



Kyogle Council

Local Emergency Management Committee

EMERGENCY RISK MANAGEMENT REPORT

Facilitated and Developed by

Echelon Australia

August 2008

Introduction

Australia has adopted a **comprehensive** and **integrated approach** to the development of its arrangements and programs for the effective management of emergencies and disasters.

This approach is:

- **comprehensive**, in encompassing *all hazards* and in recognising that dealing with the *risks* to community safety, which such hazards create, requires a range of *prevention/mitigation, preparedness, response and recovery (PPRR) programs* and other risk management treatments; and
- **integrated**, in ensuring that the efforts of governments, all relevant organisations and agencies, and the community, as a *prepared community*, are coordinated in such programs.

Ultimately, the goal of all such arrangements and programs is to contribute to the development and maintenance of a safer, sustainable community.

Within New South Wales the State Emergency Management Committee has adopted the methodology of **Emergency Risk Management (ERM)** to facilitate the integrated national approach. ERM is a process which involves dealing with risks to the community arising from emergency events. It is a systematic method for identifying, analysing, evaluating and treating emergency risks.

At a local level, Local Government is a key stakeholder in the ERM process because it is usually the first level of support for communities in emergencies and it also plays an essential and statutory role in supporting the Local Emergency Management Committee.

Purpose

The Kyogle Local Emergency Management Committee is working to build a prepared and therefore safer community in conjunction with Emergency Services and other identified Community stakeholders by developing a community Risk Based Emergency Management Plan addressing the Natural, Technological and Biological risks that may affect this Community.

Objective

The objective of the Emergency Risk Management Project is to create a prepared community by identifying, analysing and evaluating Natural, Technological and Biological risks that are may occur in the Kyogle local government area, and identifying and evaluating treatment options and developing Treatment Plans to enhance to management of the identified hazards. The process is based on the "Implementation Guide for Emergency Management Committees" developed by NSW State Emergency Management Committee.

Authority

The Emergency Risk Management Sub-Committee has been delegated the task of developing to draft stage only this report. The draft report will be tabled to the full committee for their adoption at that local level.

Supporting Documents

See appendix 2 of this document.

Document Issue & Control

This manual has been prepared by Echelon Australia specifically for reference by members of the Local & District Emergency Management Committee of the Kyogle Local Government Area.

3 copies of this manual have been issued to the Kyogle Local Emergency Management Officer for the local committee, and one to the Northern Rivers District Emergency Management Officer.

Manual Copy	Located At	Responsibility of
1 of 5	Kyogle Council	Local Emergency Management Officer
2 of 5	Kyogle Council	Local Emergency Management Officer
3 of 5	Kyogle Council	Local Emergency Management Officer
4 of 5	Lismore Police Station	District Emergency Management Officer
5 of 5	Echelon Reference Library	Echelon Project Manager

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The Emergency Risk Management assessments contained within this manual have been developed based solely on the site-specific information supplied by members of the Local Emergency Management Committee ERM Sub-Committee and have been prima facie accepted by the authors of this manual and have not been independently verified for accuracy. Echelon Australia accepts no responsibility for any loss that arises out of the Kyogle Local Emergency Management Committee having failed to bring all relevant facts to our attention or having provided inaccurate information.

Report Revision

Whenever this report is reviewed and or amended, details must be recorded on this page.

Date	Revision Summary
Issue 1	Adopted by Kyogle LEMC on 12 August 2008

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Executive Summary

This Emergency Risk Management Report has been prepared in accordance with the "Implementation Guide for Emergency Risk Management NSW" published by the NSW State Emergency Management Committee in August 2001. The report considers the risks associated with a range of Natural, Technological, Biological and Other hazards that, if each hazard occurred, would require a "significant and coordinated emergency response" within the meaning of Section 4 of the *State Emergency and Rescue Management Act 1989* (as amended).

The Kyogle Local Emergency Management Committee (LEMC) Emergency Risk Management Sub-Committee commenced the process of hazard identification and analysis in September 2006 and compiled extensive information in this regard. Significant community liaison to identify vulnerabilities was also carried out, with contact being made with 27 community groups (Progress Associations, Schools, Aboriginal Land Council). Echelon Australia was engaged to facilitate the LEMC Sub-Committee's completion of the report and this process commenced in March 2008. The Sub-Committee decided to reconsider some of their earlier work, and build on those previous inputs in development of the Report. Further opportunity was provided for community comment when this report reached draft stage. No additional comment was received through this period.

The Kyogle Local Emergency Management Committee (LEMC) Emergency Risk Management Sub-Committee developed a community hazard matrix to record the outcomes of hazard probability discussions. For the purpose of this study it was determined by the working group that consideration would be given to the potential for and severity of hazards over the Local Government Area as a whole. Risk statements were developed to account for any differences in exposure or experience of any hazards in different localities across the LGA.

The Community Hazard Matrix was developed to differentiate between hazards that the Sub-Committee believed are:

- not relevant in the LGA, or not requiring a significant, co-ordinated multi-agency response in those instance when the hazard does occur, and those
- expected to occur to the extent that would require a significant, co-ordinated, multi-agency response.

As a result of conducting the detailed discussions above it was determined that a total of 14 hazard types fall within the scope of the project that subsequently required further detailed analysis.

Risk Statements were developed for each of the 14 identified hazards, to define the nature and extent of the impact of the hazard on the community. In one case (TH01 – Dam Failure) two separate situations were analysed, being Bonalbo Dam and Toonumbar Dam. The analysis of the impact of these hazards, and evaluation of the Risk Level presented by each hazard is included in Section 5 of this report.

In summary, of the assessed hazards, 7 were considered to present an extreme level of risk, 4 to present a high level of risk, 3 to present a medium level of risk and none to present a low level of risk to the community. The results of that detailed analysis are contained in the body of this report, however a Schedule of the Hazards and the Risk Statement developed for each, grouped according to the assessed risk level is listed below:

Hazards that are rated at Extreme

Hazard	Hazard Id	Risk Rating	Agency
Fire – Bush / Grass	NH01	Extreme	NSW RFS / NSWFB
Risk Statement: There is a risk that a significant bush / grass fire may cause loss of rural infrastructure (buildings, equipment) and impact on villages, multiple occupancy and rural residential properties, and possible fatalities and injuries due to smoke inhalation, and temporary displacement or short-term isolation of a small numbers in isolated areas, due to limitations of access (single road in and out). Temporary closure of the Bruxner Highway and Summerland Way and other major roads can occur, as can localised damage to both power and communications infrastructure (telephone landline services).			

Hazard	Hazard Id	Risk Rating	Agency
Flood	NH02	Extreme	SES
Risk Statement: There is a risk that a major flood (3% AEP) could result in a small number of human fatalities and injuries. In Kyogle, inundation damage to property (up to 60 houses and 10 businesses) and temporary relocation of up to 400 persons for periods of 2-14 days, and in the rural area, damage to infrastructure (road, bridge, rail washouts) and community facilities with short-term disturbance and loss of access, impact on provision of services (power, telephone) loss of commercial activity and loss of agricultural production, including significant stock losses .			

Hazard	Hazard Id	Risk Rating	Agency
Severe Storm	NH04	Extreme	SES
Risk Statement: There is a risk that a significant storm may cause a small number of human fatalities and injuries, localised extensive damage to buildings (roofs, verandahs, water damage), with the possible need for evacuation of a few people, possible destruction of sheds, localised crop damage, short-term road blockage from fallen trees, loss of power, loss of communications, localised flooding with short-term cutting of roads and scouring to gravel surfaces reducing accessibility.			

Hazard	Hazard Id	Risk Rating	Agency
Hazardous Materials	TH02	Extreme	NSWFB
Risk Statement: There is a risk that a HAZMAT incident resulting from road / rail transport accident / industrial incident could result in human fatality, injury or illness from exposure to the material, possible environmental damage, and in particular the threat to waterways, possible site evacuation (usually less than 24 hours), temporary closure of transport link (road / rail) requiring detour and causing delay.			

Hazard	Hazard Id	Risk Rating	Agency
Transport Accident - Road	TH06	Extreme	NSWPF
Risk Statement: The Bruxner Highway, Summerland Way and other major arterial roads involving significant traffic flow pass through the LGA. There is a risk that a MVA involving a passenger coach / school bus or heavy transport vehicles could result in multiple human fatalities and injuries, localised environmental contamination, temporary blockage to roads requiring detour.			

Hazard	Hazard Id	Risk Rating	Agency
Communicable Disease – Affecting Humans	BH01	Extreme	NSW Health
Risk Statement: There is a risk that a major human communicable disease incident (eg pandemic influenza) could cause multiple fatalities, hospitalisation, quarantine, and vaccination demands, resulting in major disruption to community function (absences from work, inability for services to respond).			

Hazard	Hazard Id	Risk Rating	Agency
Communicable Disease – Affecting Animals	BH02	Extreme	DPI
Risk Statement: There is a risk that an animal disease outbreak could cause human illness, require destruction of property at contaminated sites, extended quarantine of properties, long-term environment impact at those areas designated for disposal of carcasses, mass death or destruction of affected stock and wild animals, significant economic impacts on industry and service providers.			

Hazards that are rated at High

Hazard	Hazard Id	Risk Rating	Agency
Extreme Temperature	NH03	High	NSWPF
Risk Statement: There is a risk that extended periods (3 days and longer) of extreme heat could cause fatalities and increased hospitalisation for heat related and respiratory illnesses, with reduced availability of personnel to attend work, and increase the potential for occurrence of failure of machinery, and fire hazard.			

Hazard	Hazard Id	Risk Rating	Agency
Infrastructure Failure - Power	TH03	High	NSWPF
Risk Statement: There is a risk that extended loss of power (> 24 hours) could result in failure of Council's sewerage facilities, impact on water supply and communications, possible evacuation of hospital / aged care facility and schools, temporary closure of retail outlets and farming operations (esp dairies) with major impacts on community amenity.			

Hazard	Hazard Id	Risk Rating	Agency
Transport Accident - Rail	TH05	High	NSWPF
Risk Statement: There is a risk that an incident associated with rail transport (derailment / level crossing incident) could result in multiple fatalities and serious injuries, possible environmental contamination, evacuation of the immediate area of the incident.			

Hazard	Hazard Id	Risk Rating	Agency
Fire – Commercial / Industrial	TH07	High	NSWFB / NSW RFS
Risk Statement: There is a risk that a fire in a industrial, commercial or retail complex has the potential to cause a number of human fatalities, injuries, damage or destruction of the structure and adjoining buildings, loss of commercial capacity and disruption to community activities.			

Hazards that are rated at Moderate

Hazard	Hazard Id	Risk Rating	Agency
Dam Failure - Bonalbo	TH01a	Moderate	SES
Risk Statement: There is a risk that failure of Bonalbo Dam could cause risk to human safety, inundation of downstream property (up to 31 residences), significant property damage in the village of Bonalbo. Note: Social Impact consideration based solely on Bonalbo population.			

Hazard	Hazard Id	Risk Rating	Agency
Dam Failure - Toonumbar	TH01b	Moderate	DWE / SES
Risk Statement: There is a risk that failure of Toonumbar Dam could result in loss of public infrastructure (roads, bridges) and private infrastructure (irrigation equipment, weirs and farm buildings), localised flooding of rural properties, with possible stock losses, and cause impacts to the Richmond River valley downstream from Kyogle LGA.			

Hazard	Hazard Id	Risk Rating	Agency
Infrastructure Failure - Water	TH04	Moderate	Kyogle Council
Risk Statement: There is a risk that an extended, unplanned failure of the water reticulation supply (such as contamination requiring treatment of the water before consumption) will impact on community amenity, and potentially creating public health impacts.			

Summary Of Project Management Plan

STAGE 1	Research, Establishment of Working Gp, Development of project context & limitations		
STAGE 2	Hazard Identification / Risk Assessment		
STAGE 3	Determine & Evaluate Treatment / Mitigation options		
STAGE 4	Draft Plan Developed / Stakeholder Consultation		
STAGE 5	Consultation outcome review / Plan Amended		
STAGE 6	Consultation / Publication Final Document		
Stage	Milestones & Activity Measures	Responsible Agency / Organisation	Target Completion Date / Comments
1	Sub-Committee established by LEMC Training of Sub-Committee undertaken Process context and limitations developed Community profile developed Sources of risk identified Elements at risk identified Historical information analysed	LEMC SEMC via DEMO Sub Cttee & Echelon Sub Cttee & Echelon Sub Cttee & Echelon Sub Cttee & Echelon Sub Cttee & Echelon	May 2002 July 2003 10 March '08 June 2008 10 March '08 21 April '08 21 April '08
2	Development of LGA specific risk statements Risk statements analysed(likelihood & consequence) Assessments reviewed against risk criteria	Sub Cttee & Echelon Sub Cttee & Echelon Sub Cttee & Echelon	21 April '08 28 April '08 12 May '08
3	Stakeholder consultation to confirm existing treatment and mitigation strategies Determine gap treatment and mitigation strategies	Sub Cttee & Echelon Sub Cttee & Echelon	10 June '08 12 May '08
4	Working Draft document prepared Working Draft advertised inviting public comment Community Consultation Draft Plan Finalised - inclusive (where applicable) of amendments	Echelon Echelon & Local Govt Sub Cttee & LEMC Echelon	May/June '08 June '08 June '08 July '08
5	Stakeholder consultation on amended Draft Document Treatment Options reviewed, extended Draft Plan Finalised	Sub Cttee Sub Cttee Echelon	July '08 July '08 July '08
6	Emergency Risk Management document published and Adoption of Plan by LEMC & reported to Council	Echelon, Local Govt, LEMC, DEMC & SEMC	August '08

The full Local Emergency Management Committee was kept informed of the progress of the Project at its regular meetings.

2 ERM Context Statement

The aim of the Kyogle Emergency Risk Management project is to develop a 'Community Emergency Risk Management Plan' for the Local Government Area of Kyogle, in consultation with the wider community.

The process examines Natural, Technological and Biological risks that in the event of an emergency, would require a "significant and coordinated emergency response" within the meaning of Section 4 of the *State Emergency and Rescue Management Act 1989* (as amended).

Kyogle Local Emergency Management Committee (LEMC) is managing the emergency risk management process through a sub-committee formed of relevant organisations and agencies. The NSW State Emergency Management Committee 'Implementation Guide for Emergency Risk Management (NSW)' has been used to undertake this process.

A community consultation strategy has been developed by the working party to ensure that the community is consulted during the process and adequate and equitable access is provided to all areas of the community.

2.1 Identified Problems

The Sub-Committee of the Local Emergency Management Committee reviewed and / or identified Natural, Technological and Biological hazards that may impact on the Kyogle Local Government Area only.

2.2 Process Limitations

Legislation

1. The role of LEMC is as defined in the State Emergency and Rescue Management Act 1989.
2. Each agency as a member of the LEMC whilst operating under the SERM Act also have agency specific policy and legislative requirements that may impact on their ability to share and table operational information.

The following legislation also applies to each of the positions within the LEMC;

Chairperson

Section 28 2a

"a senior representative of the council of the relevant local government area nominated by that council, who is to be the Chairperson of the Committee"

Section 29

"The Chairperson of a Committee is to be a person who has the authority of the council to co-ordinate the use of the council's resources in the prevention of, preparation for, response to and recovery from emergencies"

Emergency Services Representative

Section 28 2b

"a senior representative of each emergency services organisation operating in the relevant local government area"

Section 28 5

"The representative of an organisation is to be nominated by the organisation"

Functional Area Representative

Section 28 2c

"representatives of such organisations providing services in functional areas in the relevant local government area as the council of that area may from time to time determine"

Legislated Council Responsibilities

Section 32

Councils to provide executive support for Local Emergency Management Committee and Operations Controller.

- (1) A council is to provide executive support facilities for the Local Emergency Management Committee and the Local Emergency Operations Controller in its area.
- (2) The principal executive officer is to be known as the Local Emergency Management Officer

Policy Issues

1. Member agencies of the LEMC operate within individual policies that are specific to their organisations some of which are restricted will not be recorded within the Emergency Risk Management Study. These issues are however discussed at a local and district level within the management committee structure to ensure a whole of LGA response is adopted.

