

Berrigan LGA

Local Emergency Management Committee

# **EMERGENCY RISK MANAGEMENT REPORT**

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Facilitated and Developed by

Echelon Australia

April 2007

## 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 (SEMC) 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 role in supporting the Local Emergency Management Committee (LEMC).

## Purpose

The Local Emergency Management Committee of Berrigan is working to create a prepared community and therefore safer community in conjunction with Community, Emergency Services and other identified stakeholders to create a holistic Community Risk Based Emergency Management Plan which addresses 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, evaluating Natural and Technological risks that are appropriate to the Berrigan Local Government Area and recommending treatment options based on the "Implementation Guide for Emergency Management Committees" developed by NSW State Emergency Management committee.

## Authority

The Emergency Risk Management Working 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.

## Reference & 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 Berrigan Local Government Area.

3 copies of this manual have been issued to the Berrigan Local Emergency Management Officer for the local committee, and one to the District Emergency Management Officer at Albury.

Manual Copy	Located At	Responsibility of
1 of 5	Berrigan Council	Local Emergency Management Officer
2 of 5	Berrigan Council	Local Emergency Management Officer
3 of 5	Berrigan Council	Local Emergency Management Officer
4 of 5	Albury 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 working group 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 Berrigan 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

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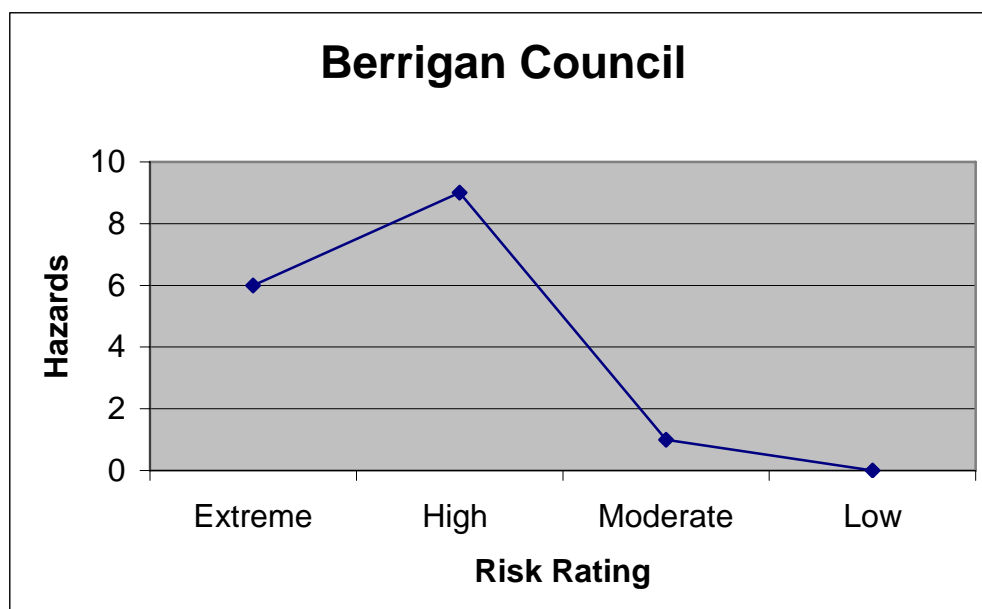
## Executive Summary

This Emergency Risk Management Report has been prepared in accordance with the NSW State Emergency Management Committee's "Implementation Guide for Emergency Risk Management". 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 Berrigan Local Emergency Management Committee (LEMC) Emergency Risk Management Working Group 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 the townships of Barooga, Berrigan, Finley and Tocumwal best represented the geographical spread of the LGA.

As a result of conducting the detailed discussions above it was determined that a total of 16 hazards may be present within the LGA and subsequently required further detailed analysis.

The results of that detailed analysis form the body of this report, however a graphical representation is presented below followed by an explanation of those hazards that currently have a risk rating of Extreme.



## Hazards that are currently rated at Extreme

Hazard	Hazard Id	Risk Rating	Agency
BUSHFIRE – Urban Interface – Major Towns	NH02	EXTREME	RFS
<p><b>Risk Statement:</b> There is a risk that a significant bushfire impacting on the urban interface in Barooga &amp; Tocumwal residential areas could result in loss of life and loss of property and the need for evacuation of residential and vulnerable communities with disruption to major transport routes.</p> <p><b>Overview of Treatment/Mitigation:</b> See Page 31 for identified treatment and mitigation strategies.</p>			

Hazard	Hazard Id	Risk Rating	Agency
FLOOD	NH04	EXTREME	SES
<p><b>Risk Statement:</b> There is a risk that in a 1 in 100 year flood event the township of Tocumwal will be impacted upon to the extent that significant evacuation of the town will be required. Up to 2000 people may need to be evacuated and relocated for up to 4 four weeks.</p> <p><b>Overview of Treatment/Mitigation:</b> See Page 33 for identified treatment and mitigation strategies.</p> <p><b>Recommendations:</b> LEMC to send assessment to Victorian equivalents for their information and comment</p>			

Hazard	Hazard Id	Risk Rating	Agency
INFRASTRUCTURE FAILURE – POWER	TH04	EXTREME	EOCON
<p><b>Risk Statement:</b> There is a risk that a Total power failure for more than 6 hours within the Berrigan LGA may impact on the wider community and in particular the medically vulnerable.</p> <p><b>Overview of Treatment/Mitigation:</b> See Page 41 for identified treatment and mitigation strategies.</p> <p><b>Recommendations:</b> LEMC to develop grant application through Natural Disaster Mitigation Funding for generator</p>			

Hazard	Hazard Id	Risk Rating	Agency
INFRASTRUCTURE FAILURE – WATER (1)	TH05	EXTREME	EOCON
<p><b>Risk Statement:</b> There is a risk that a water contamination event will impact on the water supply ability for Council to all towns.</p> <p><b>Overview of Treatment/Mitigation:</b> See Page 42 for identified treatment and mitigation strategies.</p> <p><b>Recommendations:</b> LEMC to develop grant application through Natural Disaster Mitigation Funding for generator</p>			

Hazard	Hazard Id	Risk Rating	Agency
INFRASTRUCTURE FAILURE – WATER (2)	TH06	EXTREME	EOCON
<p><b>Risk Statement:</b> There is a risk that In the event of a failure/contamination event in the Mulwala Canal the townships of Finley &amp; Berrigan and the rural surrounds will be critically impacted upon.</p> <p><b>Overview of Treatment/Mitigation:</b> See Page 43 for identified treatment and mitigation strategies.</p>			