Scope

1. The Kyogle LEMC and its working group is to document the process as outlined within the NSW State Emergency Management Committees' "*Implementation guide for emergency management committees*"
2. Where a lead combat agency or functional area has been identified as having a legislative requirement to plan for and or mitigate for identified hazards the LEMC is restricted to asking the particular agency to produce current planning and mitigation documents or status reports
3. The SEMC comments on plans developed by a LEMC via its Assessment Checklist initially released in December 2006, revised in July 2007 and further revised in November 2007.
4. The LEMC is not required to implement treatment plans.
5. The scope of the ERM Project is limited to Kyogle, ie the local effects of occurrence of a hazard.
6. The LEMC (ERM Sub-Committee) identified that it is only required to consider problems with the potential to require a "**significant and coordinated multi-agency response.**" To assist the ERM Sub-Committee apply this context, the following definition was agreed upon:

A "**significant and coordinated multi-agency response**" is determined by the ERM Workgroup to be as follows:

 - a. When an EOC is required to be operational to control an emergency or to provide support to a combat agency or coordinate evacuation operations.
 - b. When three or more liaison officers from other emergency services and or functional area services are required in a combat agency headquarters to coordinate support.
 - c. When site control/s are established and cannot access resources through normal channels and require to access resources through an EOC.
 - d. When a Combat Agency is required to source significant Combat Agency Resources from out of area and the community damage sustained requires the establishment of a recovery coordinating committee to manage the recovery operation.
 - e. Where a combat agency plan makes reference to an identifiable/quantifiable trigger requiring support to be coordinated by the LEOCON or handover of control to the LEOCON
7. In NSW various Agencies have responsibility for developing (PPRR) treatments in relation to specific hazards. Risks will be referred to those agencies and any information on treatments will be considered by the ERM Workgroup as being provided by experts in their respective fields.
8. Where there is no combat agency identified for a specific hazard the LEMC (advised by the ERM Sub-Committee) will be responsible for determining treatments. As the LEMC has no funding base with the exception of administrative support from Council, the extent of any investigation will be limited to broad information and treatments limited to Planning Treatments unless the ERM Sub-Committee considers the risk is such that it should be referred to an agency or to higher levels of the Emergency Management Committee Structure for another type of treatment to be applied.
9. In relation to local agency referrals the quality of and speed of information to the ERM Sub-Committee may be subject to agency priorities.

2.3 Management Framework

1. The management framework for the Kyogle LEMC and its relationship to the working party is identified in Appendix 1 of this document.

2. Management framework overview for ERM project:

Kyogle Council	- Provision of administrative support and ERM facilitator;
ERM Sub-Committee	- Sub-committee of LEMC responsible for project management and initial project input;
LEMC	- Adopt final project and Treatments, make referrals to District;
LEMC Members	- Provide timely information for project as requested by ERM work Group;
DEMC	- Endorse final Local ERM product, make recommendations to SEMC, and make referral to SEMC;
DEMC MEMBERS	- Ensure local agency participation; provide timely information for project as requested by ERM Workgroup/DEMC/LEMC

As per the SEMC "Implementation Guide", this plan is a document of the Local Committee and approved at local level. Reference to District and / or State Committees is for endorsement only, with comment referring to process, rather than content.

Agencies responsible for Risks to provide information on cause characteristics and effects of their respective hazards and to assist the ERM Sub-Committee to write some key risk statements that meet the "Significant and Coordinated Multi-Agency response" requirement. Agencies also to provide advice on treatments in place and currency, monitor and review dates or treatment options in the absence of treatments being in place.

Where there is no combat agency identified for a specific hazard the LEMC (advised by the ERM Sub-Committee) will be responsible for determining treatments.

At each stage as identified in the project plan working group consensus is achieved before moving to the next stage.

3. A summary of the project management plan appears on page 10 of this document.

4. LEMC Sub-Committee

The Sub-Committee consisted of representatives of a range of Agencies, as shown in Appendix 5. The process was facilitated throughout by representatives Echelon Australia, as also shown in Appendix 5.

2.4 Risk Evaluation Criteria

Risk evaluation criteria are used as a reference when considering the risk statements relating to each hazard considered to impact on the LGA. The following statements were developed by the LEMC Sub-Committee:

1. Any reasonably preventable accident/incident resulting in loss of life is unacceptable.
2. Any reasonably preventable accident/incident resulting in serious injury is unacceptable.
3. Any reasonably preventable matter that will affect the health and wellbeing of a community is unacceptable.
4. Any reasonably preventable activity or incident that will have a medium to long-term or permanent effect on the environment is unacceptable.
5. Any reasonably preventable activity or incident that will have a long-term or permanent effect on the cultural assets and values of a community is unacceptable.
6. Any reasonably preventable activity or incident that will seriously disrupt normal business activity is unacceptable.
7. Any reasonably preventable activity or incident that will seriously disrupt community lifelines or services is unacceptable.
8. Any reasonably preventable activity or action that could lead to the introduction of exotic diseases or pests is unacceptable.

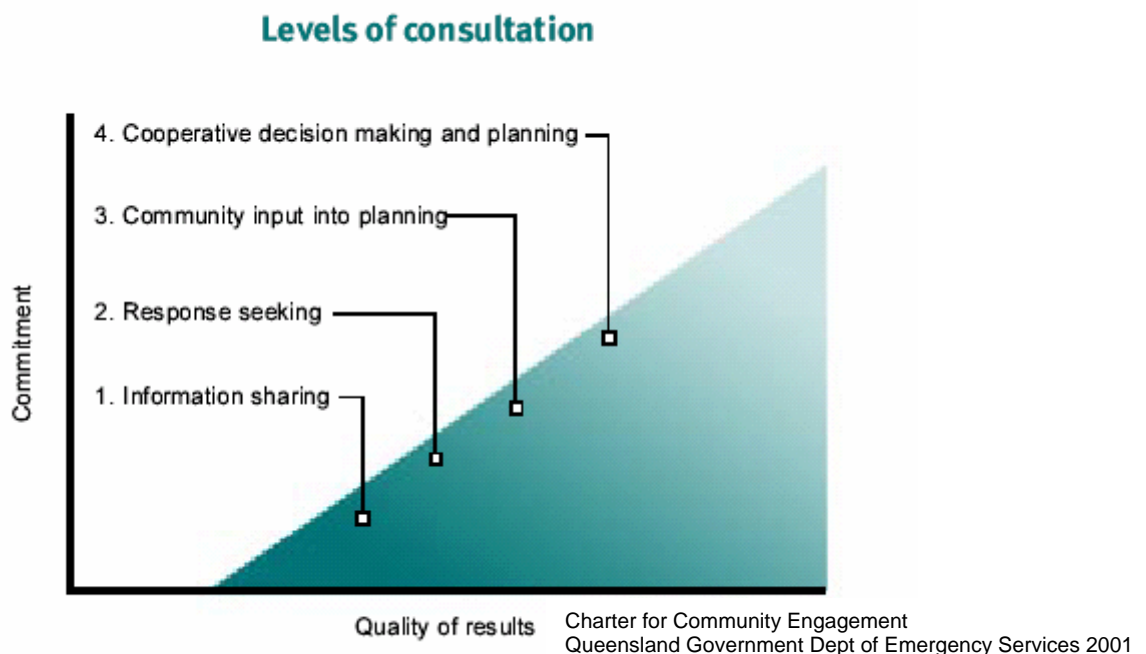
3 Stakeholder Communication and Consultation Strategy

Local Government by its very nature is constantly engaging and consulting with its community on a range of issues. It understands that community engagement is the process of working collaboratively with groups of people affiliated by geographical proximity, special interest or similar situations to address issues affecting their well-being. As such there are a number of strategies and networks in existence within the local government context that can be utilised for the Emergency Risk Management Process.

Community engagement incorporates consultation (information sharing) and active participation between the stakeholders. It strengthens the capacity of communities to take action that produces positive and sustainable changes locally. It has been the intent of the Local Emergency Management Committee to tap into the existing networks to engage and consult with the community on the Emergency Risk Management Study with the following aims:

- i. To enable the community to be better informed about hazards within their community
- ii. To reduce the level of misconception or misinformation about the ERM process
- iii. To ensuring commitment and greater ownership of the final decisions reflected within the Emergency Risk Management Study
- iv. To encourage the community to put forward ideas and assist in the recording of hazard history for the local government area
- v. Enabling the Local Emergency Management Committee to gain a better understanding of local expectations in relation to PPRR issues
- vi. To Help to identify issues which may not otherwise have been considered by the LEMC

Consultation Model



By adhering to the aims as outlined above it is anticipated that the community consultation and engagement will move through each of the abovementioned steps.

The ERM Sub-Committee agreed that they couldn't communicate and consult with every known individual and the approach was taken to use the LEMC group, known Community Groups and Schools to communicate and consult. It was also identified that major emergency management stakeholders were members of the LEMC. In the meantime the ERM Sub-Committee would rely on the considerable community experience within the ERM Sub-Committee membership and the LEMC.

It was agreed that a range of measures be used to engage and seek feedback from the Community regarding the preparation of the document through to explaining the objectives of the process.

The Kyogle LEMC had decided on the following communication strategy for this project.

- Publication of a media release via the local print media (TKN, The Richmond River Express Examiner, Council Newsletter) (see appendix 3)
- Formal briefing of elected members of Kyogle Council
- Community access to Council's website.
- Public display of documentation via Council procedures (Admin Centre, others).
- To require members of the LEMC & LEMC working group to inform and engage within their own agency to ensure the ERM process has the widest exposure as possible.

3.1 Process Documentation (Evidence of Process)

At each of the ERM Working Group meetings records were taken by the Echelon Consultant and LEMO that outline the content of the meeting, those present, the decision making and direction setting process. The meeting record shown below refers to the elements of the process carried out since Echelon's engagement (unless indicated).

10 March 2008	Meeting One	Setting the Context, review Hazards
21 April 2008	Meeting Two	Risk Statements 1
28 April 2008	Meeting Three	Risk Analysis 1
5 May 2008	Meeting Four	Risk Statements 2
12 May 2008	Meeting Five	Risk Analysis 2, Risk Treatment Options and Plans
10 June 2008	Meeting Six	present draft report to LEMC

4 Risks

4.1 Kyogle LGA Community Hazard Matrix

The following matrices represent the initial hazard assessments identified by the working committee of the Kyogle LEMC, with the list of hazards taken from Form 1 of the SEMC Implementation Guide. All hazards that meet the scope of the report have been assessed and are listed in the body of this report and as per the requirements of the State Emergency Management Committee SEMC implementation guide.

The Sub-Committee decided to consider the potential for occurrence and impact of the hazards within and across Kyogle LGA as a whole.

Column 1 of the Matrix lists the hazards that were considered.

Column 2 identifies whether the Working Group considered it possible for the particular hazard to occur within the identified area.

For hazards that have been identified as possibly occurring, Column 3 identifies whether occurrence of the hazard can be anticipated to require a significant coordinated multi agency response.

Column 4 identifies which Agency has the Lead Combat role if the hazard occurs.

Column 5 is provided for any Comments relevant to the hazard.

Generally, where the matrix indicates that occurrence of a hazard may be possible and a significant coordinated response would be required then a full risk assessment has been conducted for that hazard. The Sub-Committee considered that some specific hazard types could be combined and considered as a group, due to common attributes of the hazards. These hazards are identified in the final column of the Matrix. Risk Statements are developed to describe the hazard and the impacts of the hazard on elements at risk within the community. The Sub-Committee determined whether the respective risk statements would apply across the LGA or if a specific risk statement is required for different geographical, demographic, or other areas identified.

Those hazards that are outside of the scope of the report are not given further consideration in this current process, with these determinations being reviewed at formal reviews of the document.

Natural Hazards

Hazard	Can hazard occur in LGA?	Could occurrence require Multi Agency Response?	Lead Response Agency	Comment
Avalanche	No.	Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that there was no history of the event or opportunity for the hazard to present within the LGA at a level that would require further investigation and inclusion within this study.		
Snow Storm	No.	Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that there was no history of the event or opportunity for the hazard to present within the LGA at a level that would require further investigation and inclusion within this study.		
Cyclone (East Coast Low)	Yes	Yes	SES	Consider as part of Severe Storm and Flooding (21.04.2008)
Tornado	Yes	Yes	SES	Consider as part of Severe Storm (6.09.2006)
Earthquake	Yes	No.	Considered by the LEMC Sub-Committee on the 21 st April 2008. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.	

Coastal Erosion	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that there was no history of the event or opportunity for the hazard to present within the LGA at a level that would require further investigation and inclusion within this study.			
Fire Bush	Yes	Yes	NSW RFS	
Fire Grass	Yes	Yes	NSW RFS	Consider with Bushfire
Flood	Yes	Yes	SES	
Fog	Yes	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Extreme Temperature	Yes	Yes	NSWPF	
Landslip / Rock fall / Mudflow	Yes	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Infestation - Animal	Yes	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Infestation - Insect	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that there was no history of the event or opportunity for the hazard to present within the LGA at a level that would require further investigation and inclusion within this study.			
Infestation - Plant	Yes	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Severe storm - Electrical	Yes	Yes	SES	Consider as part of Severe Storm (6.09.2006)
Severe storm - Wind	Yes	Yes	SES	Consider as part of Severe Storm (6.09.2006)
Severe storm - Rain	Yes	Yes	SES	Consider as part of Severe Storm (6.09.2006)
Severe storm - Hail	Yes	Yes	SES	Consider as part of Severe Storm (6.09.2006)
Severe storm	Yes	Yes	SES	
Storm Surge	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that there was no history of the event or opportunity for the hazard to present within the LGA at a level that would require further investigation and inclusion within this study.			
Tsunami	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that there was no history of the event or opportunity for the hazard to present within the LGA at a level that would require further investigation and inclusion within this study.			

Technological Hazards

Hazard	Can hazard occur in LGA?	Would occurrence require Multi Agency Response?	Lead Response Agency	Comment
Aeronautical	Yes	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Space Debris re-entry	Yes	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Bridge Collapse	Yes	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Building Collapse	Yes	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Dam Failure	Yes	Yes	KSC, State Water	Consider separate situations for Bonalbo and Toonumbar Dams
Hazardous Materials	Yes	Yes	NSWFB	
Industrial Accident	Yes	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Infrastructure failure – Power	Yes	Yes	NSWPF	
Infrastructure failure - Water	Yes	Yes	KSC	
Infrastructure failure - Sewerage	Yes	No. Considered by the LEMC Sub-Committee on the 21 st April 2008. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Infrastructure failure - Communications	Yes	No. Considered by the LEMC Sub-Committee on the 28 th April 2008. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Infrastructure failure - Gas	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that there was no history of the event or opportunity for the hazard to present within the LGA at a level that would require further investigation and inclusion within this study.			
Mine Accident	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that there was no history of the event or opportunity for the hazard to present within the LGA at a level that would require further investigation and inclusion within this study.			
Radiological Hazard	Yes	Yes	NSWFB	Consider as HAZMAT (10.05.2006)
Pollution - chemical	Yes	Yes	NSWFB	Consider as HAZMAT (10.05.2006)
Pollution - Oil/Fuel	Yes	Yes	NSWFB	Consider as HAZMAT (10.05.2006)

Pollution - Hazardous Waste	Yes	Yes	NSWFB	Consider as HAZMAT (10.05.2006)
Land Subsidence	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that there was no history of the event or opportunity for the hazard to present within the LGA at a level that would require further investigation and inclusion within this study.			
Transport Accident - air	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that there was no history of the event or opportunity for the hazard to present within the LGA at a level that would require further investigation and inclusion within this study.			
Transport Accident - rail	Yes	Yes	NSWPF	
Transport Accident – Road	Yes	Yes	NSWPF	
Transport Accident - Sea	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that there was no history of the event or opportunity for the hazard to present within the LGA at a level that would require further investigation and inclusion within this study.			
Explosion	Yes	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Fire Residential	Yes	No. Considered by the LEMC Sub-Committee on the 21 st April 2008. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Fire Industrial / Commercial	Yes	Yes	NSWFB / NSWRF	Combat agency depends on relevant fire district.
Search & Rescue	Yes	Yes	SES	Need to search for lost bushwalkers etc can occur – not Emergency Response (5.05.2008)

Biological Hazards

Hazard	Can hazard occur in LGA?	Would occurrence require Multi Agency Response?	Lead Combat Agency	Comment
Pathogens	Yes	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		
Communicable Disease - affecting humans	Yes	Yes	NSW Health	
Communicable Disease - affecting animals	Yes	Yes	DPI	
Communicable Disease - affecting plants	Yes	No. Considered by the LEMC Sub-Committee on the 6 th September 2006. The Sub-Committee determined that if the hazard did occur in the LGA it would not require a significant coordinated multi-agency response.		

4.2 Natural Hazards - a National Perspective

The European colonization of Australia – and its written history – began at Sydney Cove in 1788. With only 20 million people spread across 7.7 million km², even today parts of the continent are not exactly overcrowded. As an example, Australia Post divides the country into 2,433 postcodes, each with an average population of about 8,200. The largest postcode (872 in Western Australia), had a population at the 2001 Census of 20,400; the postcode covers an area of 621,400 km² an area significantly larger than continental France. While it could be argued that nothing much happens in postcode 872, from a natural hazards point of view, that was exactly the rest of the nation's view of Canberra, the national capital – except that this view changed in January 2003, when the city was hit by severe bushfires.

Nearly twenty years ago, researchers at Macquarie University, in what was later to become the insurance industry-sponsored research centre known as Risk Frontiers, began compiling databases on natural hazards and their impacts in Australia. An integrated data base is the result that contains more than 5000 hazard occurrences and information about human deaths and damage to the built environment resulting from nine natural perils – Tropical cyclones, bushfires, floods, wind gusts, tornadoes, hailstorm's, earthquakes, landslides and tsunamis.

Summary of Deaths Due to Natural Hazards 1788 – 2003

PERIL	FIRST RECORDED DEATH	NUMBER OF DEATHS	%TOTAL DEATHS
Earthquake	1902	16	0.3
Landslide	1842	95	1.6
Bushfire	1850	696	11.4
Thunderstorm	1824	774	12.7
Tornado	1861	52	0.9
Cyclone	1839	2163	35.5
Flood	1790	2292	37.6
Tsunami		0	0.0
Total		6088	100

Issues in Risk Science 2004

Tropical cyclones and floods together account for more than 70% of known natural hazard deaths since the European colonisation of Australia in 1788. Thunderstorms, particularly lightning, and bushfires each account for 11 to 13% of deaths, indicating that the other hazards considered have produced very few human deaths, at least in the last 200 years.

At the other end of the spectrum, deaths in earthquakes, landslides and tsunamis combined account for less than 2% of all deaths. This paltry total reinforces the view that Australia is a land of meteorological perils; a low lying, ancient continent with all its sea coast remote from the active boundaries of tectonic plates is unlikely to be dominated by geological hazards.

If we delve into the totals a little further we discover, for example that while flood deaths average 10-11 per year, one quarter of all flood deaths have occurred in New South Wales. Bushfire deaths have averaged about 4 per year with 50% of all deaths in just eight fires or, more accurately, on just eight days of extreme fires. Lightning deaths (that is most of the thunderstorm deaths) average about 3.5 fatalities per year, with nearly half in NSW.

4.3 Natural Hazards - a Local Perspective

Significant Weather Summaries 2001 – 2007, Kyogle Region NSW.

Data taken from Bureau of Meteorology Monthly Significant Weather summaries. This information, although not specific to the Kyogle LGA, gives an indication of the significant weather experience in the region.

2001

January: On the 8th, 30 kilometres east southeast of Tenterfield (Northern Tablelands) wind gusts up to 93 km/h and a funnel cloud were reported, large branches and trees were down. Casino (Northern Rivers) had 6.3 cm hail, 31.2 mm of rain in 10 minutes and wind gusts up to 109 km/h which damaged buildings and devastated trees.

On the 29th, at Numulgi (Northern Rivers) a tornado was reported over a 4 minute period.

March: On the 8th, a very intense east coast low crossed the New South Wales North Coast near Byron Bay, with extensive flooding and wind damage. Wind gusts recorded include: 139 km/h at Evans Head with a mean wind speed of 100 km/h; 93 km/h at Casino; 120km/h at Woombah; and 91 km/h at Ballina. Extensive damage was caused to roofs, trees and powerlines. A State of Emergency was declared for the Kyogle LGA and damage to Council infrastructure was of the order of \$2million.

April: On the 26th at Murwillumbah (Northern Rivers) 3cm hail and 50mm of rain fell in 40 minutes. At Swan Creek (Northern Rivers) 31mm of rain fell in 45 minutes. At New Italy (Northern Rivers) large size hail was reported.

May: On the 6th at Wollongbar (Northern Rivers) 2.5cm hail, heavy rain and strong winds were reported.

September: On the 1st at Byron Bay (Northern Rivers) 2cm hail and 89 km/h wind gusts were recorded.

November: On 19th at Lismore (Northern Rivers) 2cm hail was reported in the area.

December: On the 22nd at Ballina (Northern Rivers) 2.5cm hail occurred.

On the 30th at Tabulam (Northern Tablelands) very heavy rain (46mm in 30 min) and 3cm hail was reported.

2002

January: On the 16th damaging winds, flash flooding and golf ball sized hail were reported at Lismore. The storm was the most intense as it crossed the coast at Kingscliff with 7cm hail, torrential rain and damaging winds being reported there.

February: Hail, 4cm in diameter, very heavy rain and flash flooding reported at Tabulam (Northern Tablelands) on the 7th.

March: On the 26th 2cm hail and strong winds were recorded near Lismore (Northern Rivers).

June: On the 16th at Casino (Northern Rivers), hail strong winds and heavy rain caused damage to houses. Trees were down and 12mm of rain was recorded in 10 minutes. At Lismore (Northern Rivers) a wind gust of 89 km/h was recorded, heavy rain occurred with 20mm recorded in 10 minutes and a total of 35mm in 24 hours. At Ocean Shores (Northern Rivers) severe thunderstorms with strong winds damaged houses, brought down trees and powerlines and small hail occurred for 5 minutes. At Byron Bay (Northern Rivers) a wind gust of 89 km/h was recorded and 20 mm of rain fell in 10 minutes. At Coolangatta-Tweed Heads (Northern Rivers) very heavy rain and strong winds occurred. Small hail was reported.

On the 19th at Cape Byron (Northern Rivers) a wind gust of 104 km/h was recorded.

December: On the 10th at Ballina (Northern Rivers) heavy rain and strong winds unroofed houses and downed trees in Ballina-Alstonville area.

On the 24th at Lismore (Northern Rivers) very heavy rain and strong winds caused flash flooding and damage to houses and trees.

2003

March: On the 23rd golfball sized hail was reported at Casino (Northern Rivers).

On the 30th at Evans Head and Tabbimoble (Northern Rivers) large hail damaged cars, strong winds and heavy rain were also reported.

October: On the 2nd thunderstorms, strong winds and hail in the northeast of the state caused structural damage to houses and brought down trees and power lines. Worst affected areas were Grafton, Lismore and Tamworth.

On the 16th very heavy rain fell at Rock Valley near Lismore with falls of 63mm in one hour and 50mm in 20 minutes.

On the 20th thunderstorms with 3cm hail was recorded near Wardell, south of Ballina.

On the 26th thunderstorms and giant hail over 9cm in diameter was reported near Grafton on the North Coast also Kyogle, and Tyndale, near Maclean in the Northern Rivers.

December: On the 14th at Lismore (Northern Rivers) 18.8mm of rain was recorded in 10 minutes.

2004

January: On the 24th at Corndale (Northern Rivers) heavy rain (54mm) fell in 30 minutes. On the 27th at Lismore (Northern Rivers) hail 3cm in diameter was experienced. On the 30th at Evans Head (Northern Rivers) golf ball sized hail was experienced and a tornado was sighted. At Drake (Northern Tablelands) hail 4cm in diameter occurred.

February: On the 15th at Tenterfield (Northern Tablelands) strong winds damaged buildings.

March: On the 18th at Murwillumbah very heavy rain, hail up to 1.5cm in size and strong winds were reported; 34mm of rain in 30 minutes was recorded and there was a spotters report of 89mm in 20 minutes. Winds were estimated at over 100km/h with a funnel cloud seen. Roofs were torn off houses, trees and powerlines brought down. At Casino strong winds uprooted trees causing power outages and there was flash flooding. At Lismore flash flooding was also reported.

September: On the 19th at Tabulam (Northern Tablelands) 3cm hail was reported.

October: On the 18th at Tweed Heads heavy rain caused local flooding and 158mm of rain fell in 3.5 hours.

November: On the 8th at Crystal Creek (Northern Rivers) very heavy rain (37mm in 30 minutes) with small hail was reported. At Murwillumbah hail 2cm in diameter and heavy rain (34mm in 20 minutes) was reported. On the 9th, at Casino (Northern Rivers) large hail up to 8cm in diameter smashed car windscreens. At Lismore (Northern Rivers) heavy rain at McKees Hill, near Lismore (67mm in 45 minutes) with small hail was reported.

December: On the 8th at Lismore 2cm hail was observed. On the 13th at Lismore 3cm hail was observed and winds of 102km/h. On the 23rd hail 4.5cm in diameter occurred 8 kilometres west of Evans Head. On the 27th at Evans Head hail 2.5cm was observed and strong winds gusting to 100km/h were recorded and heavy rain, 28mm in 30 minutes occurred. At Lismore heavy rain, 59mm in 60 minutes fell at Corndale (near Lismore)

2005

April: On the 20th at Byron Bay (Northern Rivers) heavy rain caused flash flooding; 28mm of rain fell in 30 minutes including 8.8mm in 10 minutes. Strong winds reached 102km/h.

September: Thunderstorms on the 27th at Lismore produced heavy rain and golf ball sized hail at Larnook (NW of Lismore)

October: On the 27th numerous lightning strikes caused power outages in the Casino area.

November: On the 23rd at Murwillumbah a thunderstorm with heavy rain, 47mm in 45 minutes was reported. On the 29th at Clunes (near Lismore) a thunderstorm with heavy rain, 44mm in 25 minutes was reported.

December: On the 8th at Wardell (Northern Rivers) hail 2.5cm in diameter was reported with a maximum gust of 95km/h. Heavy rain (42mm in 70 minutes) was reported and branches were broken off trees. On the 17th at Casino hail 4cm in size was reported. Large trees were snapped and ripped out and power lines and sheds were damaged. At Clunes hail 2.8cm in diameter was reported. The hail continued for 15 minutes.

2006

January: On the 6th at Casino, wind gusts of 100km/h were reported. A Natural Disaster was declared in the Kyogle LGA and the cost to repair damage to Council infrastructure was \$900,000.

April: On the 5th at Byron Bay heavy rain caused flash flooding in the Byron Bay area. Strong winds uprooted trees and a lighthouse was struck by lightning. Heavy rain on the 16th at Byron Bay produced 40mm of rain in 1 hour and a total of 83mm in 3 hours.

October: On the 26th at Larnook (Northern Rivers) a thunderstorm caused strong winds which uprooted trees.

November: On the 8th at Tabulam (Northern Rivers) hail up to 3cm in diameter and 10cm deep on ground was reported south of Tabulam. At Swan Creek (Northern Rivers) a thunderstorm with golf ball size hail was reported. At Kingscliff a thunderstorm with 2cm hail was reported on the 15th and at Tweed Heads a thunderstorm with 3-4cm hail occurred.

December: On the 15th at Casino a thunderstorm with heavy rain produced 52mm. Small hail and power outages caused lightning were also reported.

2007

October: 8th: at Coraki a thunderstorm with 2.5cm hail and 20mm of rain was recorded in 5 minutes. At Casino 2cm hail was reported and 6cm hail was reported south of Casino. At Lismore a severe thunderstorm with 6cm hail was reported with gale force winds and widespread damage to central Lismore. Many cars and houses were damaged, windows broken and trees blown over. A wind gust of 81km/h was recorded at the airport. Damage was estimated at about \$60 million. Lismore was declared a natural disaster area. At Goonellabah hail 3cm in diameter covered the ground and stripped gardens. Some windows were broken and 22mm of rain was recorded in 20 minutes.

9th: at South Lismore a thunderstorm with 6cm hail and strong winds estimated at 100km/h caused widespread damage. About 20mm of rain was recorded in 10 minutes and windows were broken. People were injured and cars were damaged, many trees were uprooted. There were also flash flooding and power outages. At McLeans Ridges hail 3cm in diameter was reported. Hail 3-4cm in diameter was recorded at Richmond Hill, golf ball sized hail occurred for 15 minutes and 25mm of rain was recorded during that period. At Byron Bay very heavy rain, 20mm was recorded in 16 minutes. At Corndale very heavy rain, 32mm in 12 minutes was recorded.

12th: at Tweed Heads golf ball size hail was reported.

26th: at Grafton, Byron Bay and Mullumbimby large hail and strong winds caused damage exceeding \$1 million. A tornadic super-cell thunderstorm hit Dunoon, near Lismore causing major damage in the small town. More than 20 houses lost their roofs with some partly demolished, including the local church when the tornado swept through the town centre. Trees were snapped off or uprooted, powerlines brought down and gardens flattened. Large hail was also reported. The local sub-station exploded after being hit by flying debris, causing power outages. The Lismore district was declared a natural disaster area for the second time this month with the damage bill at Dunoon totalling about \$5 million.

29th: at Lismore a thunderstorm with 2cm hail and heavy rain, about 25mm in 10 minutes was recorded.

November: 2nd: at Lismore heavy rain 30mm of rain in 20 minutes was reported which caused storm damage.

2008

January: Extended rain resulted in the highest flood through Kyogle since 1954, with a Natural Disaster declared and repair costs to Council infrastructure estimated at \$5million.

4.4 Kyogle Natural Hazards Descriptions

HAZARD	NH01 - BUSH FIRE / GRASS FIRE
History	Frequent event in all areas. Could occur continually for several months depending on weather conditions. Jan 1994 – Cawongla area (~15km n of Kyogle) – houses destroyed, large areas of private property and National Park burnt out.
Intensity	Can cover a large area in a short time.
Extent	Generally a number of separate outbreaks which can tie up resources quickly.
Speed of onset	A minor fire can become major in a very short time if weather conditions change.
Vulnerabilities	
Secondary Hazards	Evacuation, Road closures, Service interruptions, Personal injury

HAZARD	NH02 - FLOOD
History	1954 highest flood (18.9m), Jan 2008 – second largest in past 100yrs (18.1m) – in recent years there have been Natural Disaster declarations in Kyogle LGA due to flooding in 2001, 2006 and 2008.
Intensity	Depends on location and extent of rain. Can be major flooding extending over days or flash flooding in one or more catchments lasting only hours.
Extent	2008 flood - 400 people evacuated, approx 60 damaged / inundated, some with all contents destroyed, Bowling Club severely affected (damage to buildings and greens), extensive road and bridge damage (~\$6m restoration cost). Can be local flooding due to storm or widespread due to a major weather influence such as cyclone or rain depression. Duration can vary from hours to days.
Speed of onset	Depends on location. Short notice in upper catchments, ~ 7 hours at Kyogle town.
Vulnerabilities	Topography of LGA creates short notice between rainfall and potential flooding in some areas, resulting in isolation of numerous remote residential groups. Kyogle town is also isolated for extended periods (up to 3000 persons in Kyogle and Geneva).
Secondary Hazards	Evacuation, Road closures, Personal injury, Structural damage to roads & bridges, Service interruptions

HAZARD	NH03 – EXTREME TEMPERATURE
History	
Intensity	The effects of heatwaves are of a gradual cumulative nature. Australian studies are considering many factors contributing to the effects of a heat wave including; the maximum daily temperatures in the high 30's-40 persisting for 48-72 hrs with minimum temperatures over night remaining above 20, Air pollution and wind factors. There is no internationally accepted definition for a heatwave it is generally accepted that consistency in higher than usual temperatures for 48-72 hours or more will have an impact, primarily on health. The health impact can be lessened by people taking time out of the heat to cool off such as in air conditioned facilities. This is a further impact on power usage.
Extent	Extremes in age (elderly or children); Persons with health co morbidities such as renal disease, heart disease, diabetes and haematological disorders; Workforce in areas of exposure to heat (eg outdoors, poorly ventilated areas)
Speed of onset	Summer months - BOM provides forecasts for hot days and potential heatwaves
Vulnerabilities	Rail network, Power and communication infrastructure, elderly, young, outside workers, medically vulnerable individuals.
Secondary Hazards	Bushfires; Excess power usage / power failures – impacts on the services reliant on mains power; Rail network could be affected with extreme heat potentially damaging rail lines; Emergency workers suffering heat stress (eg Fire fighters)

HAZARD	NH04 - SEVERE STORM (including ELECTRICAL WIND, HAIL, RAIN, CYCLONE (East Coast Low) and TORNADO)
History	Electrical storms frequently occur in summer, wind storms usually precede rain storm which can escalate damage caused by the wind,
Intensity	Electrical activity usually for a short duration, Wind intensity depends on exposure of the area concerned and the strength of the weather influence. Winds can be very strong for extended period. Rainfall can be very intense but usually only for a short time and in a limited area
Extent	Can cover a wide area but with variable effect depending on exposure, rain generally most severe in only one or two catchments, Hail can fall over a large area but size and consequent damage is variable, tornados (if they occur) usually localised to a narrow linear strip
Speed of onset	Generally several hours warning usually available via weather bureau and SES
Secondary Hazards	Bush & Grass fires, Power failure – Interruption to services if power failure is long term, Communication failure, Property damage, Personal injury, Road closure by debris / fallen trees, Local flash flooding – especially in urban areas, Driving hazards (poor visibility, local flooding), Road closures, Landslip, Injury to people and stock from hail,

4.5 Kyogle Technological Hazards Descriptions

HAZARD	TH01 – DAM FAILURE
History	No recorded occurrence in the area. Toonumbar Dam , Bonalbo dam. Weirs are generally within the low river banks, Numerous farm dams of various sizes.
Intensity	Only Bonalbo Dam is classified as high risk.
Extent	Bonalbo Dam is upstream of the Bonalbo urban area and could cause major damage in that community. Toonumbar Dam has numerous farm properties downstream and could cause major local flooding down to Casino. Weirs are mainly in stream and would not have major effects. Farm dams may cause local flooding but of short duration because of limited capacity
Speed of onset	Bonalbo dam possible sudden failure and nil warning time for downstream community. Toonumbar Dam unlikely to fail suddenly and sufficient distance to downstream properties for warning and evacuation if necessary. Farm dams could fail suddenly, especially in periods of intense rainfall. Could have similar consequences to a local intense storm eg flash flooding.
Secondary Hazards	Property damage, Loss of human life, Loss of livestock, Road closures due to flooding or bridge wash outs.