Hazard	Hazard Id	Risk Rating	Agency
INFRASTRUCTURE FAILURE - TELECOMMUNICATIONS	TH08	EXTREME	EOCON
<p><b>Risk Statement:</b> There is a risk that if the Telecommunications system failed for more than 24 hours there would be significant disruption to the community including the loss of the 000 emergency number.</p> <p><b>Overview of Treatment/Mitigation:</b> See Page 45 for identified treatment and mitigation strategies.</p> <p><b>Recommendations:</b> LEMC to formalise emergency communications strategy</p>			



# 1 Summary Of Project Management Plan

STAGE 1	Research, Establishment of Working Group, 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	Working group established by LEMC Training of Working group undertaken Process context and limitations developed Community profile developed Sources of risk identified Elements at risk identified Historical information analysed	LEMC SEMC via DEMO Working Gp & Echelon Working Gp & Echelon Working Gp & Echelon Working Gp & Echelon	Aug 06
2	Development of LGA specific risk statements Risk statements analysed(likelihood & consequence) Assessments reviewed against risk criteria	Working Gp & Echelon Working Gp & Echelon Working Gp & Echelon	Sept 06
3	Stakeholder consultation to confirm existing treatment and mitigation strategies Determine gap treatment and mitigation strategies	Working Gp & Echelon Working Gp & Echelon	Oct 06
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 Working Gp & LEMC Echelon	Dec 06
5	Community and Stakeholder consultation on amended Draft Document Draft Plan Finalised	Working Gp Echelon	March 07
6	Emergency Risk Management document published and Adoption of Plan by LEMC, Council & SEMC	Echelon, Local Govt, LEMC, DEMC & SEMC	April 07

At the completion of each stage as outlined above the Working Group provided the full Local Emergency Management Committee with a copy of items developed to ensure the LEMC is aware of each stage of the process.

## 2 ERM Context Statement

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

The process examines Natural and Technological 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).

Berrigan 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 working party of the Local Emergency Management Committee has been charged with the task of reviewing and or identifying Natural and Technological hazards that impact on the Berrigan 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 has 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 and 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 LEMC is only required to consider hazards that impact on **people, property, animals and or the environment** that would have the potential to require a significant and coordinated multi-agency response.
2. The Berrigan LEMC and its working group is to document the process as outlined within the NSW State Emergency Management Committee's "*Implementation Guide for Emergency Management Committees*"
3. The LEMC is not required to implement treatment plans.
4. 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
5. The SEMC makes final comment on any plan developed by a LEMC via its Assessment Checklist released in December 2006.
6. As per the SEMC "Implementation Guide" the plan is approved at local level.

### Resources

Many members of the LEMC are volunteers that represent their agency or private companies and attend meetings out side of normal working hours. This requires the meeting of the working group to be scheduled at a time that these members are available as they are a valuable resource to the process, and in many cases have a greater knowledge of the history of local events than response agencies that have periodic staff changes. Every effort has been made to ensure agency volunteer staff have been able to contribute to the ERM process.

## 2.3 Management Framework

1. The management framework for the Berrigan LEMC and its relationship to the working party is identified in Appendix 1 of this document.
2. A summary of the project management plan appears on Page 9 of this document.
3. Management framework overview

Working Party formed as sub committee of LEMC and charged with undertaking the Emergency Risk Management Study

At each stage as identified in the project plan the full LEMC is briefed by the working group and consensus is achieved before moving to the next stage

At the completion of the Study the document will be presented to the LEMC for endorsement and then adoption by Council. The completed document will then be forwarded to the SEMC via the DEMC.

#### 4. LEMC Working Group

Title	First Name	Last Name	Agency
Mr	John	Elphinstone	NSW VRA
Mr	Fred	Exton	Council
Mr	Ian	Fox	NSW RFS
Mr	Kevin	Gabriel	DEMO
Mr	Ian	Hovenden	NSW SES
Mr	Gary	Lewis	NSWPF
Mr	Bruce	Purves	ASNSW
Mr	Mervyn	Reed	NSWFB
Ms	Anne	Seamer	Tocumwal
Mr	Matthew	Tischler	NSWPF
Ms	Kelwyn	Wilson	NSW RFS

#### Facilitators

Title	First Name	Last Name	Agency
Mr	Bob	Walker	Echelon Australia
Ms	Karin	Sutton	Echelon Australia

## 2.4 Risk Evaluation Criteria

The risk evaluation criteria developed by the LEMC Working Group is measured by the following statements;

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.

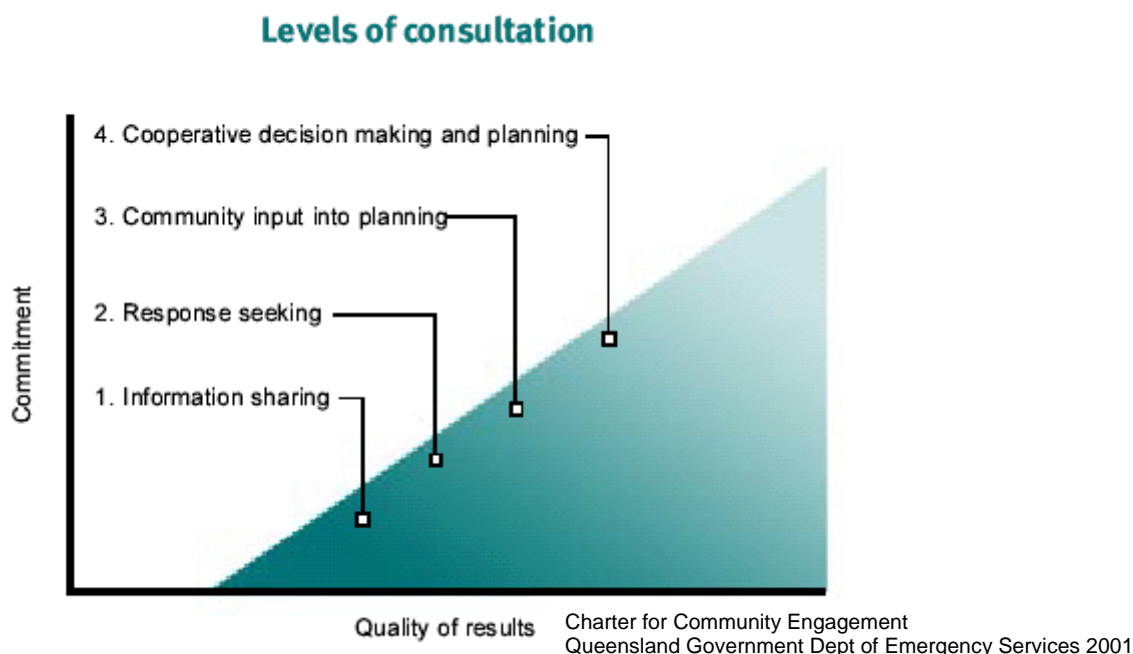
### 3 Communication Strategy

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 incorporate 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 been 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 ensure 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 Berrigan LEMC had decided on the following communication strategy for this project.