HAZARD	TH02 – HAZARDOUS MATERIALS
History	Numerous Hazmat incidents occur. Most associated with diesel spills on roads or unknown compounds falling off trucks. Toxic chemicals widely used and transported in the area. Three x 23,000l tanker incidents (white oil, cooking oil and molasses) have occurred over past 20 years.
Intensity	Dependent on the type of hazardous material involved.
Extent	Generally expected to effect only the immediate area of the incident, subject to weather conditions and nature of hazardous material.
Speed of onset	No warning. Could be associated with a transport accident.
Secondary Hazards	Evacuation, Road closure , Personal injury, Environmental Damage

HAZARD	TH03 – INFRASTRUCTURE FAILURE - POWER
History	Extended failure of power supply (>24 hours) has occurred (2003 Casino storm) and has the potential for recurrence, subject to availability of Country Energy resources.
Intensity	Has impact on all aspects of normal life, due to high reliance on electrical power.
Extent	Widespread across whole community.
Speed of onset	Instant – no warning.
Vulnerabilities	Aged care facilities, commercial enterprises, frail aged and disabled / medically dependent persons living in community, communications services.
Secondary Hazards	Inability for normal life to be carried for period of service failure.

HAZARD	TH04 - INFRASTRUCTURE FAILURE - WATER
History	No history of major failure although potential exists for loss of water source or delivery of service from extended power failure (in urban situation), or water contamination. Contamination would require multi-agency response, where other sources of failure would be managed by a single agency.
Intensity	Widespread effect, with extended duration before clearance to return to normal service.
Extent	Could impact on reticulated supply – worst case to full system in Kyogle (~4,000 persons)
Speed of onset	Potential for no warning if contamination occurs in reticulated system.
Vulnerabilities	Whole community, especially people with ill-health.
Secondary Hazards	Illness to persons drinking contaminated water.

HAZARD	TH06 – TRANSPORT ACCIDENT – RAIL
History	No rail accidents have occurred in the Council area, however the only rail link between NSW and Queensland passes through the area. This line carries freight and passengers and passes through areas with difficult access. There are numerous level crossings and high bridges on the line and the infrastructure is ageing.
Intensity	Any rail incident is expected to involve a major response by the emergency services. An incident involving a freight train will result in a major recovery and clean up operation with possible restricted access for heavy machinery due to terrain and low load limited bridges. A passenger train incident will also involve casualty recovery and transport and the need to handle intense media and community interest.
Extent	Generally expected to be limited physically to the immediate vicinity of the incident, however a passenger train incident will require large scale victim evacuation out of the area because of the limited medical resources available locally.
Speed of onset	No warning.
Vulnerabilities	
Secondary Hazards	Personal injury, Road closure, Hazmat, Fire, Environmental damage

HAZARD	TH07 – TRANSPORT ACCIDENT – ROAD
History	No major road accidents involving multiple vehicles or casualties have occurred in the area. Road accidents occur frequently but are generally of a scale which can be handled by the normal emergency procedures. Potential exists.
Intensity	Dependent on the number of vehicles involved, number of casualties, location, timing and weather conditions. There are not many tourist coach routes in the area but numerous school buses and extensive recreational use in relatively inaccessible areas of national parks and state forests. There is a high proportion of heavy freight vehicles on the Summerland Way.
Extent	Generally expected to be limited to the immediate vicinity of the incident.
Speed of onset	No warning.
Vulnerabilities	
Secondary Hazards	Personal injury, Road closure, Hazmat, Fire

HAZARD	TH08 – FIRE – COMMERCIAL / INDUSTRIAL
History	Sept 2005 NORPLY factory fire, other premises within Shire, no recent history in commercial premises, although potential exists in Kyogle shopping area.
Intensity	An established fire would be difficult to extinguish due to nature of structures and their contents. NORPLY incident extended for 3 days.
Extent	Potential to impact on 15 – 20 premises in commercial area, industrial fires expected to be contained to site of fire.
Speed of onset	Depends on cause of ignition and materials and maintenance on site - if a fire became established it could spread quickly.
Vulnerabilities	Employees, residents and shoppers in premises.
Secondary Hazards	Economic and social impact through loss of employment and service to community, HAZMAT.

4.6 Kyogle Biological Hazards Descriptions

HAZARD	BH01 - COMMUNICABLE DISEASE AFFECTING HUMANS – Pandemic Influenza
History	There is no history of communicable disease incident falling within the scope of the report having occurred in the LGA. However, potential exists for outbreaks of pandemic influenza. It should be noted that an outbreak of the scale covered by this report would not be managed locally, with local input being support activities.
Intensity	The intensity of the pandemic will be variable pending the epidemiology of virus in regards to susceptible age groups and incubation period, maintenance of water cooling systems, or method of delivery of the biological agent, subject to the type of disease. Effectiveness of containment strategies could delay onset of the peak of those affected.
Extent	Subject to exposure, and has the potential to spread and impact on a large proportion of the community.
Speed of onset	The speed of onset will also be variable depending on the method of exposure
Vulnerabilities	All members of community, esp medically vulnerable and medical staff.
Secondary Hazards	Secondary hazards are the social and economic impacts resulting from: <ul style="list-style-type: none"> • Quarantine measures to isolate actual and potential cases; • Workforce issues related to the strike rate, element of fear and carers of family on leave from work; • Interruption to any gatherings (eg schools closed, other events cancelled); • Continued supply of essential services and Recovery Processes.

HAZARD	BH02 - COMMUNICABLE DISEASE – AFFECTING ANIMALS
History	<p>There are no recorded instances of communicable animal disease in the LGA to the scale covered by this report.</p> <p>Globally, the incidence of the emergency animal diseases is increasing, including in western world countries in recent years eg FMD in UK, Ireland, France & Netherlands 2001; Bovine Spongiform Encephalitis (Mad Cow Disease) Canada & USA 2003/04; AI Netherlands, Belgium, Germany, most Asian Pacific rim countries, South Africa, Canada.</p> <p>The following applies to Australia:</p> <ul style="list-style-type: none"> • 63 emergency animal diseases are exotic to Australia including Newcastle Disease (ND) and Avian Influenza (AI) in birds, Foot & Mouth Disease in ruminants • approx 1/5 of the 63 diseases can also infect humans • a significant outbreak of Equine Influenza impacted across Australia in late 2007, with the Kyogle LGA being in the “Orange Zone” for containment. <p>In last 7-8 years Newcastle Disease & highly pathogenic Avian Influenza incidents have occurred in commercial poultry in NSW. Each incident has been confined to the initially infected area eg Tamworth for AI, Mangrove Mtn for ND.</p>
Intensity	<ul style="list-style-type: none"> • All infected animals will be slaughtered out as quick as possible unless the disease becomes widespread eg state wide • Factors that will influence number of properties infected will include: <ul style="list-style-type: none"> ○ Time between when the first animals get infected and when the disease is detected ○ No. and density of susceptible animals both on infected and around properties (more animals in a smaller area = greater intensity) ○ Virulence of the infective agent ○ Resources available to combat the disease ○ Biosecurity measures of producers and community, and ○ Weather may be a factor
Extent	<p>In addition to disease control operations on infected and suspect infected properties, movement controls will be introduced for susceptible livestock and livestock products eg a national livestock standstill be introduced for FMD, or the recent restriction for EI. A designated area around the infected property(s) will prohibit the above movements for a specified a period (typically months).</p>
Speed of onset	<p>From the time of detection of the disease to a response action is likely to vary with the disease – range is for as short as 3-6hrs for highly infectious diseases to 24-48hrs for less infectious diseases.</p> <p>The response time will be short (hrs) for subsequent infected properties.</p>
Vulnerabilities	<p>Farmers and families (health and isolation if quarantined), loss of source of supply to processing businesses, impact on trade for affected industries.</p>
Secondary Hazards	<p>Human health for zoonotic diseases including highly pathogenic avian influenza</p> <p>Exposure of the response workforce to “everyday” zoonotic diseases eg Q fever, TB</p> <p>Response activities will generate a range of occupational hazards, with some having the potential to impact on the adjoining community.</p> <p>Severe social disruption due to restrictions on movement.</p>

4.7 Community & Environmental Description

Demographic Factors

Age groups:		
0-4 years	526	5.7%
5-14 years	1,493	16.1%
15-24 years	979	10.6%
25-54 years	3,591	38.8%
55-64 years	1,256	13.6%
65 years and over	1,413	15.3%
Median age of persons	42	
In the 2006 Census 21.8% of the population usually resident in Kyogle (A) (Local Government Area) were children aged between 0-14 years, and 28.8% were persons aged 55 years and over. The median age of persons in Kyogle (A) (Local Government Area) was 42 years, compared with 37 years for persons in Australia.		
Gender / Indigenous background		
Males	4,660	50.3%
Females	4,596	49.7%
Indigenous persons (comprises Aboriginal and Torres Strait Islander)	539	5.8%
In the 2006 Census (held on 8th August 2006), there were 9,256 persons usually resident in Kyogle (A) (Local Government Area): 50.3% were males and 49.7% were females. Of the total population in Kyogle (A) (Local Government Area) 5.8% were Indigenous persons, compared with 2.3% Indigenous persons in Australia.		
Labour Force		
Total labour force (includes employed and unemployed persons)	3,772	-
Employed full-time	1,967	52.1%
Employed part-time	1,204	31.9%
Employed away from work	117	3.1%
Employed hours not stated	99	2.6%
Unemployed	385	10.2%
Not in the labour force	3,154	-
During the week prior to the 2006 Census, 3,772 people aged 15 years and over who were usually resident in Kyogle (A) (Local Government Area) were in the labour force. Of these, 52.1% were employed full-time, 31.9% were employed part-time, 3.1% were employed but away from work, 2.6% were employed but did not state their hours worked and 10.2% were unemployed. There were 3,154 usual residents aged 15 years and over not in the labour force.		
Industry of Employment		
Sheep, Beef Cattle and Grain Farming	418	12.3%
School Education	241	7.1%
Hospitals	152	4.5%
Dairy Cattle Farming	102	3.0%
Supermarket and Grocery Stores	79	2.3%
In the 2006 Census, the most common industries of employment for persons aged 15 years and over usually resident in Kyogle (A) (Local Government Area) were Sheep, Beef Cattle and Grain Farming 12.3%, School Education 7.1%, Hospitals 4.5%, Dairy Cattle Farming 3.0% and Supermarket and Grocery Stores 2.3%.		

Housing

Tenure Type		
Fully owned	1,678	46.0%
Being purchased (includes being purchased under rent/buy scheme)	990	27.1%
Rented (includes rent-free)	762	20.9%
Other tenure type	41	1.1%
Not stated	177	4.9%
In Kyogle (A) (Local Government Area), 46.0% of occupied private dwellings were fully owned, 27.1% were being purchased and 20.9% were rented.		
Household Type		
Family household	2,476	67.9%
Lone person household	972	26.6%
Group household	84	2.3%
In the 2006 Census in Kyogle (A) (Local Government Area), 67.9% of occupied private dwellings were family households, 26.6% were lone person households and 2.3% were group households.		

4.8 Kyogle Council Local Government Area

Kyogle is located 758 km north of Sydney, 32 km north of Casino, 184 km south of Brisbane and 60 metres above sea level on the Richmond River at the base of Fairy Mount. Promoted as 'The Gateway to the Rainforest', it is surrounded by one of the largest areas of rainforest in the state and boasts an annual rainfall of 1118mm. The Council area is 3,589 sq km and is surrounded by the NSW / Queensland border to the north, Tenterfield Shire to the west, Clarence Valley on the south, Richmond Valley, Lismore and Tweed on the east. Kyogle is the largest population centre in the LGA. Other villages include Woodenbong, Wiangaree, Bonalbo, Old Bonalbo, Tabulam, Mallanganee, Mummulgum, Cawongla, Homeleigh, Wadeville and Barkersvale. Urbenville is a village located in the adjoining Tenterfield Shire, which provides facilities for Kyogle LGA residents in that area.



History

The area of Kyogle, a name derived from Kaiou gal (the place of the plain turkey), was settled by the Bundjalung people. Their exact numbers are uncertain, but the estimates of white settlers in the early 19th century placed the indigenous population of the present Kyogle area at up to 600.

European discovery of the region took place in the late 1820s, but it was not until the early 1840s that white settlement began with some enthusiasm. By 1843 seven stations had leased the entire Upper Richmond, including the area around Kyogle, then known as Fairymount.

Timber getters made serious inroads into the region's resources from the 1860s. Stands of red cedar, which had attracted them at first, were all but stripped bare by the 1890s.

The Free Selection Bill introduced by the NSW government in the 1860s resulted in the subdivision of the large stations into farm selections. Before long there were 551 farms in the district, the great majority of them dairy farms. An organised dairying industry began with the building of a creamery and, in 1905, Kyogle's first butter factory.

In 1901 the name Kyogle appeared on official maps for the first time. In the same year a census recorded a population of 51. Ten years later the population had increased to 1226 and the Kyogle district had become the North Coast's most rapidly growing community. In 1910 the railway came to Kyogle, providing a greater boost for the district's commercial potential.

Kyogle's fortunes as a centre for the timber and pastoral industries were maintained during the period between the two world wars. Widespread social and economic changes during the post-war decades, however, had their impact on this region. The earlier symbols of rural wealth, butter factories and timber mills, gradually closed as the reasons for their existence dwindled, however dairying and timber products are still regarded as the economic mainstays.

Public Facilities

Hospitals – The LGA is served by hospitals at Kyogle and Bonalbo, and Urbenville Health Service and Community Health Centre is located outside the LGA but provides facilities for Kyogle LGA residents in the area.

Schools – The following schools operate in the LGA: Woodenbong Central, Wiangaree Public, Tabulam Public, St Bridgids (Kyogle), Kyogle Public, Kyogle High, Rukenvale Public, Old Bonalbo Public, Mummulgim Public, Afterlee Public, Barkers Vale Public, Collins Creek Public, Bonalbo Central, Doubtful Creek Public, Mallanganee Public, Grevillea Public, The Risk Public and Lillian Rock Steiner School.

Utilities – Kyogle Council provides reticulated water supply to Kyogle, Bonalbo, Woodenbong, and Muli Muli and sewerage services to Kyogle, Bonalbo, Muli Muli and Woodenbong. Urbenville is also services by reticulated water and sewerage by Tenterfield Council. Electricity services are provided by Country Energy.

Emergency Services - The emergency services based in the town of Kyogle include NSW Ambulance Service, NSW Rural Fire Service, NSW Police, NSW Fire Brigades, State Emergency Service and other supporting agencies. Emergency Services in the villages consist of the following:

Woodenbong: Police, RFS.
Urbenville: Police, RFS, SES
Bonalbo: RFS, Ambulance
Tabulam: Police, SES, RFS

Geographic Factors

The LGA contains 2 main National Parks. Richmond Range National Park, 40 km west of Kyogle, contains a remnant of the vast Focal Peak volcano, active about 24 million years ago. About 40 per cent of the park is covered by subtropical and dry rainforest, and more than 400 species of plants may be found. The park's mammal fauna are said to be the most diverse of any comparably sized area in Australia, and include spotted tailed quolls and squirrel gliders. Bird species number more than 100.

The World Heritage listed Border Ranges Park, shared by NSW and Queensland, has its southern entrance at Barkers Vale, some 25 km from Kyogle. This rainforest park is on the rim of a vast, ancient volcano. Pinnacle Lookout offers views of Mt Warning, the escarpment and all the way to the coast. The park is a haven to native fauna such as Alberts lyrebird and the pouched frog.

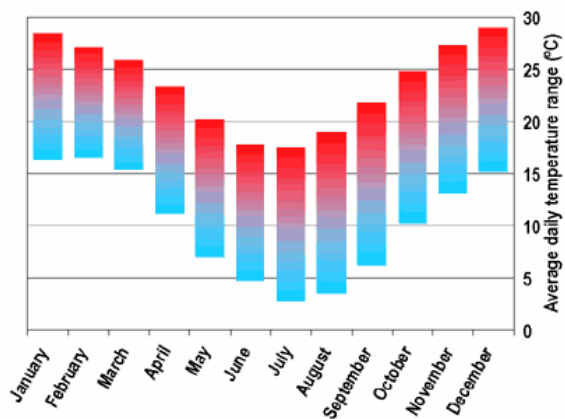
The LGA generally contains extensive areas of heavily vegetated and rugged terrain, creating a vulnerability to bush fire. In addition, the high annual rainfall and steep valleys leads to rapid runoff of rainfall and frequent flooding, ranging from nuisance flooding of creeks and cutting of roads to major flooding cutting transport links and causing damage to built infrastructure, especially bridges.

Climate

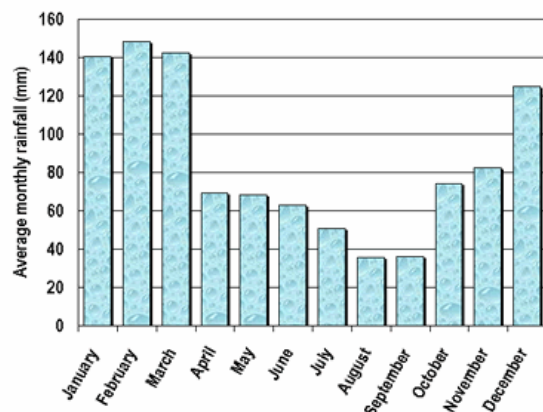
The following graphs represent the range of average temperature and rainfall distributions experienced in different areas of the LGA:

Urbenville (western edge of LGA):

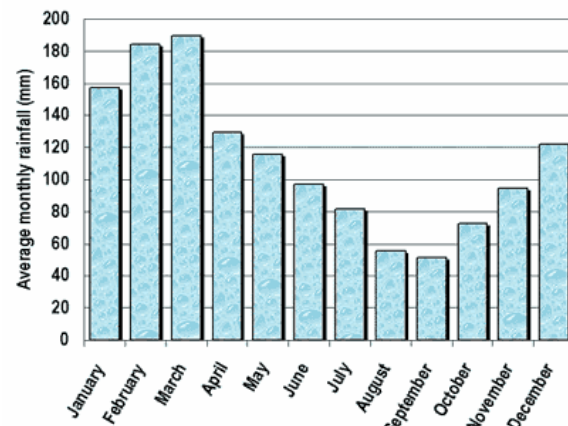
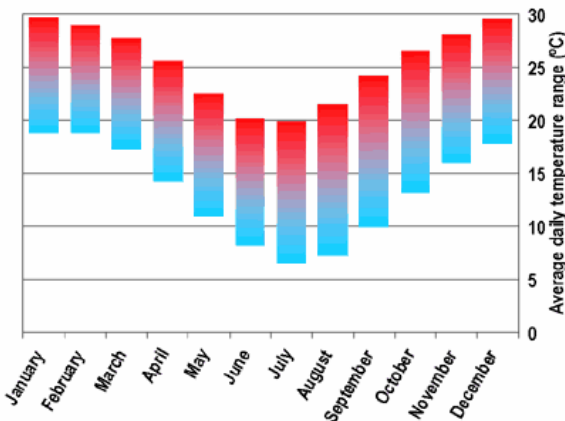
Average temperature ranges



Average rainfall ranges



Lismore (SE of LGA):



4.9 Vulnerable Communities

A risk appears only where there is an interaction between a hazard and vulnerable elements of the community. For example a flood is a hazard but does not present a risk unless it interacts with people, roads, bridges or other identified elements.

In using the 10 level consequence rating matrix Kyogle LEMC have considered vulnerability and the 'element at risk' nexus for People, Social Impact, Evacuation, Property, Community Services, Environmental, Animals and Financial. Vulnerability is further identified and localised by the use of localised risk statements.

Vulnerable Communities					
Community	Elements of Vulnerability				Remarks
	Proximity to hazard	Age or condition of community	Ability to communicate with community	Access to community in need during emergency	
Caravan Parks	Yes	No	Yes	Yes	Adjacent to River in Kyogle
Aged care facilities	No	Yes	No	No	
Hospitals	Yes	Yes	No	No	
Schools	Yes	Yes	Yes	No	
Child Care Centres	Yes	Yes	Yes	No	
Remote, isolated communities	Yes	No	Yes	Yes	Note – consider cultural issues if evacuation required in some communities
Medically dependent residents – (dialysis machines, palliative care)	Yes	Yes	No	Yes	
Generally disabled people (intellectual / physical)	Yes	Yes	Yes	Yes	

5 Risk Analysis & Evaluation

The following sections provide the core information of this report, being the assessments of the impact of each hazard on the community and determination of the risk level for each of the hazards that have previously been identified. These are followed by the processes that were followed in identifying treatment plans to address those hazards falling within the assessment criteria adopted by the Sub-Committee.

The *IDENTIFY* section of the page lists the hazard by type (Natural, Technological, Biological) and number, and also includes the Risk Statement developed and adopted by the LEMC Sub-Committee to describe the manner in which the hazard impacts on the community, and in particular, which elements of the community are affected by the hazard. If a particular element is not referred to in the risk statement it is because that element is not considered to be at risk from the hazard.

In the *ANALYSE / EVALUATE* section the Consequence Rating Matrix on the upper left side of the page considers the impact of the hazard on each of the listed elements at risk, with the definitions for each level of consequence (Insignificant, Minor, Moderate, Major, Catastrophic) applying to each element scheduled in Appendix 7. The definitions were generally taken to apply across the entire LGA, rather than the locality affected, except where the hazard impacts only one local community, such as Bonalbo Dam failure.

The overall consequence rating, giving the representative assessment for the 10 consequence areas was determined from the Table taken from Table 2 on p59 of the *Implementation Guide*, also as shown in Appendix 7.

This Overall Consequence Rating is applied to the Risk Level Matrix on the upper right side of the page, in conjunction with the Likelihood rating deemed to apply to the occurrence of the hazard, to determine the Risk Level. Definitions for the Likelihood levels (rare, unlikely, possible, likely, almost certain) are listed in Appendix 8.

The Lead Combat or Response Agency responsible for each hazard is also identified, as are the Support Agencies and/or Functional Areas associated with the hazard response. These Agencies are identified by acronyms or abbreviated titles. Definitions of these Agency titles are included in Appendix 10.

The *TREAT* section of the page identifies existing documents, strategies, activities etc that are followed in relation to the hazard under consideration. These have been allocated under the headings of Prevention, Preparation, Response and Recovery to identify to which aspect of Emergency Management the strategy applies. The Sub-Committee further identified additional treatment options for all hazards. A range of treatment options in addition to those already in operation were identified for each of the Prevention, Preparation, Response and Recovery phases of emergency management. Each of these were then evaluated against criteria as identified in Appendix 11 of this report. A Priority Score was allocated to each of these treatment options, and the combat agency / functional area responsible for implementation (where applicable) was listed. In cases where a combat agency is responsible, the suggested treatment option was referred for further action and reporting back to the LEMC. In cases where no combat agency is responsible, the Sub-Committee determined a plan of action to implement the treatment option(s) in cases where the Priority Score is less than, or equal to 10. The Treatment Options and Treatment Plans are listed in section 5.5 of the Report.

The *REVIEW* section of the page identifies when the analysis was carried out, when the content was endorsed by the LEMC and the time period for review of the assessment. The Sub-Committee determined two categories of review to apply, Administrative Review and Content Review. The Administrative Review is carried out to ensure Agency titles and roles are current and is to be conducted annually by the LEMO and LEOCON. The Content review is conducted by the LEMC every 5 years from approval date or after a significant event occurrence, to allow any changes of detail, impact of the hazard on risk level, response capability or any other feature to be addressed.

5.1 Natural Hazards



IDENTIFY	Hazard Category	Natural	Hazard ID	NH01	Hazard	Fire – Bush / Grass												
	Risk Statement	There is a risk that a significant bush / grass fire may cause loss of rural infrastructure (buildings, equipment) and impact on villages, multiple occupancy and rural residential properties, and possible fatalities and injuries due to smoke inhalation, and temporary displacement or short-term isolation of a small numbers in isolated areas, due to limitations of access (single road in and out). Temporary closure of the Bruxner Highway and Summerland Way and other major roads can occur, as can localised damage to both power and communications infrastructure (telephone landline services).					Risk Statement confirmed against criteria		Date: 12 May 2008									
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX											RISK LEVEL MATRIX						
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating	Likelihood	Representative Consequence Rating				
														Insignificant	Minor	Moderate	Major	Catastrophic
	Catastrophic												Almost Certain	High	High	Extreme	Extreme	Extreme
	Major	x							x	x			Likely	Moderate	High	High	Extreme	Extreme
	Moderate			x							x	x	Possible	Low	Moderate	High	Extreme	Extreme
	Minor				x		x	x					Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant		x			x							Rare	Low	Low	Moderate	High	High
	LEAD COMBAT AGENCY			NSW RFS / NSWFB					ASSESSED RISK LEVEL		Extreme							
	Existing Control / Mitigation / Treatment Strategies	Prevention		Hazard reduction/mitigation, Community Education, Bush Fire Danger Period procedures, Bushfire Risk Management Plan, BFMC														
Preparation		Hazard reduction/mitigation, Community Education, RFS training and recruitment, consideration of the Bushfire Code for new development, BFMC, Infrastructure Management Plan																
Response		S52 Operations Plans, DISPLAN arrangements, Fire Sub-Plan																
Recovery		DISPLAN arrangements																
REVIEW	Date Assessment Conducted		5 May 2008					Assessment Conducted by:		LEMC Working Group								
	Date Approved by LEMC		12 August 2008					Review Date / Frequency:		Administrative review Annually Content review: 5 years, or after incident occurrence								

IDENTIFY	Hazard Category		Natural		Hazard ID	NH02	Hazard	Flood										
	Risk Statement		There is a risk that a major flood (3% AEP) could result in a small number of human fatalities and injuries. In Kyogle, inundation damage to property (up to 60 houses and 10 businesses) and temporary relocation of up to 400 persons for periods of 2-14 days, and in the rural area, damage to infrastructure (road, bridge, rail washouts) and community facilities with short-term disturbance and loss of access, impact on provision of services (power, telephone) loss of commercial activity and loss of agricultural production, including significant stock losses .							Risk Statement confirmed against criteria								
										Date: 12 May 2008								
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX											RISK LEVEL MATRIX						
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating		Representative Consequence Rating				
														Insignificant	Minor	Moderate	Major	Catastrophic
	Catastrophic												Almost Certain	High	High	Extreme	Extreme	Extreme
	Major	x		x	x		x		x	x	x	x	Likely	Moderate	High	High	Extreme	Extreme
	Moderate		x			x		x					Possible	Low	Moderate	High	Extreme	Extreme
	Minor												Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant												Rare	Low	Low	Moderate	High	High
	LEAD COMBAT AGENCY			SES				ASSESSED RISK LEVEL				Extreme						
	Existing Control / Mitigation / Treatment Strategies		Prevention		Council LEP flood-prone area identification													
Preparation			Council LEP flood-prone area identification, Community education, SES training and recruitment, Kyogle Floodplain Flood Risk Management Study (in progress), BoM Flood warnings, Local SES Flood Intelligence records															
Response			Flood Plan (Sub-Plan of DISPLAN), Road Closure Sub-Plan															
Recovery			DISPLAN arrangements															
REVIEW	Date Assessment Conducted		5 May 2008					Assessment Conducted by:		LEMC Sub-Committee								
	Date Approved by LEMC		12 August 2008					Review Date / Frequency:		<u>Administrative review</u> Annually <u>Content review</u> : 5 years, or after incident occurrence								

IDENTIFY	Hazard Category		Natural		Hazard ID	NH03	Hazard	Extreme Temperature												
	Risk Statement		There is a risk that extended periods (3 days and longer) of extreme heat could cause fatalities and increased hospitalisation for heat related and respiratory illnesses, with reduced availability of personnel to attend work, and increase the potential for occurrence of failure of machinery, and fire hazard.					Risk Statement confirmed against criteria		Date: 12 May 2008										
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX										RISK LEVEL MATRIX									
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating		Representative Consequence Rating						
	Catastrophic												Almost Certain	High	High	Extreme	Extreme	Extreme		
	Major	x											Likely	Moderate	High	High	Extreme	Extreme		
	Moderate						x			x			Possible	Low	Moderate	High	High	Extreme	Extreme	
	Minor		x		x	x					x	x	Unlikely	Low	Low	Moderate	High	High	Extreme	
	Insignificant			x				x	x				Rare	Low	Low	Moderate	High	High		
	LEAD COMBAT AGENCY		NSW Health									ASSESSED RISK LEVEL		High						
	Existing Control / Mitigation / Treatment Strategies	Prevention		Unable to prevent occurrence of hazard																
Preparation		State Health Plan, backup power generators at critical sites (hospitals, nursing / aged care facilities), community education & notification																		
Response		State Health Plan, backup power generators at critical sites (hospitals, nursing / aged care facilities), community notification																		
Recovery		DISPLAN arrangements																		
REVIEW	Date Assessment Conducted		5 May 2008					Assessment Conducted by:		LEMC Sub-Committee										
	Date Approved by LEMC		12 August 2008					Review Date / Frequency:		Administrative review: Annually Content review: 5 years, or after incident occurrence										

IDENTIFY	Hazard Category	Natural	Hazard ID	NH04	Hazard	Severe Storm (including ELECTRICAL, WIND, HAIL, RAIN, CYCLONE (East Coast Low) and TORNADO)												
	Risk Statement	There is a risk that a significant storm may cause a small number of human fatalities and injuries, localised extensive damage to buildings (roofs, verandahs, water damage), with the possible need for evacuation of a few people, possible destruction of sheds, localised crop damage, short-term road blockage from fallen trees, loss of power, loss of communications, localised flooding with short-term cutting of roads and scouring to gravel surfaces reducing accessibility.								Risk Statement confirmed against criteria Date: 12 May 2008								
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX											RISK LEVEL MATRIX						
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating		Representative Consequence Rating				
													Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic
	Catastrophic												Almost Certain	High	High	Extreme	Extreme	Extreme
	Major	x			x	x			x	x		x	Likely	Moderate	High	High	Extreme	Extreme
	Moderate			x			x	x					Possible	Low	Moderate	High	Extreme	Extreme
	Minor		x										Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant												Rare	Low	Low	Moderate	High	High
	LEAD COMBAT AGENCY			SES								ASSESSED RISK LEVEL		Extreme				
	Existing Control / Mitigation / Treatment Strategies	Prevention		No measures prevent storm occurrence														
Preparation		Community Education, construction compliance with Building Code of Australia, BoM / SES Severe Weather Warnings																
Response		State Storm Plan, DISPLAN arrangements, Kyogle SES SOPs																
Recovery		DISPLAN arrangements																
REVIEW	Date Assessment Conducted		5 May 2008							Assessment Conducted by:		LEMC Sub-Committee						
	Date Approved by LEMC		12 August 2008							Review Date / Frequency:		Administrative review Annually Content review: 5 years, or after incident occurrence						

5.2 Technological Hazards



IDENTIFY	Hazard Category		Technological			Hazard ID	TH01a	Hazard	Dam Failure - Bonalbo											
	Risk Statement		There is a risk that failure of Bonalbo Dam could cause risk to human safety, inundation of downstream property (up to 31 residences), significant property damage in the village of Bonalbo. Note: Social Impact consideration based solely on Bonalbo population.						Risk Statement confirmed against criteria		Date: 12 May 2008									
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX											RISK LEVEL MATRIX								
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating		Representative Consequence Rating						
						x														
	Catastrophic												Almost Certain	High	High	Extreme	Extreme	Extreme		
	Major		x						x				Likely	Moderate	High	High	Extreme	Extreme		
	Moderate	x			x					x		x	Possible	Low	Moderate	High	Extreme	Extreme		
	Minor			x			x	x					Unlikely	Low	Low	Moderate	High	Extreme		
	Insignificant										x		Rare	Low	Low	Moderate	High	High		
	LEAD COMBAT AGENCY			SES			ASSESSED RISK LEVEL			Moderate										
	Existing Control / Mitigation / Treatment Strategies	Prevention		Kyogle Council Dam Safety Plan																
Preparation		Kyogle Council Dam Safety Plan																		
Response		DISPLAN																		
Recovery		DISPLAN																		
REVIEW	Date Assessment Conducted		5 May 2008					Assessment Conducted by:		LEMC Sub-Committee										
	Date Approved by LEMC		12 August 2008					Review Date / Frequency:		Administrative review Annually Content review: 5 years, or after incident occurrence										

IDENTIFY	Hazard Category		Technological		Hazard ID	TH01b	Hazard	Dam Failure - Toonumbar											
	Risk Statement		There is a risk that failure of Toonumbar Dam could result in loss of public infrastructure (roads, bridges) and private infrastructure (irrigation equipment, weirs and farm buildings), localised flooding of rural properties, with possible stock losses, and cause impacts to the Richmond River valley downstream from Kyogle LGA.						Risk Statement confirmed against criteria										
								Date: 12 May 2008											
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX											RISK LEVEL MATRIX							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating		Representative Consequence Rating					
														Insignificant	Minor	Moderate	Major	Catastrophic	
	Catastrophic													Almost Certain	High	High	Extreme	Extreme	Extreme
	Major						x	x						Likely	Moderate	High	High	Extreme	Extreme
	Moderate								x		x	x		Possible	Low	Moderate	High	Extreme	Extreme
	Minor	x		x	x					x				Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant		x			x								Rare	Low	Low	Moderate	High	High
	LEAD COMBAT AGENCY			DWE / SES				ASSESSED RISK LEVEL			Moderate								
	Existing Control / Mitigation / Treatment Strategies	Prevention		Dam Safety Plan															
Preparation		Dam Safety Plan																	
Response		DISPLAN																	
Recovery		DISPLAN																	
REVIEW	Date Assessment Conducted		5 May 2008					Assessment Conducted by:		LEMC Sub-Committee									
	Date Approved by LEMC		12 August 2008					Review Date / Frequency:		<u>Administrative review</u> Annually <u>Content review</u> : 5 years, or after incident occurrence									