- Publication of a media release via the local print media. (see appendices)
- Public meeting as determined by the LEMC

- Formal briefing of elected members of Berrigan Shire Council
- Community access to ERM project website [www.echelonaustralia.com.au](http://www.echelonaustralia.com.au) and email address [centrocdrm@echelonaustralia.com.au](mailto:centrocdrm@echelonaustralia.com.au)
- Public display of documentation via Council procedures
- 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

Screen dump from CENTROC Emergency Risk Management Project website.

The screenshot shows the website for the Emergency Risk Management Project. At the top, there is a navigation bar with links for Home, Projects, Councils Involved, Community Forums, DoTaRS, and Contact Us. Below this is a banner with the project title and several images depicting natural disasters. The main content area starts with a 'Home' section, followed by a 'We value your input' feedback form. A 'Project News' section contains four sub-sections: 'Emergency Risk Management', 'Community Consultation', 'Draft ERM Plans', and 'Further Information'. The footer includes copyright information for Echelon Australia and links for Home, Accessibility, and Privacy Policy.

### 3.1 Process Documentation (Evidence of Process)

At each of the ERM Working Group meetings minutes were taken by the Echelon Consultant and LEMO that outline the content of the meeting, those present, the decision making and direction setting process.

1.	Aug 06	Meeting One	“Setting the Context”
2.	Sept 06	Meeting Two	“Hazard Identification and Risk Statements”
3.	Oct 06	Meeting Three	“Risk Analysis”
4.	Dec 06	Meeting Four	“Risk Treatment”
5.	March 06	Meeting Five results	Public Meeting to discuss ERM process and results
6.	April 06	Individual meeting with each Combat Agency	
7.	April 06	Meeting Six	“Report Consolidation”

## 4 Risks

### 4.1 Berrigan LGA Community Hazard Matrix

The following matrices represent the initial hazard assessments identified by the working committee of the Berrigan LEMC. All hazards that meet the criteria of the report have been assessed as per the requirements of the State Emergency Management Committee SEMC implementation guide. For those hazards that are outside of the criteria, an initial assessment has been conducted and documented with a review date identified, these hazards are shaded grey. In relation to the hazard matrix 'Yes' indicates that the particular hazard may occur within the identified area, i.e. that it is possible, the last column (Multi Agency Response) then indicate that if the hazard was to occur it would require a significant coordinated multi agency response. In all instances where the matrix indicates that a hazard may be possible and a significant coordinated response would be required then a full risk assessment has been conducted for that hazard. Risk Statements are used to localise the hazard, the committee determines whether a risk statement is developed to sit across the LGA or if a risk statement is required for each geographical area identified.

Natural Hazards					
	Barooga	Berrigan	Finley	Tocumwal	Multi Agency Response
Avalanche	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Snow Storm	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Cyclone	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Tornado	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Earthquake	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Coastal Erosion	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Bush Fire – Urban Interface – Isolated Communities	Y	N	N	Y	Y
Bush Fire – Urban Interface – Major Towns	Y	Y	Y	Y	Y
Grass Fire - Rural	Y	Y	Y	Y	Y
Flood	N	N	N	Y	Y
Fog	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Extreme Cold	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Landslip/Rock	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				

Natural Hazards					
	Barooga	Berrigan	Finley	Tocumwal	Multi Agency Response
Fall/Mudflow	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Infestation – Animal	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Infestation – Insect	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Infestation – Plant	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Severe Storm – Electrical	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Severe Storm – Wind	Y	Y	Y	Y	Y
Severe Storm – Rain	Y	Y	Y	Y	Y
Severe Storm – Hail	Y	Y	Y	Y	Y
Storm Surge	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Tsunami	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				

Technological Hazards					
	Barooga	Berrigan	Finley	Tocumwal	Multi Agency Response
Aeronautical	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Space Debris Re-entry (no impact)	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Space Debris Re-entry (impact)	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Bridge Collapse	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Building Collapse	Y	Y	Y	Y	Y
Dam Failure	Y	N	N	Y	Y
Hazardous Materials	Y	Y	Y	Y	Y
Industrial Accident	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Infrastructure Failure – Power	Y	Y	Y	Y	Y



<b>Technological Hazards</b>					
	<b>Barooga</b>	<b>Berrigan</b>	<b>Finley</b>	<b>Tocumwal</b>	<b>Multi Agency Response</b>
Infrastructure Failure – Water	Y	Y	Y	Y	Y
Infrastructure Failure – Sewerage > 24 Hours	Y	Y	Y	Y	Y
Infrastructure Failure – Sewerage Contamination	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Infrastructure Failure – Telecommunications	Y	Y	Y	Y	Y
Infrastructure Failure – Gas	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Mine Accident	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Radiological Hazard	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Pollution – Chemical	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Pollution – Oil/Fuel	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Pollution – Hazardous Waste	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Land Subsidence	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Transport Accident – Air	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				
Transport Accident – Road	Y	Y	Y	Y	Y
Transport Accident – Waterways (Murray River)	Y	N	N	Y	Y
Event That Requires Resources From NSW For Caravan Park	Considered by committee. No history of the hazard occurring within the LGA to a level that warrants inclusion within study. This decision is to be reviewed by the LEMC in 12 months from date of adoption.				

## 4.2 Natural Hazards - a National Perspective

The European colonisation of Australia – and its written history – began at Sydney Cove in 1788. With only 20 million people spread across 7.7 million km<sup>2</sup>, 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 (0872 in Western Australia), had a population at the 2001 Census of 20,400; the postcode covers an area of 621,400 km<sup>2</sup> an area significantly larger than continental France. While it could be argued that nothing much happens, from a natural hazards point of view, in postcode 0872, that was exactly the rest of the nations view of Canberra, the national capital – except that this view changed in January 2003 when five hundred residential homes were destroyed by bushfire. (Blong 04).

Nearly twenty years ago, researchers at Macquarie University in Australia, 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, hailstorms, earthquakes, landslides and tsunamis.

### Summary of Deaths Due to Natural Hazards 1788 – 2003 (National Figures)

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
<b>Total</b>		<b>6088</b>	<b>100</b>

*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

Each month the unusual, extreme and interesting weather events which occur around Australia are summarised by the Bureau of Meteorology. They record temperatures and rainfalls, storms, floods, fires, tropical cyclones and other meteorological events which have had a significant impact on Australian localities. Summaries use real time data some of which may not be complete or verified. The full version of the national significant weather summaries can be viewed at [http://www.bom.gov.au/inside/services\\_policy/public/sigwxsum/sigwmenu.shtml](http://www.bom.gov.au/inside/services_policy/public/sigwxsum/sigwmenu.shtml)

Regional Summary for the period Jan 2000 to Dec 2006 is replicated below:

#### 2000

**Nov** On the 10th, a thunderstorm with heavy rain was reported at Barham. 90mm in two hours, flooding was reported and electricity supplies were cut, 12 houses were sandbagged.