IDENTIFY	Hazard Category	Technological	Hazard ID	TH02	Hazard	Hazardous Materials												
	Risk Statement	There is a risk that a HAZMAT incident resulting from road / rail transport accident / industrial incident could result in human fatality, injury or illness from exposure to the material, possible environmental damage, and in particular the threat to waterways, possible site evacuation (usually less than 24 hours), temporary closure of transport link (road / rail) requiring detour and causing delay.					Risk Statement confirmed against criteria		Date: 12 May 2008									
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX										RISK LEVEL MATRIX							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating		Representative Consequence Rating				
													Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic
	Catastrophic									x			Almost Certain	High	High	Extreme	Extreme	Extreme
	Major	x			x			x			x	x	Likely	Moderate	High	High	Extreme	Extreme
	Moderate			x		x							Possible	Low	Moderate	High	Extreme	Extreme
	Minor		x				x		x				Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant												Rare	Low	Low	Moderate	High	High
	LEAD COMBAT AGENCY		NSWFB					ASSESSED RISK LEVEL		Extreme								
	Existing Control / Mitigation / Treatment Strategies	Prevention		Dangerous Goods Regulations for transport and storage														
Preparation		NSWFB training and resourcing locally, community education																
Response		NSWFB response (locally and regional support) and Agency procedures (eg MAA, MOU)																
Recovery		DISPLAN arrangements																
REVIEW	Date Assessment Conducted		5 May 2008					Assessment Conducted by:		LEMC Sub-Committee								
	Date Approved by LEMC		12 August 2008					Review Date / Frequency:		<u>Administrative review</u> Annually <u>Content review</u> : 5 years, or after incident occurrence								

IDENTIFY	Hazard Category		Technological		Hazard ID	TH03	Hazard	Infrastructure Failure - Power										
	Risk Statement		There is a risk that extended loss of power (> 24 hours) could result in failure of Council's sewerage facilities, impact on water supply and communications, possible evacuation of hospital / aged care facility and schools, temporary closure of retail outlets and farming operations (esp dairies) with major impacts on community amenity.						Risk Statement confirmed against criteria									
								Date: 12 May 2008										
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX											RISK LEVEL MATRIX						
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating		Representative Consequence Rating				
													Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic
	Catastrophic		x			x							Almost Certain	High	High	Extreme	Extreme	Extreme
	Major				x								Likely	Moderate	High	High	Extreme	Extreme
	Moderate	x		x			x		x	x	x	x	Possible	Low	Moderate	High	Extreme	Extreme
	Minor							x					Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant												Rare	Low	Low	Moderate	High	High
	LEAD COMBAT AGENCY			NSWPF			ASSESSED RISK LEVEL			High								
	Existing Control / Mitigation / Treatment Strategies	Prevention		Business continuity plans for Country Energy														
Preparation		Business continuity plans for businesses / agencies																
Response		Hospital backup generator, SES generators for lighting, Country Energy generators																
Recovery		Country Energy Recovery plans, DISPLAN																
REVIEW	Date Assessment Conducted		5 May 2008				Assessment Conducted by:		LEMC Sub-Committee									
	Date Approved by LEMC		12 August 2008				Review Date / Frequency:		<u>Administrative review</u> Annually <u>Content review</u> : 5 years, or after incident occurrence									

IDENTIFY	Hazard Category		Technological		Hazard ID	TH04	Hazard	Infrastructure Failure - Water												
	Risk Statement		There is a risk that an extended, unplanned failure of the water reticulation supply (such as contamination requiring treatment of the water before consumption) will impact on community amenity, and potentially creating public health impacts.						Risk Statement confirmed against criteria											
								Date: 12 May 2008												
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX											RISK LEVEL MATRIX								
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating		Representative Consequence Rating						
	Catastrophic					x							Almost Certain	High	High	Extreme	Extreme	Extreme		
	Major				x								Likely	Moderate	High	High	Extreme	Extreme		
	Moderate	x	x						x	x	x	x	Possible	Low	Moderate	High	Extreme	Extreme		
	Minor						x						Unlikely	Low	Low	Moderate	High	Extreme		
	Insignificant			x				x					Rare	Low	Low	Moderate	High	High		
	LEAD COMBAT AGENCY			Kyogle Council								ASSESSED RISK LEVEL		Moderate						
	Existing Control / Mitigation / Treatment Strategies	Prevention		No formal measures in place																
Preparation		Water quality testing carried out to program, Drought Contingency Plan																		
Response		Drought Contingency Plan, community education & notification, NSW Health Plan																		
Recovery		DISPLAN arrangements																		
REVIEW	Date Assessment Conducted		5 May 2008						Assessment Conducted by:		LEMC Sub-Committee									
	Date Approved by LEMC		12 August 2008						Review Date / Frequency:		Administrative review Annually Content review: 5 years, or after incident occurrence									

IDENTIFY	Hazard Category		Technological			Hazard ID	TH05	Hazard	Transport Accident - Rail									
	Risk Statement		There is a risk that an incident associated with rail transport (derailment / level crossing incident) could result in multiple fatalities and serious injuries, possible environmental contamination, evacuation of the immediate area of the incident.						Risk Statement confirmed against criteria		Date: 12 May 2008							
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX											RISK LEVEL MATRIX						
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating		Representative Consequence Rating				
													Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic
	Catastrophic	x											Almost Certain	High	High	Extreme	Extreme	Extreme
	Major				x					x	x	X	Likely	Moderate	High	High	Extreme	Extreme
	Moderate					x		x	x				Possible	Low	Moderate	High	Extreme	Extreme
	Minor			x			x						Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant		x										Rare	Low	Low	Moderate	High	High
	LEAD COMBAT AGENCY			NSWPF						ASSESSED RISK LEVEL		High						
	Existing Control / Mitigation / Treatment Strategies		Prevention		Track maintenance practices, Crossing signal maintenance, Safety Practices													
Preparation			Agencies training															
Response			ARTC SOPs, Police SOPs															
Recovery			DISPLAN arrangements															
REVIEW	Date Assessment Conducted		12 May 2008					Assessment Conducted by:		LEMC Sub-Committee								
	Date Approved by LEMC		12 August 2008					Review Date / Frequency:		<u>Administrative review</u> Annually <u>Content review</u> : 5 years, or after incident occurrence								

IDENTIFY	Hazard Category	Technological	Hazard ID	TH06	Hazard	Transport Accident - Road												
	Risk Statement	The Bruxner Highway, Summerland Way and other major arterial roads involving significant traffic flow pass through the LGA. There is a risk that a MVA involving a passenger coach / school bus or heavy transport vehicles could result in multiple human fatalities and injuries, localised environmental contamination, temporary blockage to roads requiring detour.					Risk Statement confirmed against criteria Date: 12 May 2008											
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX											RISK LEVEL MATRIX						
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating		Representative Consequence Rating				
													Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic
	Catastrophic	x											Almost Certain	High	High	Extreme	Extreme	Extreme
	Major							x	x	x	x		Likely	Moderate	High	High	Extreme	Extreme
	Moderate					x							Possible	Low	Moderate	High	Extreme	Extreme
	Minor		x		x			x					Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant			x			x						Rare	Low	Low	Moderate	High	High
	LEAD COMBAT AGENCY			NSWPF					ASSESSED RISK LEVEL		Extreme							
	Existing Control / Mitigation / Treatment Strategies	Prevention		Driver awareness and safety programs, road upgrading, maintenance standards and practices, enforcement of road regulations														
Preparation		Agencies training																
Response		All Agencies SOPs and Policies																
Recovery		DISPLAN arrangements																
REVIE	Date Assessment Conducted		12 May 2008					Assessment Conducted by:		LEMC Sub-Committee								
	Date Approved by LEMC		12 August 2008					Review Date / Frequency:		<u>Administrative review</u> Annually <u>Content review</u> : 5 years, or after incident occurrence								

IDENTIFY	Hazard Category		Technological		Hazard ID	TH07	Hazard	Fire – Commercial / Industrial											
	Risk Statement		There is a risk that a fire in a industrial, commercial or retail complex has the potential to cause a number of human fatalities, injuries, damage or destruction of the structure and adjoining buildings, loss of commercial capacity and disruption to community activities.						Risk Statement confirmed against criteria										
								Date: 12 May 2008											
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX											RISK LEVEL MATRIX							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating		Representative Consequence Rating					
	Catastrophic												Almost Certain	High	High	Extreme	Extreme	Extreme	
	Major	x							x	x			Likely	Moderate	High	High	Extreme	Extreme	
	Moderate		x		x						x	x	Possible	Low	Moderate	High	Extreme	Extreme	
	Minor			x		x	x	x					Unlikely	Low	Low	Moderate	High	Extreme	
	Insignificant												Rare	Low	Low	Moderate	High	High	
	LEAD COMBAT AGENCY			NSWFB / NSW RFS					ASSESSED RISK LEVEL		High								
	Existing Control / Mitigation / Treatment Strategies		Prevention		Construction compliance with Building Code of Australia, storage of materials in compliance with Hazardous Materials Regulations, existence of hydrant facilities in reticulated areas														
Preparation			Fire Emergency Plans and Evacuation drills, fire / smoke alarms																
Response			NSWFB SOGs, Agency SOPs, MAA between NSWFB & RFS																
Recovery			DISPLAN arrangements																
REVIEW	Date Assessment Conducted		12 May 2008					Assessment Conducted by:		LEMC Sub-Committee									
	Date Approved by LEMC		12 August 2008					Review Date / Frequency:		<u>Administrative review</u> Annually <u>Content review</u> : 5 years, or after incident occurrence									

5.3 Biological Hazards



IDENTIFY	Hazard Category		Biological			Hazard ID	BH01	Hazard	Communicable Disease – Affecting Humans										
	Risk Statement		There is a risk that a major human communicable disease incident (eg pandemic influenza) could cause multiple fatalities, hospitalisation, quarantine, and vaccination demands, resulting in major disruption to community function (absences from work, inability for services to respond).						Risk Statement confirmed against criteria										
									Date: 12 May 2008										
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX											RISK LEVEL MATRIX							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating	Likelihood	Representative Consequence Rating					
														Insignificant	Minor	Moderate	Major	Catastrophic	
	Catastrophic	x				x				x	x			Almost Certain	High	High	Extreme	Extreme	Extreme
	Major		x	x					x			x		Likely	Moderate	High	High	Extreme	Extreme
	Moderate													Possible	Low	Moderate	High	Extreme	Extreme
	Minor						x	x						Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant				x									Rare	Low	Low	Moderate	High	High
	LEAD COMBAT AGENCY			NSW Health						ASSESSED RISK LEVEL		Extreme							
	Existing Control / Mitigation / Treatment Strategies	Prevention		State Health Plan, NSW Health Infection Control Policies, Community Education and notification															
Preparation		State Health Plan, Business Continuity Plans, Community Education and notification (eg Flu Alerts)																	
Response		State Health Plan, NSW Influenza Pandemic Plan, Business Continuity Plans, Community Education and notification																	
Recovery		State Health Plan, Business Continuity Plans, Community Education and notification, DISPLAN arrangements																	
REVIEW	Date Assessment Conducted		12 May 2008					Assessment Conducted by:		LEMC Sub-Committee									
	Date Approved by LEMC		12 August 2008					Review Date / Frequency:		<u>Administrative review</u> Annually <u>Content review</u> : 5 years, or after incident occurrence									

IDENTIFY	Hazard Category		Biological			Hazard ID	BH02	Hazard		Communicable Disease – Affecting Animals									
	Risk Statement		There is a risk that an animal disease outbreak could cause human illness, require destruction of property at contaminated sites, extended quarantine of properties, long-term environment impact at those areas designated for disposal of carcasses, mass death or destruction of affected stock and wild animals, significant economic impacts on industry and service providers.							Risk Statement confirmed against criteria			Date: 12 May 2008						
ANALYSE / EVALUATE	ELEMENTS AT RISK / CONSEQUENCE RATING MATRIX											RISK LEVEL MATRIX							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Overall Rating	Likelihood	Representative Consequence Rating					
												Insignificant		Minor	Moderate	Major	Catastrophic		
	Catastrophic						x							Almost Certain	High	High	Extreme	Extreme	Extreme
	Major		x					x	x	x	x	x		Likely	Moderate	High	High	Extreme	Extreme
	Moderate	x		x		x								Possible	Low	Moderate	High	Extreme	Extreme
	Minor				x									Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant													Rare	Low	Low	Moderate	High	High
	LEAD COMBAT AGENCY			DPI			ASSESSED RISK LEVEL			Extreme									
	Existing Control / Mitigation / Treatment Strategies		Prevention		AUSVETPLAN, AQIS Procedures, Public & industry education														
Preparation			Public & industry education																
Response			NSW Animal Health Emergency Sub-Plan, specific disease plans (eg NSW Foot and Mouth Disease Sub-plan, Equine Influenza Plan)																
Recovery			DISPLAN arrangements																
REVIEW	Date Assessment Conducted		12 May 2008					Assessment Conducted by:		LEMC Sub-Committee									
	Date Approved by LEMC		12 August 2008					Review Date / Frequency:		<u>Administrative review</u> Annually <u>Content review</u> : 5 years, or after incident occurrence									

5.4 Summary of Assessments

EXTREME	7	HIGH	6	MODERATE	2	LOW	0
RISK MATRIX							
Likelihood	Consequences						
	Insignificant	Minor	Moderate	Major	Catastrophic		
	Almost Certain	High	High	Extreme <small>(NH01)</small>	Extreme	Extreme	
	Likely	Moderate	High <small>(NH03)</small>	High <small>(TH03)</small>	Extreme <small>(NH02)</small>	Extreme	
	Possible	Low	Moderate	High <small>(TH07)</small>	Extreme <small>(NH04, TH02, TH06, BH01, BH02)</small>	Extreme	
	Unlikely	Low	Low	Moderate <small>(TH04)</small>	High <small>(TH05)</small>	Extreme	
Rare	Low	Low	Moderate <small>(TH01a, TH01b)</small>	High	High		

5.5 Hazard by Lead Agency

State Emergency Service

HAZARD ID	HAZARD	RISK RATING	REFERRAL DATE
NH02	Flood	Extreme	5 June 2008
NH04	Severe Storm	Extreme	5 June 2008
TH01a	Dam Failure - Bonalbo	Moderate	5 June 2008
TH01b	Dam Failure - Toonumbar	Moderate	5 June 2008

NSW Rural Fire Service

HAZARD ID	HAZARD	RISK RATING	REFERRAL DATE
NH01	Fire – Bush / Grass	Extreme	5 June 2008
TH07	Fire – Commercial/Industrial within rural fire district	High	5 June 2008

New South Wales Police Force

HAZARD ID	HAZARD	RISK RATING	REFERRAL DATE
NH03	Extreme Temperature	High	5 June 2008
TH03	Infrastructure Failure - Power	High	5 June 2008
TH05	Transport Accident - Rail	High	5 June 2008
TH06	Transport Accident - Road	Extreme	5 June 2008

Kyogle Council

HAZARD ID	HAZARD	RISK RATING	REFERRAL DATE
TH04	Infrastructure Failure - Water	Moderate	5 June 2008

New South Wales Fire Brigade

HAZARD ID	HAZARD	RISK RATING	REFERRAL DATE
NH01	Fire – Bush / Grass	Extreme	5 June 2008
TH02	Hazardous Materials	Extreme	5 June 2008
TH07	Fire – Commercial/Industrial	High	5 June 2008

Department of Primary Industry

HAZARD ID	HAZARD	RISK RATING	REFERRAL DATE
BH02	Communicable Disease – Affecting Animals	Extreme	5 June 2008

New South Wales Health

HAZARD ID	HAZARD	RISK RATING	REFERRAL DATE
BH01	Communicable Disease – Affecting Humans	Extreme	5 June 2008

Department of Water & Energy

HAZARD ID	HAZARD	RISK RATING	REFERRAL DATE
TH01b	Dam Failure - Toonumbar	Moderate	5 June 2008

6 Treatment Options and Treatment Plans

Criteria for the development of treatment plans

The Sub-Committee determined that, in accordance with the guidelines, a Treatment Plan would be developed for any Treatment Option where:

1. There is no designated responsible agency for the treatment option; and
2. Where, according to the **Selection Criteria** of the treatment options considered, the scoring priority is 10 points or less.

Existing implemented Treatment Strategies have been identified and listed against each of the hazards considered in Sections 5.1, 5.2 and 5.3 of this report and are not subject to these Selection criteria.

Where a hazard is identified for which an agency has primary responsibility, this has been recorded in the treatment plan table for referral to the relevant agency and monitoring by the LEMC.

Selection Criteria for Treatment Options and Prioritisation:

Criteria for evaluation of identified treatment options were established. These are:

- Cost to implement treatment option;
- The effectiveness of the Treatment Option, ie the expected residual risk after implementation of the Treatment Option;
- The time taken to implement the Treatment Option;
- The percentage of the community impact by the treatment option.

The table defining the process of the treatment option evaluation is found in Section 6.1 of this report.