#### 2001

**Jan** On the 24th, Deniliquin had 91 km/h wind gusts which caused tree damage.

#### 2002

**Feb** At Coleambally 3cm hail and very heavy rain occurred. A microburst destroyed several trees at Coleambally.  
Large hail damaged houses at Jerilderie on the 20th.

#### 2003

**Nov** On the 21st at Narrandera and Leeton (Riverina) severe thunderstorms occurred with hail up to 2cm was reported

#### 2004

No entries for the Berrigan Shire or the Riverina

#### 2005

**April** In Deniliquin (Riverina) a downburst from a thunderstorm caused a wind gust of 113 km/h.  
On the 22nd a grassfire at Barmedman (Riverina) burnt out 400 hectares.

#### August

On the 9th at Albury thunderstorms with heavy small hail covered the ground like snow.

#### 2006

**Jan** Deniliquin wind speeds recorded at 91 km/h

## 4.4 Berrigan Natural Hazards Descriptions

HAZARD	BUSHFIRE
History	<ul style="list-style-type: none"> <li>January 1990 is only known record of major fire in district</li> <li>At Tocumwal – All other fires have been grass fires (during harvesting) which have been extinguished quickly.</li> </ul>
Intensity	<ul style="list-style-type: none"> <li>Catastrophic to Major</li> <li>Immediate (depends where fire started and weather/fuel conditions of the day)</li> <li>With high winds and dry conditions there is potential for an extremely intense fire in forests.</li> </ul>
Extent	<ul style="list-style-type: none"> <li>Followed forests from west of Tocumwal township, jumped river a few times, threatened south and east of township, then changed to southerly. Travelled approximately 20 km.</li> <li>Could require evacuation of much of the township and 1000's of campers.</li> </ul>
Speed of onset	<ul style="list-style-type: none"> <li>12 hours duration.</li> <li>Only 30 minutes warning. (Can be as little as 5 minutes warning if fire starts closer to towns.</li> </ul>
Secondary Hazards	<ul style="list-style-type: none"> <li>Depending on location, can result in roadblocks preventing use of major routes by motorists and freight vehicles.</li> <li>Depending on intensity a panic could result in vehicle accidents.</li> <li>Traffic/transport issues (road closures particularly along highway)</li> <li>Evacuation of residents and campers.</li> </ul>

HAZARD	FLOOD
History	<ul style="list-style-type: none"> <li>1975- Highest flood water in recent history.</li> <li>Lesser high water events early nineties.</li> </ul>
Intensity	<ul style="list-style-type: none"> <li>Levee banks stretched capacity</li> <li>Slow time frame</li> <li>Event at that time was as big as system should survive.</li> <li>Without town inundation.</li> </ul>
Extent	<ul style="list-style-type: none"> <li>Main input – West of Tocumwal</li> <li>Flood plain farmland occupants – Time out</li> <li>Heavy sandbagging town levees</li> <li>Some sand bag activity Barooga Township.</li> </ul>
Speed of onset	<ul style="list-style-type: none"> <li>Flooding after significant storm events which may be upstream of urban areas.</li> <li>Immediately following localised storm event</li> <li>Approximately 3 days warning.</li> <li>Main response activity over 4 to 5 days.</li> <li>Around October to November commonly.</li> </ul>
Secondary Hazards	<ul style="list-style-type: none"> <li>Road closure</li> <li>Loss of property</li> <li>Isolating</li> <li>Utilities Threatened</li> </ul>

HAZARD	SEVERE STORM
History	<ul style="list-style-type: none"> <li>Annually in effected towns.</li> </ul>
Intensity	<ul style="list-style-type: none"> <li>Very fast approach</li> <li>Very volatile/powerful</li> </ul>
Extent	<ul style="list-style-type: none"> <li>Generally spot or strip damage.</li> <li>Population depends on location, i.e. town, rural or forest areas.</li> </ul>
Speed of onset	<ul style="list-style-type: none"> <li>Low warning time frame.</li> <li>Spring/Summer storm season.</li> </ul>
Secondary Hazards	<ul style="list-style-type: none"> <li>Loss of power/services etc</li> <li>Loss of Accommodation by affected individuals in severe events</li> <li>Injuries when affected</li> </ul>

#### 4.5 Berrigan Technological Hazards Descriptions

HAZARD	BUILDING COLLAPSE
History	<ul style="list-style-type: none"> <li>Nil recorded events within the LGA.</li> <li>There are only a small number of buildings within the LGA that would be effected by this type of incident, i.e. Finley – RSL Club, Cobram – Barooga Golf Club.</li> </ul>
Intensity	<ul style="list-style-type: none"> <li>Limited due to size of buildings, i.e. Two storey only</li> </ul>
Extent	<ul style="list-style-type: none"> <li>Limited to effected building only.</li> </ul>
Speed of onset	<ul style="list-style-type: none"> <li>Duration of one day plus depends on number affected.</li> <li>Warning time is nil to minimal.</li> <li>Any time of the year.</li> </ul>
Secondary Hazards	<ul style="list-style-type: none"> <li>Gas Leak</li> <li>Electrical</li> <li>Fire</li> <li>Water Damage</li> </ul>

HAZARD	DAM FAILURE
History	<ul style="list-style-type: none"> <li>No history of a complete failure.</li> <li>1996 – Movement of Hume Dam caused major concern in all LGA's along the Murray Valley.</li> <li>1989 – Power station incident at Dart Mouth Dam raised concerns with the dam spilling.</li> </ul>
Intensity	<ul style="list-style-type: none"> <li>If occurred would inundate a large percentage of the shire.</li> <li>Warning time would be short.</li> <li>Most infrastructure would be damaged or destroyed.</li> </ul>
Extent	<ul style="list-style-type: none"> <li>All areas along the valley for inundation.</li> <li>Areas not inundated would be isolated and lose services, may still need to be evacuated.</li> </ul>
Speed of onset	<ul style="list-style-type: none"> <li>Sunny day failure – fast onset (within 24 hours)</li> <li>PMF Flood – Length of prior rain fall event.</li> <li>Duration would be flooding period – Several weeks – Recovery of many years.</li> <li>Spring would normally be when dam's are full.</li> </ul>
Secondary Hazards	<ul style="list-style-type: none"> <li>Many deaths/injured</li> <li>Lack of drinking water</li> <li>Lack of sewerage</li> <li>Lack of all other utilities (Power &amp; Telecommunications)</li> </ul>

	<ul style="list-style-type: none"> <li>• Evacuations</li> <li>• Transport systems destroyed</li> <li>• Public Health</li> <li>• Mental Health</li> <li>• Isolated Communities</li> <li>• Security Issues</li> <li>• Electrical Issues</li> <li>• Loss of Accommodation</li> </ul>
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<b>HAZARD</b>	<b>HAZARDOUS MATERIALS</b>
History	<ul style="list-style-type: none"> <li>• No part history of major event requiring all agencies to attend.</li> </ul>
Intensity	<ul style="list-style-type: none"> <li>• Large hazmat incident could affect population if up to 2000 people in shire township.</li> </ul>
Extent	<ul style="list-style-type: none"> <li>• If one did occur in populated area evacuation of up to 2000 people could be affected.</li> </ul>
Speed of onset	<ul style="list-style-type: none"> <li>• Depending on size and place and how long.</li> <li>• Also depends on what hazard material is involved.</li> </ul>
Secondary Hazards	<ul style="list-style-type: none"> <li>• Blockage of Major Highway.</li> <li>• River of canal could be put under threat of water pollution.</li> <li>• Environmental damage</li> <li>• Health Hazards</li> <li>• Fire</li> </ul>

<b>HAZARD</b>	<b>INFRASTRUCTURE FAILURE - POWER</b>
History	<ul style="list-style-type: none"> <li>• Loss of power for 6 hours.</li> <li>• No major recorded history.</li> </ul>
Intensity	<ul style="list-style-type: none"> <li>• Instant loss.</li> <li>• No power to all of Berrigan Shire. (There are back up power feeds)</li> </ul>
Extent	<ul style="list-style-type: none"> <li>• Towns could be isolated from Power Source.</li> <li>• Some towns can be back feed from other areas.</li> </ul>
Speed of onset	<ul style="list-style-type: none"> <li>• Instant power outage for a short duration.</li> </ul>
Secondary Hazards	<ul style="list-style-type: none"> <li>• No power to shire</li> <li>• Pumps</li> <li>• Medical</li> <li>• Hospitals (without generators)</li> </ul>

<b>HAZARD</b>	<b>INFRASTRUCTURE FAILURE – WATER &amp; SEWERAGE</b>
History	<ul style="list-style-type: none"> <li>• No history of incidents that required co-ordinated significant response.</li> </ul>
Intensity	<ul style="list-style-type: none"> <li>• Would vary dependant on incident.</li> <li>• Towns could be isolated from Power Source. Some towns can be back feed from other areas.</li> <li>• Power failure - One town not as critical where as a whole area is a larger issue</li> <li>• Pump equipment failure – one facility.</li> </ul>
Extent	<ul style="list-style-type: none"> <li>• Could affect one individual town or all four towns within shire depending on incident, i.e. loss of electricity to whole area.</li> </ul>
Speed of onset	<ul style="list-style-type: none"> <li>• Could be an immediate loss of power</li> <li>• Would have lead time with capacity in system – Sewer 6 hours peak time and Water – 24 hours storage.</li> </ul>
Secondary Hazards	<ul style="list-style-type: none"> <li>• Water – Health issues, no drinking water, may require evacuation or carting of water.</li> </ul>

	<ul style="list-style-type: none"> <li>• Sewer – Health issues related to spread of disease etc from sewerage spills, environmental damage due to sewerage spills.</li> </ul>
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<b>HAZARD</b>	<b>TRANSPORT ACCIDENT - ROAD</b>
History	<ul style="list-style-type: none"> <li>• School Bus and Semi-Trailer crash early 1990's</li> <li>• Numerous heavy vehicle and single vehicle crashes (Main Hwy Newell) and Local secondary roads</li> <li>• Potential</li> </ul>
Intensity	<ul style="list-style-type: none"> <li>• Bus crash 20-25 School Children</li> <li>• Other various 1-6 persons</li> <li>• Extensive damage, Injuries and death</li> </ul>
Extent	<ul style="list-style-type: none"> <li>• Various locations within community.</li> <li>• Limited to 1 to 2 vehicles within local arrangements.</li> </ul>
Speed of onset	<ul style="list-style-type: none"> <li>• Varies – Bus accident several hours.</li> </ul>
Secondary Hazards	<ul style="list-style-type: none"> <li>• Hazmat</li> <li>• Road Blockage</li> <li>• Contamination</li> <li>• Stock</li> <li>• Physiological Stages - Minimal Health Issues</li> <li>• Environmental Contamination</li> <li>• Electrocution</li> </ul>

<b>HAZARD</b>	<b>TRANSPORT ACCIDENT – WATERWAYS</b>
History	<ul style="list-style-type: none"> <li>• Numerous boating accidents recorded from vessel fires to minor injury to fatal collisions.</li> </ul>
Intensity	<ul style="list-style-type: none"> <li>• Single to multiple vessel.</li> <li>• Property damage only to serious injury or loss of life.</li> </ul>
Extent	<ul style="list-style-type: none"> <li>• Limited to those directly involved.</li> <li>• Minor injury to multiple fatality or missing person.</li> </ul>
Speed of onset	<ul style="list-style-type: none"> <li>• Duration from very short to extended if search and rescue required.</li> <li>• Nil warning would be possible.</li> <li>• Could happen any time of year.</li> </ul>
Secondary Hazards	<ul style="list-style-type: none"> <li>• Fuel Spill/Fire</li> <li>• Fire/Explosion</li> <li>• Environmental Contamination</li> <li>• Psychological Impact</li> </ul>

## 4.6 Community & Environmental Description

### AUSTRALIAN BUREAU OF STATISTICS

#### National Regional Profile, 2000 to 2004

##### Berrigan Local Government Area, New South Wales

		2000	2001	2002	2003	2004
<b>ESTIMATES OF UNEMPLOYMENT</b>				155	237	196
Unemployment	no.			3.7	5.7	4.6
<b>LOCAL GOVERNMENT FINANCE - year ended 30 June</b>						
Total Revenue	\$'000	12,427	11,917	11,745	13,143	13,405
Total Expenses	\$'000	12,121	12,215	9,964	10,397	10,603
<b>SELECTED INCOME SUPPORT CUSTOMERS - at June</b>						
Total selected income support customers	no.			2,018	2,180	
<b>AVERAGE INDIVIDUAL ANNUAL TAXABLE INCOME - year ended 30 June</b>	\$	28,844	32,352	33,394	33,716	
<b>AVERAGE WAGE AND SALARY EARNERS - year ended 30 June</b>	\$	2,406	2,404	2,576	2,613	
<b>LAND AREA</b>	km2					2,049
<b>BUILDING APPROVALS - year ended 30 June</b>						
Private sector houses	no.	40	25	50	45	67
Total dwelling units	no.	43	27	56	46	75
<b>VALUE OF AGRICULTURAL PRODUCTION - year ended 30 June</b>						
Value of livestock products	\$m		25.0			
Total value of agriculture	\$m		128.1			
<b>INDIGENOUS POPULATION - PERCENTAGE OF TOTAL POPULATION at 30 June</b>	%		0.9			
<b>HOUSEHOLDS BY TYPE - Census 2001</b>						
Total households	no.		2,936			
<b>FAMILIES BY TYPE - Census 2001</b>						
Total families	no.		2,101			



## 4.7 Berrigan Shire Council Local Government Area

Berrigan Shire Council is a rural and tourist area covering 2049 sq kilometres, the community numbers approximately 8,200 spread amongst the towns of Barooga, Berrigan, Finley and Tocumwal. Berrigan Shire is situated in the Southern Riverina and is predominantly irrigated rural land in nature, with its main pursuits being devoted to the agriculture industry. It is bound to the south by the Murray River.