The evaluation criteria were then used to prioritise the proposed treatment options, noting that the lower the score, the highest the priority. The LEMC was then able to use this method of prioritisation to determine which of the options would be included in the treatment plan.

Any treatment plan that is not the responsibility of the LEMC to implement will be referred to the responsible agency for appropriate action and progress will be reviewed by the LEMC through its meeting process.

Residual Risk

Due to the nature of the hazards identified and the degree of severity being such that required inclusion in this study, a level of residual risk remains regardless of the treatments implemented, particularly for the natural hazards that cannot be controlled.

This being the inaugural stage of the study, it would be more appropriate to review residual risks following an actual emergency that has implemented all the controls as indicated in the mitigating strategies and treatment plan. This has been included in the monitor and review section of the report.

6.1 Additional Treatment Options

In accordance with the Implementation Guide, the Sub-Committee determined that additional treatment options to be developed for all hazards. The additional treatment options as proposed by the Sub-Committee for these hazards are listed in the tables on the following pages.

The evaluation criteria developed and adopted by the Sub-Committee are also listed.

Hazards with EXTREME Risk Rating

Hazard: Fire – Bush / Grass						Hazard ID: NH01				
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined
		a	b	c	d					
Prevention	Employ specialist hazard reduction work teams	3	2	4	4	13	5	NSW RFS	No	12 May 2008
Preparation	Ensure NSW RFS Brigade stations and equipment comply with State Standards of Fire Cover	5	4	4	4	17	6	NSW RFS	No	12 May 2008
	Employ retained fire-fighting staff	3	3	2	4	12	4	NSW RFS	No	12 May 2008
Response	Retained fire-fighting staff enhance response capacity	3	3	2	3	11	2	NSW RFS	No	12 May 2008
	Increase access to aerial fire-fighting capability	3	2	1	2	8	1	NSW RFS	No – refer RFS	12 May 2008
Recovery	Post-incident rehabilitation of access and control lines, roads, trails used	1	4	1	5	11	2	NSW RFS	No	12 May 2008

Hazard: Flood						Hazard ID: NH02				
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined
		a	b	c	d					
Prevention	Provide levee bank along Fawcetts Creek at Kyogle	4	3	3	1	11	4	Kyogle Council	No	12 May 2008
	Voluntary house purchase in flood-prone areas at Kyogle	5	5	5	1	16	6	Kyogle Council	No	12 May 2008
	Construction of floodway connecting Fawcetts Creek and Richmond River	4	3	2	1	10	1	Kyogle Council	No – refer Council	12 May 2008
Preparation	Recruit and retain greater number of volunteers for SES activities	2	4	2	2	10	1	SES	No – refer SES	12 May 2008
	Provide additional flood level indicators at selected locations	1	4	1	5	11	4	Kyogle Council	No	12 May 2008
	Implement Inter-agency training to provide mutual support	1	4	2	3	10	1	SES and other Agencies	No – refer SES	12 May 2008
Response	No additional measures identified									12 May 2008
Recovery	No additional measures identified									12 May 2008

Hazard: Severe Storm						Hazard ID: NH04					
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined	
		a	b	c	d						
Prevention	No additional measures identified at a local level									12 May 2008	
Preparation	Implement program of tree assessment and potential removal adjacent to roads, powerlines, buildings in urban areas	2	2	4	5	13	2	Kyogle Council	No – refer Council	12 May 2008	
Response	Recruit and retain greater number of volunteers for SES activities	2	4	2	2	10	1	SES	No – refer SES	12 May 2008	
Recovery	No additional measures identified at a local level									12 May 2008	

Hazard: Hazardous Materials						Hazard ID: TH02					
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined	
		a	b	c	d						
Prevention	Selective upgrading of known hazardous road locations reducing vehicle accidents	5	3	4	4	16	2	Kyogle Council / RTA	No – refer Council / RTA	12 May 2008	
Preparation	Upgrade of HAZMAT resources locally	2	3	4	4	13	1	NSWFB	No – refer NSWFB	22 Aug 2008	
Response	No additional measures identified									12 May 2008	
Recovery	No additional measures identified									12 May 2008	

Hazard: Transport Accident - Road						Hazard ID: TH0					
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined	
		a	b	c	d						
Prevention	Selective upgrading of known hazardous road locations reducing vehicle accidents	5	3	4	4	16	3	Kyogle Council / RTA	No – refer Council / RTA	12 May 2008	
Preparation	Increased use of Highway Patrol	3	3	3	3	12	2	NSWPF	No – refer Police	12 May 2008	
	Install Speed Cameras and Safe-T-Cam on major routes	3	2	3	3	11	1	RTA	No – refer RTA	12 May 2008	
Response	No additional measures identified									12 May 2008	
Recovery	No additional measures identified									12 May 2008	

Hazard: Communicable Disease – Affecting Humans						Hazard ID: BH01					
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined	
		a	b	c	d						
Prevention	No additional measures identified at a local level									12 May 2008	
Preparation	Agencies to develop Business Continuity Plans to apply to this hazard	1	4	4	5	14	4	LEMC / Agencies	No	12 May 2008	
	Encourage private businesses to develop Business Continuity Plans to apply to this hazard	1	4	4	3	12	1	LEMC	No	12 May 2008	
	LEMC to conduct desktop exercise to consider implications of reduced resources	1	3	3	5	12	1	LEMC	No	12 May 2008	
Response	Implement Business Continuity Plan measures	2	4	4	3	13	3	LEMC / Agencies	No	12 May 2008	
Recovery	No additional measures identified							LEMC	No	12 May 2008	

Hazard: Communicable Disease – Affecting Animals						Hazard ID: BH02					
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined	
		a	b	c	d						
Prevention	No additional measures identified at a local level									12 May 2008	
Preparation	No additional measures identified at a local level									12 May 2008	
Response	No additional measures identified at a local level									12 May 2008	
Recovery	No additional measures identified at a local level									12 May 2008	

Hazards with HIGH Risk Rating

Hazard: Extreme Temperature						Hazard ID: NH03					
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined	
		a	b	c	d						
Prevention	No additional measures identified									12 May 2008	
Preparation	No additional measures identified									12 May 2008	
Response	No additional measures identified									12 May 2008	
Recovery	No additional measures identified									12 May 2008	

Hazard: Infrastructure Failure - Power						Hazard ID: TH03					
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined	
		a	b	c	d						
Prevention	No additional measures identified at a local level									12 May 2008	
Preparation	Encourage private businesses to develop Business Continuity Plans to apply to this hazard	1	4	4	3	12	1	LEMC	No	12 May 2008	
Response	No additional measures identified at a local level									12 May 2008	
Recovery	No additional measures identified at a local level									12 May 2008	

Hazard: Transport Accident - Rail						Hazard ID: TH05					
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined	
		a	b	c	d						
Prevention	No additional measures identified at a local level									12 May 2008	
Preparation	No additional measures identified at a local level									12 May 2008	
Response	No additional measures identified at a local level									12 May 2008	
Recovery	No additional measures identified at a local level									12 May 2008	

Hazard: Fire – Commercial / Industrial						Hazard ID: TH07				
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined
		a	b	c	d					
Prevention	Encourage installation of fire sprinklers in commercial premises	1	4	4	4	13	2	NSWFB & NSW RFS	No – refer NSWFB & NSW RFS	12 May 2008
Preparation	Ensure hydrants clearly marked	1	4	2	3	10	1	Kyogle Council	No – refer Council	12 May 2008
Response	Encourage direct alarms be installed in commercial & industrial premises	1	4	4	4	13	2	NSWFB & NSW RFS	No – refer NSWFB & NSW RFS	12 May 2008
Recovery	No additional measures identified at a local level									12 May 2008

Hazards with MODERATE Risk Rating

Hazard: Dam Failure						Hazard ID: TH01				
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined
		a	b	c	d					
Prevention	No additional measures identified at a local level									12 May 2008
Preparation	No additional measures identified at a local level									12 May 2008
Response	No additional measures identified at a local level									12 May 2008
Recovery	No additional measures identified at a local level									12 May 2008

Hazard: Infrastructure Failure - Water						Hazard ID: TH04				
PPRR	Treatment Option	Criteria Scores				Score	Priority	Responsible Agency / Authority	Treatment Plan Required? YES / NO	Date Determined
		a	b	c	d					
Prevention	No additional measures identified									12 May 2008
Preparation	No additional measures identified									12 May 2008
Response	No additional measures identified									12 May 2008
Recovery	No additional measures identified									12 May 2008

6.2 Treatment Options Evaluation Criteria

TREATMENT OPTIONS EVALUATION CRITERIA							
	1	2	3	4	5		
a) Cost	less than \$10,000	\$10,000 - \$100,000	\$100,000 - \$500,000	\$500,000 - \$1,000,000	greater than \$1,000,000		
b) Effectiveness (residual)	risk eliminated	significant reduction	moderate reduction	minor reduction	no effect		
c) Period of implementation	within 3mths	within 6mths	within 1 yr	within 5yrs	more than 5yrs		
d) Impact on affected community (positive)	80% - 100%	60% - 79%	40% - 59%	20% - 39%	0% - 19%		
Total Score (add the value of the column of the chosen answer for each category)							
TREATMENT OPTION EFFECTIVENESS (PRIORITY)							
1-5	most effective/ highest priority	6-10	very effective	11-15	some effectiveness	16-20	least effective/ lowest priority
The Working Group/or LEMC agreed that a treatment plan will be developed for those treatment options with a score between:			1 to 10		Date of endorsement by Sub Committee/LEM C		12 May 2008
AND with a Risk Rating level of equal or greater than: <i>Note that hazards with a primary (Lead) Agency identified, this is referred to that Agency and only monitored by the LEMC</i>			MODERATE				

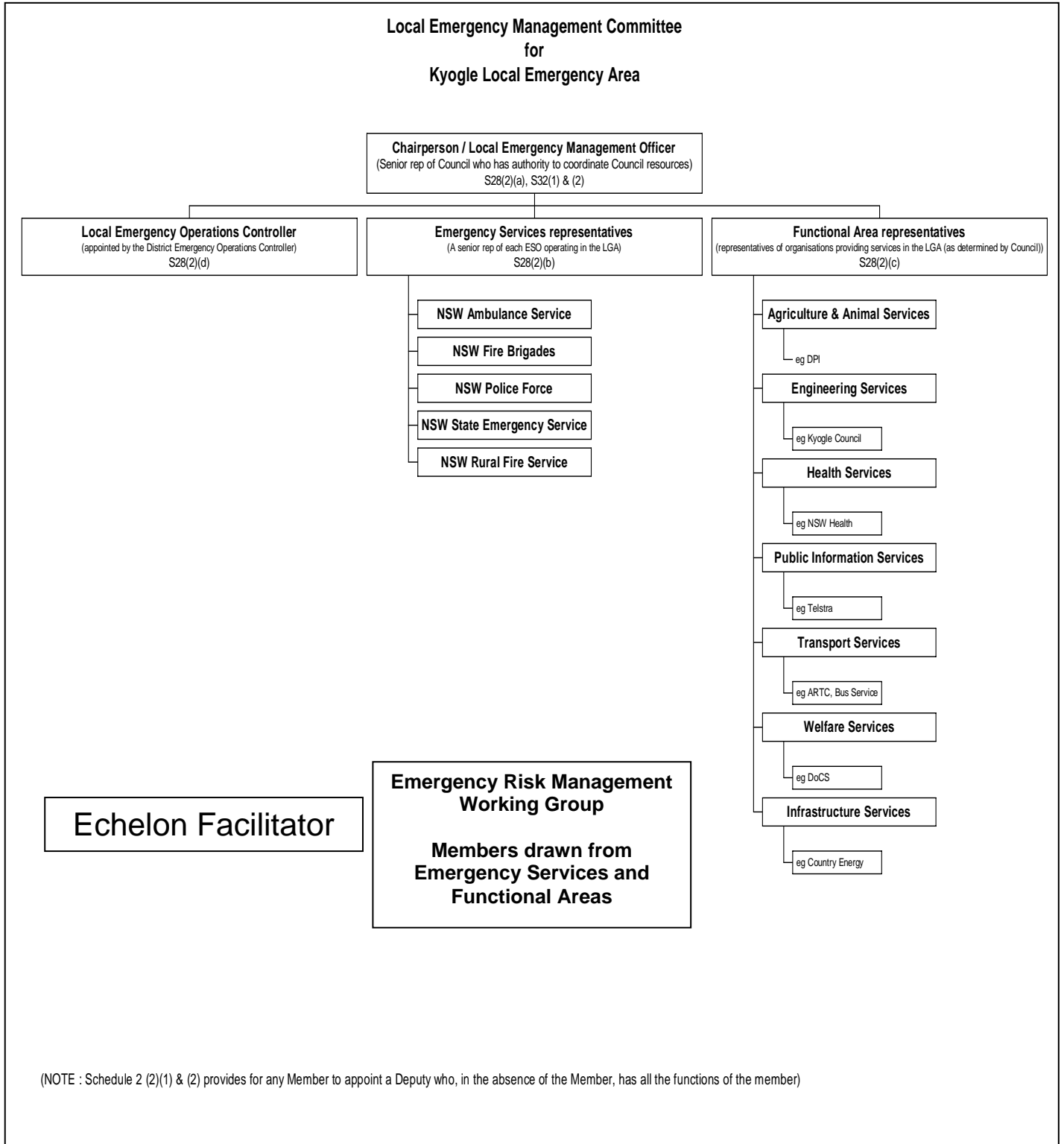
6.3 Treatment Plans

The schedule of Treatment Options listed in Section 6.1 identifies and recommends a range of measures to assist in managing and the risk associated with the hazards included in the schedule.

Most of the Treatment Options need to be referred to the appropriate Agency, with this process being monitored by the LEMC. Treatment Options for which no specific Agency is responsible have been considered by the Sub-Committee on behalf of the LEMC. As none of these options fall within the criteria adopted as requiring development of a Treatment Plan, no Treatment Plans have been developed.

6 Appendices

Appendix 1 Management Framework



Appendix 2 Supporting Plans

Name of Plan
SERM Act
NSW State Disaster Plan
NSW Disaster Welfare Plan
NSW State Storm Plan
NSW State Flood Plan
Kyogle Local Flood Plan
Kyogle Local DISPLAN
Kyogle Floodplain Flood Risk Management Study
Kyogle Council Dam Safety Plan
Kyogle Council Drought Contingency Plan
Kyogle Local Environmental Plan
Kyogle Council Road Closure Plan
Police IESOPS
NSW Hazmat Plan
NSWFB SOG
NSW Health Plan
NSW Influenza Pandemic Plan
Ausvet Plan
NSW Animal Health Sub-Plan
NSW Foot & Mouth Disease Sub-Plan
NSW Agriculture and Animal Services Plan
NSW Agriculture Equine Influenza Plan
NSW Rural Fires Act 1997
Northern Rivers Bush Fire Management Plan of Operations
Northern Rivers Bushfire Risk Management Plan
Kyogle Bushfire Risk Management Plan
NSW RFS SOPs
Building Code of Australia

Appendix 3 Press Release

COUNCIL COMMITS TO EMERGENCY RISK MANAGEMENT

Emergency Risk Management aims to reduce the potential effects of emergency events through a comprehensive approach of prevention, preparedness, response and recovery. All Local Government areas are required to use emergency risk management processes in developing and reviewing emergency management arrangements for their communities. This is to be undertaken through the Local Emergency Management Committees, for which Councils have the responsibility of executive support, preparation and maintenance of all plans and other documentation, public education, and assistance during emergency responses.

Kyogle Council resolved in 2005 to apply for Natural Disaster Mitigation Programme funding to assist in undertaking a Disaster (Emergency) Risk Management Plan. Advice was subsequently received that the application had been approved with the total cost of the project being shared equally between the Australian, State and Local Governments.

The project put forward was for the employment of a Project Officer/Manager to assist in the preparation of the Disaster Risk Management Plan. Following advertising and interviews, Echelon Risk Management was selected to undertake the process.