### Demographic factors

**Distribution** – Each town has shown different population trends over the past five years. Significant growth has occurred in Barooga on the back of increased economic activity in nearby Cobram. Tocumwal has shown strong growth due to significant numbers retiring along the Murray River. While the northern towns of Finley and Berrigan have shown a slight decline particularly in Finley where several government industries have down sized or regionalised to larger towns. Population on rural properties has declined as the size of farm holdings increase due to increased mechanisation and in order to improve economic viability.

**Composition** – The dependency ratio for people over 55 is increasing over time, being 23.7% in 1993, 27.5% in 1997, 30.8% in year 2001 and 32% in the year 2002, which is the last official ABS figure. This is due to the combined factors of, larger numbers of retired people relocating in the Murray River towns, and young people leaving the shire to pursue job and educational opportunities. This means that the working aged population is supporting relatively more retired aged people. Only 2.3% of the Berrigan Shire population are designated as being born in a non-English speaking country and only 1.6% state that they do not speak English at home (2.1% are not stated). This is much lower than the State average of 19%.

**Employment** – The major industries for employment in the Shire are Agriculture, Tourism, Retail and to a lesser extent Engineering, while people involved in manufacturing usually travel outside the Shire to work. Three thousand four hundred and one people are employed in the Shire with significant amount working across the Victorian border. The concentration of Managers/Administrators is high due to the large number of owner/operator businesses.

## Geographic factors

**Landform and Topography** – The Shire is situated in the central southern part of the Riverina region and is predominantly irrigated rural land in nature, with its main pursuits being devoted to agriculture across its flat to slightly undulating terrain. It is bound to the south by the Murray River.

**Vegetation** – Of the 18 bioregions in NSW, the SWS and the Riverina are among the four bioregions that have less than 1% in conservation reserves (Thackway and Creswell 1995). Most of the remnant native vegetation occurs on private property, usually on the less fertile soils, on roadsides and travelling stock reserves, or as ribbons along creeks. Many remnants on private property are less than 10 ha in size and are suffering incremental decline (edge effect). Fragmentation of habitat is reducing the likelihood of survival for those species that require continuous vegetation and is also causing ecosystems to become unbalanced and dysfunctional. The dominant managers of native vegetation in the catchment are private landholders, local government and the Rural Lands Protection Boards. The only two major National Parks in the catchment are confined to the east, and the major State Forests are confined to the riverine environment. Without adequate off-reserve conservation, the representativeness of the catchment's biodiversity will be compromised. Broad Vegetation Types (BVT) and Mitchell Landscapes are used as a basis for dividing the catchment's vegetation systems.

**Climate** – The Berrigan Shire region is blessed with magnificent climate with a summer daytime temperature average of 31.8°C and autumn average of 23.7°C. Average rainfall is 395mm (17") This climate provides for the ideal agricultural growth which provides a quality of life that enables enjoyment of the abundant sporting and recreation facilities.

## Land use

Historically, the economy of Berrigan Shire has been reliant on agriculture, with holdings covering around 200,000 hectares. Of this, irrigation is available to 75 per cent of land within the Shire, with 86 per cent of properties utilising irrigation for production. Agriculture in Berrigan Shire is diverse with livestock, pasture crops, grains, oilseeds, vegetables, fruit, wine grapes and dairy products among a range of agricultural pursuits.

In more recent years, off-farm industries have grown markedly, with a significant base of small and medium sized manufacturing and processing firms being established in the Shire. These changes have been mirrored by growth in service related industries, particularly tourism based businesses along the Murray River.

## Transport

**Road** – Road accessibility is via the Newell Highway which is the main inland highway in Australia linking Melbourne and Brisbane. The Riverina Highway traverses the Shire from east/west. These highways provide road links to Sydney, Adelaide, Canberra and Melbourne, together with major regional centres of Shepparton and Albury. Council also has an extensive sealed regional and local road network. A large number of transport operators are based throughout the Shire

**Rail** – Freight Australia has the Tocumwal Railhead as a major container freight terminal. This activity has exceeded all expectations and currently up to three container trains operate on a daily basis. The railhead is now also well supported by adjacent bulk grain handling facilities which provide direct to port access for bulk and containerised grain.

**Air** – Tocumwal aerodrome provides air links to all major centres, catering for planes up to 5700kg with Civil Aviation Safety Classification Code 2. During World War II, Tocumwal was the largest allied forces airbase in the Southern Hemisphere. Some of the infrastructure is still present at the site. Private operators currently use the aerodrome. "Sportavia" conducts gliding and ultra-lite activities from Tocumwal.

**Bus** – V/Line also operate a passenger bus service to each town in the Shire, providing links to Melbourne and Sydney.

## Public Facilities

Hospitals – There are 3 hospitals in the Berrigan Shire. One in Berrigan, Finley and Tocumwal.

Schools – All towns in the Shire, except for Barooga, have pre-schools and State Public Primary Schools, with Catholic Primary Schools in Berrigan, Tocumwal and Finley. Barooga has access to Cobram Catholic and Cobram Pre-School. Childcare services are presently available throughout the Shire under the Family Day Care model. Centre based child care facilities, incorporating pre school services have recently been developed at Berrigan. Finley is the region's location for High School education as well as the Finley campus of the Riverina Institute of TAFE. Finley High School caters for approximately 620 students with a full range of subjects being offered. Finley High School is attaining academic results which are the envy of most other public and private schools.

Utilities – Berrigan Shire is the water supply authority to the towns within the Shire. Barooga, Berrigan and Finley have dual supplies of treated (filtered) and untreated (unfiltered) water supplies. Tocumwal has a single treated supply of water. The treated water supply meets the World Health Organisation standards and is inexpensive water by Australian standards. The Council holds adequate water supplies for commercial and industrial uses.

Like water supply, Berrigan Shire is the sewerage service provider. Each town has reticulated sewerage with adequate capacity for expansion.

The region is well serviced by electricity. The supplier of electricity is Country Energy which has depots and service centres across the region.

Natural Gas is available in the townships of Barooga, Finley and Tocumwal. Reticulation of Berrigan is currently under consideration. Origin Energy is the supply provider.

## 4.8 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 Berrigan 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.

The LEMC felt however that there were other elements that are considered vulnerable by their nature or location and have developed the following matrix to describe their vulnerability.

Yes = Community is susceptible to vulnerability

No = Community is not susceptible to vulnerability

<b>Vulnerable Communities</b>					
<b>Community</b>	<b>Elements of vulnerability</b>				<b>Remarks</b>
	Proximity to hazard	Age or condition of community	Ability to communicate with community	Access to community in need during emergency	
Hospitals, aged care facilities, schools and pre-schools	No	Yes	No	No	The New South Wales Police Force maintain a register of elderly citizens.
3 Aged Homes (Berrigan, Finley and Tocumwal)	No	Yes	No	No	No Remarks
Campers along the river during holiday session	Yes	No	Yes	Yes	Up to 3,000 people may need to be evacuated

# 5 Risk Analysis & Evaluation

## 5.1 Natural Hazards



<b>IDENTIFY</b>	Hazard Category		Natural	Hazard ID	NH01	Hazard	<b>BUSHFIRE- URBAN INTERFACE – ISOLATED COMMUNITIES.</b>													
	Risk Statement		There is a risk that a significant bushfire impacting on Time Out holiday village and camping sites along the river could result in considerable loss of life and property and the need for evacuation of up to 3000 people during peak holiday periods.																	
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>								
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences						
	Catastrophic													Almost Certain	High	High	Extreme	Extreme	Extreme	
	Major								X	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	<b>RFS</b>							<b>RISK LEVEL</b>		<b>HIGH</b>									
<b>TREAT</b>	Functional Areas & Support Agencies		NSWFB, CFA, ASNSW, NSWPF, SES, VRA, DOCS, NSW Forests, NSW Health, Council, Country Energy, RTA																	
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan, NSW State Bushfire Plan, NSW Health Plan, Community Education Program, response agreement with Vic, RFS ban forest fires and camp fires during danger periods, "standards of fire coverage" program ensure appropriate level of resources																	
<b>REVIEW</b>	Recommendations		State forestry graze and rangers patrol. Emergency services standard operating procedures. Charter of VRA, Tocumwal hospital Disaster plan, RTA traffic diversion plans, Murray River Crossings District river crossing sub-plan, fire protection zones, asset protection zones																	
	Date Approved by LEMC							Review Date												

<b>IDENTIFY</b>	Hazard Category		Natural		Hazard ID	NH02	Hazard	<b>BUSHFIRE- URBAN INTERFACE – MAJOR TOWNS</b>											
	Risk Statement		There is a risk that a significant bushfire impacting on the urban interface in Barooga & Tocumwal residential areas could result in loss of life and loss of property and the need for evacuation of residential and vulnerable communities and disruption to major transport routes.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
	Catastrophic											Almost Certain		High	High	Extreme	Extreme	Extreme	
	Major	X							X	X		X		Likely	Moderate	High	High	Extreme	Extreme
	Moderate		X	X		X		X			X			Possible	Low	Moderate	High	Extreme	Extreme
	Minor				X		X							Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant													Rare	Low	Low	Moderate	High	High
	Lead Combat Agency	<b>RFS</b>					<b>RISK LEVEL</b>			<b>EXTREME</b>									
<b>TREAT</b>	Functional Areas & Support Agencies		NSWFB, CFA, ASNSW, NSWPF, SES, VRA, DOCS, NSW Forests, NSW Health, Council, Country Energy, RTA																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan. NSW State Bushfire Plan, Local Bushfire Plan																
<b>REVIEW</b>			Community Education Program, “standard of fire coverage’ program to ensure adequate resources, Hazard Reduction Program, Training Strategies, Training Program, Tocumwal Hospital Disaster Plan, mutual aid agreement with local SES, standard operating procedures for emergency services, Council traffic control planning. Charter of VRA																
			RTA traffic diversion plans, District Murray river crossing sub-plan, fire protection zones, asset protection zones																
Date Approved by LEMC							Review Date												

<b>IDENTIFY</b>	Hazard Category		Natural		Hazard ID	NH03		Hazard	<b>GRASSFIRE - RURAL</b>										
	Risk Statement		There is a risk that a significant grassfire could result in destruction or damage to economic assets, being lands used for primary production and associated livestock, tourist destinations, including minor disruption to major transport routes																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
	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	<b>RFS</b>										<b>RISK LEVEL</b>	<b>HIGH</b>							
<b>TREAT</b>	Functional Areas & Support Agencies		NSWFB, CFA, ASNSW, NSWPF, SES, VRA, DOCS, NSW Forests, NSW Health, Council, Country Energy, RTA																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan, NSW State Bushfire Plan, Local Bush Fire Management Plan (Fire Breaks). Community Education Program, Training Strategy, Training Program, Promotion of danger fire periods, Machinery bans strict permits on burning, Harvest warnings on bad weather days. Standard operating procedures for emergency services, Charter of VRA, Tocumwal hospital Disaster plan, Council traffic control and resources																
<b>REVIEW</b>	Recommendations		RTA traffic diversion plans, District Murray river crossing sub-plan, fire protection zones, asset protection zones																
	Date Approved by LEMC									Review Date									



<b>IDENTIFY</b>	Hazard Category		Natural		Hazard ID	NH04	Hazard	<b>FLOOD</b>											
	Risk Statement		There is a risk that in a 1 in 100 year flood event the township of Tocumwal will be impacted upon to the extent that significant evacuation of the town will be required. Up to 2000 people may need to be evacuated and relocated for up to 4 four weeks.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
														Insignificant	Minor	Moderate	Major	Catastrophic	
	Catastrophic			X	X				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												Unlikely	Low	Low	Moderate	High	Extreme
Insignificant												Rare		Low	Low	Moderate	High	High	
Lead Combat Agency		<b>SES</b>				<b>RISK LEVEL</b>			<b>EXTREME</b>										
<b>TREAT</b>	Functional Areas & Support Agencies		NSWFB, RFS, ASNSW, NSWPF, VRA, DOCS, NSW Health, Council, Country Energy, RTA, Telstra, Origin Energy, Pacific National(Vic)																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan, NSW State Flood Plan, Local Flood Plan, NSW Rescue Policy																
<b>REVIEW</b>	Recommendations		Flood study currently being conducted - LEMC to consider recommendations for implementation, Council town planning procedures takes into consideration flood pattern Council general maintenance program to build and maintain levy banks with formal inspection process.  Community education, standard operating procedures for emergency services and MOUs at local level to provide resources, Local SES operational readiness, BOM waring systems, Charter of VRA, Tocumwal hospital disaster plan, alternative EOC at Council if Tocumwal flooded.  LEMC to develop a community recovery plan & community evacuation plan.																
	Date Approved by LEMC					Review Date													