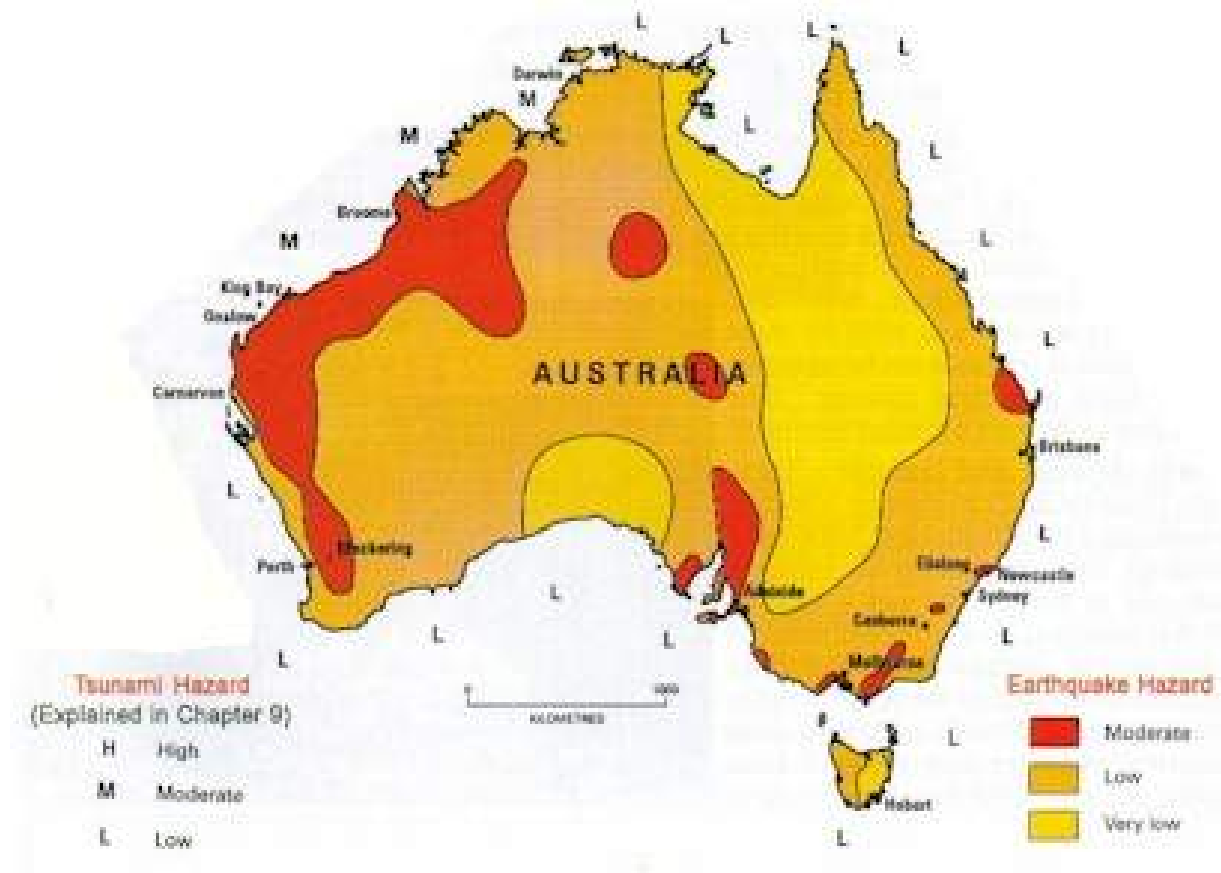
Key to the project is community consultation to ensure that planning and management arrangements are well understood by the community and relevant to their needs. Events that cause disruption and damage to communities may occur at any time and without warning. Your Local Emergency Management Committee is working to ensure the community, emergency services personnel, recovery workers and administrators are adequately prepared.

Local participation in planning of emergency risk management is essential to ensure information provided to the community is relevant and credible. Community consultation is enhanced by a link to the project that is included on Echelon's website (www.echelonaustralia.com.au) from which email responses can be sent.

Your Council's Local Emergency Management Committee will be contacting key stakeholders to gain their input throughout the process, as well as exhibiting the Draft Disaster (Emergency) Risk Management Plans when prepared for public comment.

Further information on the process can be obtained by contacting the Local Emergency Management Officer at Kyogle Council or by visiting Echelon's website.

Appendix 4 Tsunami and Earthquake Zones within Australia.



Source – Hazards, Disasters and Survival, Emergency Management Australia

Appendix 5 Project Sub-Committee Participating Agencies.

Agency / Functional Area Organisation
Kyogle Council
SES
RFS
NSWPF
NSWFB
NSW Health

Facilitator

Title	First Name	Last Name	Agency
Mr	Nigel	Sutton	Echelon Australia

Appendix 6 Local Emergency Management Committee Agencies.

Agency / Functional Area
LEMO
LEOCON
DEMO
NSWPF
NSWFB
Rural Fire Service
ASNSW
SES
Health Services
Disaster Welfare Service
Communication Services
Country Energy
Agriculture & Animal Service
Transport Services

Appendix 7 Consequence Descriptors

Assessment of the Risk Level of any hazard is carried out by identifying both the consequence and likelihood of the hazard occurring, and using this information in the Risk Matrix shown as Table 3 on p61 of the *Implementation Guide*.

To assist in the process of determining the most accurate *consequence* rating for the risk statements 10 key consequence areas were considered. These key areas are:

Area No	Consequence Area	Area No	Consequence Area
1	Fatalities / Injuries: People	6	Fatalities / Injuries: Animals
2	Community Social Impact	7	Environment: Loss / Damage
3	Evacuation	8	Financial Impact
4	Property Impact / Damage	9	Availability of Resources
5	Community Services: Loss / Damage	10	Operational management

The definitions for the consequence levels under each of these consequence areas are as follows:

Area No. 1: PEOPLE – Fatalities / Injuries	
Catastrophic	Significant fatalities / large number severe injuries.
Major	Fatalities / Extensive injuries / Significant number hospitalisation.
Moderate	No fatalities. Medical treatment required.
Minor	No fatalities. Small number of injuries.
Insignificant	No fatalities. No injuries.

Area No. 2: SOCIAL IMPACT – Number of people impacted	
Catastrophic	80 – 100% of community.
Major	40 – 80% of community.
Moderate	20 – 40% of community.
Minor	5 – 20% of community.
Insignificant	Less than 5% of community.

Area No. 3: EVACUATION	
Catastrophic	Widespread displacement for extended periods / relocation to areas outside of community.
Major	Large number displaced for more than 24 hours.
Moderate	Localised displacement – return within 24 hours.
Minor	Some displacement – less than 24 hours.
Insignificant	Small number moved from area – no persons displaced.

Area No. 4: PROPERTY – Impact / Damage	
Catastrophic	Key Infrastructure / Utilities – Water, electricity, sewerage, gas, communications.
Major	Hospitals, Nursing Homes, major road / air / rail facilities, emergency service centres.
Moderate	Government sector, key business / industry, schools, factories.
Minor	Small number of public and private business / industry.
Insignificant	Small number of residential homes.

Area No. 5: COMMUNITY SERVICES – Loss / Damage	
Catastrophic	Essential Services: Medical / Health and Food / Water.
Major	Essential Services: Energy, gas, fuel supplies, communication.
Moderate	Transportation Services: public & private.
Minor	Pharmaceutical supplies, key retail outlets, key industry.
Insignificant	Other products & services.

Area No. 6: ANIMALS – Fatalities / Injuries	
Catastrophic	Significant deaths / large number severe injuries and humane destruction, relocation with no likelihood of return / possible disposal.
Major	Deaths / Significant injuries and humane destruction, disposal / return from relocation with 1 week to 1 month return.
Moderate	Some injuries with displacement and return - 48 hours to 1 week. Some disposal.
Minor	Displacement with short term return – 24 hours to 48 hours.
Insignificant	No fatalities. No relocation.

Area No. 7: ENVIRONMENT – Loss / Damage	
Catastrophic	Significant impact and / or permanent damage.
Major	Some impact with long-term effects.
Moderate	Some impact with no long-term effect or small impact with long-term effect.
Minor	Some impact but no lasting effects.
Insignificant	No measurable impact.

Area No. 8: FINANCIAL IMPACT – Cost / Damage.	
Catastrophic	\$10 to \$100 million and above.
Major	\$1 to \$10 million.
Moderate	\$100,000 to \$1 million.
Minor	\$10,000 to \$100,000.
Insignificant	Under \$10,000.

Area No. 9: RESOURCES – Availability	
Catastrophic	Multi-Agency: Coordinated and obtained at National or State level.
Major	Multi-Agency: Coordinated and obtained from within the District.
Moderate	Multi-Agency: Coordinated and obtained from within the Local area.
Minor	Combat Agency only – Coordinated and obtained from outside the Local area.
Insignificant	Combat Agency only – Coordinated and obtained within the Local area.

Area No. 10: OPERATIONAL MANAGEMENT	
Catastrophic	Management at National or State level.
Major	Management at District DEOCON level.
Moderate	Management at Local LEOCON level.
Minor	Management by Combat Agency at District or Region level.
Insignificant	Management by Combat Agency at Local level.

The overall consequence rating, giving the representative assessment for the 10 consequence areas was determined from the following Table, taken from Table 2 on p59 of the *Implementation Guide*.

Descriptor	Description
Insignificant	No injuries or fatalities. Small number or no people are displaced and only for a short duration. Little or no personal support required (support not monetary or material). Inconsequential or no damage. Little or no disruption to community. No measurable impact on environment. Little or no financial loss.
Minor	Small number of injuries but no fatalities. First aid treatment required. Some displacement of people (less than 24 hours). Some personal support required. Some damage. Some disruption (less than 24 hours). Some impact on environment with no lasting effects. Some financial loss.
Moderate	Medical treatment required but no fatalities. Some hospitalization. Localised displacement of people who return within 24 hours. Personal support satisfied through local arrangements. Localised damage that is rectified by routine arrangements. Normal community functioning with some inconvenience. Some impact on environment with no long-term effect or small impact on environment with long-term effect. Significant financial loss.
Major	Extensive injuries, significant hospitalization, large number displaced (more than 24 hours duration). Fatalities. External resources required for personnel support. Significant damage that requires external resources. Community only partially functioning, some services unavailable. Some impact on environment with long-term effects. Significant financial loss – some financial assistance required.
Catastrophic	Large number of severe injuries. Extended and large numbers requiring hospitalization. General and widespread displacement for extended duration. Significant fatalities. Extensive personal support. Extensive damage. Community unable to function without significant support. Significant impact on environment and/or permanent damage.

Appendix 8 Likelihood Descriptors

Rating	Description
Almost Certain	Expected to occur, many recorded incidents, strong anecdotal evidence, great opportunity, reason, or means to occur; may occur or be exceeded once every 1 to 5 years.
Likely	Will probably occur; consistent record of incidents and good anecdotal evidence; considerable opportunity, reason or means to occur; may occur or be exceeded once every 20 years.
Possible	Might occur; a few recorded incidents in each locality, some anecdotal evidence within the community; some opportunity, reason or means to occur; may occur or be exceeded once every 100 years. Will generally be close to or exceed past records of severity.
Unlikely	Is not expected to occur; isolated recorded incidents in this country, anecdotal evidence in other communities; little opportunity, reason or means to occur; may occur or be exceeded once every 250 years. Will almost always break previous records of severity.
Rare	May only occur in exceptional circumstances, some recorded events on a worldwide basis, may only or be exceeded once every 500 years or more. Can approach the theoretical upper limits of severity.

Implementation Guide for Emergency Management Committees

Appendix 9 Definitions

NOTE: *The definitions used in this plan are sourced from the State Emergency and Rescue Management Act, 1989 (as amended), other New South Wales legislation, and The Macquarie Dictionary (Second Edition, 1991). Where possible, the reference source is identified as part of the definition (eg. The State Emergency and Rescue Management Act, 1989 (as amended) is identified as SERM Act).*

Act / SERM Act

Means the State Emergency and Rescue Management Act, 1989 (as amended).

Agency

Means a government agency or a non-government agency.

Annual Exceedance Probability

The chance of an event (typically a flood) of a given or larger size occurring in any one year. Usually expressed as a percentage, e.g. 1% AEP equates to 1 chance in 100 per year of occurrence, 2% AEP equates to 2 chances in 100 per year of occurrence.

Combat Agency

Means the agency identified in the State Disaster Plan as the agency primarily responsible for responding to a particular emergency. (Source: SERM Act).

Disaster

Means an occurrence, whether or not due to natural causes, that causes loss of life, injury, distress or danger to persons, or loss of or damage to property.

DISPLAN

In this plan means the Kyogle DISPLAN. The object of DISPLAN is to ensure the co-ordinated preparation for, response to and recovery from emergencies by all agencies having responsibilities and functions in emergencies.

District Emergency Management Committee (DEMC)

Means the Committee, constituted under the State Emergency & Rescue Management Act, which at the District level is responsible for the preparation and maintenance of plans in relation to the prevention of, preparation for, response to and recovery from emergencies in the District, including the District DISPLAN. In the exercise of its functions, this committee is responsible to the State Emergency Management Committee (SEMC).

Emergency

Means an emergency due to an actual or imminent occurrence (such as a fire, flood, storm, earthquake, explosion, accident, epidemic or warlike action) which:

- Endangers, or threatens to endanger, the safety or health of persons or animals in the State; or
- destroys or damages, or threatens to destroy or damage, any property in the State, being an emergency which requires a significant and co-ordinated response. (Source: SERM Act).

Emergency Risk Management

A systematic process that produces a range of measures that contributes to the well being of communities and the environment.

Emergency Risk Management Working Group

A subcommittee to the relevant emergency management committee established to undertake the emergency risk management process.

Environment

Conditions or influences comprising social, physical and built elements, which surround and interact with the community.

Functional Area

In this plan means a category of services involved in preparations for an emergency, including:

- agriculture and animal services
- communication services
- engineering services
- environmental services
- health services
- transport services
- welfare services
- media services
- power / energy services

Hazard

A source of potential harm or situation with a potential to cause loss.

Lifeline

A system or network that provides services on which the well being of the community depends.

Likelihood

A qualitative description of probability and frequency.

Local Government Area

In this plan means a local government area within the meaning of the Local Government Act, 1993 (as amended), or combination of local government areas as referred to in Section 27 of the State Emergency and Rescue Management Act, 1989 (as amended).

Local Emergency Management Committee (LEMC)

In this plan means the Committee, constituted under the SERM Act, which is responsible for the preparation and maintenance of plans in relation to the preparation for, response to and recovery from emergencies in the local government area, for which it is constituted. In the exercise of its functions, this committee is responsible to the relevant District Emergency Management Committee.

Local Emergency Management Officer (LEMO)

In this plan means the person, appointed by Council under the Act to act as principal Executive Officer to the LEMC.

Local Emergency Operations Controller (LEOCON)

Means a Police Officer appointed by the District Emergency Operations Controller as the Local Emergency Operations Controller for the Local Government Area.

Mitigation

Measures taken in advance of a disaster aimed at decreasing or eliminating its impact on society and environment.

Risk Analysis

A systematic use of available information to determine how often specified events may occur and the magnitude of their likely consequences (In emergency risk management the systematic use of available information to study risk).

Risk Treatment Options

Measures that modify the characteristics of hazards, communities or environments.

Appendix 10 Abbreviations

AMSA	Australian Maritime Safety Authority
CASA	Civil Aviation Safety Authority
DECC	Department of Environment and Climate Change
DECC (NPWS)	DECC National Parks & Wildlife Service
DECC (EPA)	DECC Environmental Protection Authority
DEMO	District Emergency Management Officer
DEOCON	District Emergency Operation Controller
DISPLAN	Disaster Plan
DLWC	Department of Land and Water Conservation
DOCS	Department of Community Services
DPI	Department of Primary Industry
EOC	Emergency Operations Centre
HAZMAT	Hazardous Materials
LGA	Local Government Area
LEMC	Local Emergency Management Committee
LEMO	Local Emergency Management Officer
LEOCON	Local Emergency Operations Controller
NSWFB	New South Wales Fire Brigade
NSWPF	New South Wales Police Force
RFS	Rural Fire Service
RTA	Road Transport Authority
SEMC	State Emergency Management Committee
SERM ACT	State Emergency & Rescue Management Act, 1989 (as amended)
SES	State Emergency Services
USAR	Urban Search and Rescue

Appendix 11 Treatment Evaluation Criteria

Criteria for the development of treatment plans

The working group determined that any treatment option where the responsible agency for the treatment option was the LEMC would require a treatment plan to be developed by the LEMC. Any treatment option not the responsibility of the LEMC to implement is to be referred to the responsible agency for consideration, with the LEMC to review.

Criteria for evaluation of treatment options and Prioritisation:

Criteria for evaluation of identified treatment options were established. These are:

- Cost to Implement treatment option;
- The effectiveness of the Treatment option, ie the residual risk if the option is implemented;
- Period taken for implementation;
- The percentage of the community impact by the treatment option.

Details of the treatment evaluation criteria are shown below.

This set of treatment evaluation criteria was then used to prioritise the proposed treatment options with the lower the number being the higher the priority (as per the established criteria). The LEMC is then able to use this method of prioritisation to assist with their implementation of treatment plans.

Any treatment plan that is not the responsibility of the LEMC to implement will be referred to the responsible agency for consideration, and progress will be reviewed by the LEMC as per the established review process.

TREATMENT OPTIONS EVALUATION CRITERIA							
	1	2	3	4	5		
Cost	less than \$10,000	\$10,000 - \$100,000	\$100,000 - \$500,000	\$500,000 - \$1,000,000	greater than \$1,000,000		
Effectiveness (Residual)	risk eliminated	significant reduction	moderate reduction	minor reduction	no effect		
Period for implementation	within 3mths	within 6mths	within 1 yr	within 3yrs	more than 5yrs		
% of population impacted	80-100%	60-80%	40-60%	20-40%	0-20%		
TREATMENT OPTION EFFECTIVENESS (PRIORITY)							
0-5	most effective / highest priority	5-10	very effective	10-15	some effectiveness	15-20	least effective / lowest priority