<b>IDENTIFY</b>	Hazard Category		Natural		Hazard ID	NH05	Hazard	<b>SEVERE STORM – WIND</b>											
	Risk Statement		There is a risk that if a severe wind event occurs within the Berrigan LGA there may be major building damage and some casualties and environmental damage to crops and trees, etc.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
														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	X					X	X	X		Possible	Low	Moderate	High	Extreme	Extreme
	Minor						X	X						Unlikely	Low	Low	Moderate	High	Extreme
Insignificant												Rare		Low	Low	Moderate	High	High	
Lead Combat Agency		<b>SES</b>				<b>RISK LEVEL</b>			<b>HIGH</b>										
<b>TREAT</b>	Functional Areas & Support Agencies		NSWFB, RFS, ASNSW, NSWPF, VRA, DOCS, NSW Health, Council, Country Energy, RTA, Telstra																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan, NSW State Storm Plan																
<b>REVIEW</b>			Council building and inspection and certification protocols as per the building code of Australia, Local SES unit operational readiness and standard operating procedures, Access to SES resources from around the state if required, Community education program, VRA charter, Tocumwal hospital disaster plan																
	Date Approved by LEMC							Review Date											

<b>IDENTIFY</b>	Hazard Category		Natural		Hazard ID	NH06	Hazard	<b>SEVERE STORM – RAIN</b>											
	Risk Statement		There is a risk that if a severe rain storm event occurs within the Berrigan LGA there may be some building damage, and localised flooding to urban areas, with temporary road closures and possible evacuations.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
														Insignificant	Minor	Moderate	Major	Catastrophic	
	Catastrophic													Almost Certain	High	High	Extreme	Extreme	Extreme
	Major													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	X					X	X					Rare		Low	Low	Moderate	High	High	
Lead Combat Agency		<b>SES</b>									<b>RISK LEVEL</b>		<b>HIGH</b>						
<b>TREAT</b>	Functional Areas & Support Agencies		NSWFB, RFS, ASNSW, NSWPF, VRA, DOCS, NSW Health, Council, Country Energy, RTA, Telstra																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan, NSW State Storm Plan, NSW State Flood Plan, Local Flood Plan																
<b>REVIEW</b>			Community Education Program, Town planning takes into consideration flood patterns, local SES operational readiness and standard operating procedures. Standard operating procedures for emergency services, Council staff on call 24 hours a day. VRA charter, Tocumwal Hospital Disaster Plan																
			Storm water management plan-30 year strategic plan for storm water.																
Date Approved by LEMC								Review Date											

<b>IDENTIFY</b>	Hazard Category		Natural		Hazard ID	NH07	Hazard	<b>SEVERE STORM – HAIL</b>											
	Risk Statement		There is a risk that if a severe hail storm event occurs within the Berrigan LGA there may be some building and crop damage, with minor casualties and possible evacuations.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
														Insignificant	Minor	Moderate	Major	Catastrophic	
	Catastrophic													Almost Certain	High	High	Extreme	Extreme	Extreme
	Major								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					X	X						Rare		Low	Low	Moderate	High	High	
Lead Combat Agency		<b>SES</b>				<b>RISK LEVEL</b>		<b>HIGH</b>											
<b>TREAT</b>	Functional Areas & Support Agencies		NSWFB, RFS, ASNSW, NSWPF, VRA, DOCS, NSW Health, Council, Country Energy, RTA, Telstra																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan, NSW State Flood Plan, Local Flood Plan, NSW State Storm Plan  Community Education Program, Local SES operational readiness and standard operating procedures, standard operating procedures for emergency services and MOUs exist at local level for sharing of resources, BOM severe thunderstorm directives, VRA charter, Tocumwal Hospital Disaster Plan, Council staff on call 24 hours a day, SES has formulated a list of all tradesman in area who can assist with recovery,  DPI to assess crop damage and rural assistance																
<b>REVIEW</b>	Date Approved by LEMC						Review Date												

## 5.2 Technological Hazards



<b>IDENTIFY</b>	Hazard Category		Technological		Hazard ID	TH01	Hazard	<b>BUILDING COLLAPSE</b>											
	Risk Statement		There is a risk that if a multi story single building collapsed within the Berrigan LGA it may result in multiple causalities, gas leak and fire.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
	Catastrophic											Almost Certain		High	High	Extreme	Extreme	Extreme	
	Major	X							X	X				Likely	Moderate	High	High	Extreme	Extreme
	Moderate										X	X		Possible	Low	Moderate	High	Extreme	Extreme
	Minor				X									Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant		X	X		X	X	X						Rare	Low	Low	Moderate	High	High
Lead Combat Agency		<b>EOCON</b>									<b>RISK LEVEL</b>			<b>MODERATE</b>					
<b>TREAT</b>	Functional Areas & Support Agencies		NSWPF, SES, ASNSW, NSWFB, Country Energy, Council, RFS, VRA, Origin Gas, DOCS, NSW Health																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan, NSW State Major Structural Collapse Plan																
<b>REVIEW</b>			Council building and inspection and certification protocols as per building code of Australia, Berrigan Council planning procedures-, RSL to have limit on number of people allowed on top story as per liquor licence, Standard operating procedures for emergency services, VRA certified as first rescue squad in district, Tocumwal hospital disaster plan, building collapse subplan under state plan																
	Date Approved by LEMC							Review Date											

<b>IDENTIFY</b>	Hazard Category		Technological		Hazard ID	TH02	Hazard	<b>DAM FAILURE</b>											
	Risk Statement		There is a risk that a major dam failure of the Hume Dam would require an evacuation of up to 4000 people from the townships of Barooga & Tocumwal including rural areas, resulting in the loss of all infrastructure.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
	Catastrophic			X	X	X	X		X	X	X	X		Almost Certain	High	High	Extreme	Extreme	Extreme
	Major	X	X					X						Likely	Moderate	High	High	Extreme	Extreme
	Moderate													Possible	Low	Moderate	High	Extreme	Extreme
	Minor													Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant													Rare	Low	Low	Moderate	High	High
Lead Combat Agency	<b>EOCON</b>					<b>RISK LEVEL</b>			<b>HIGH</b>										
<b>TREAT</b>	Functional Areas & Support Agencies		SES NSWFB, RFS, ASNSW, NSWPF, VRA, DOCS, NSW Health, Council, Country Energy, RTA, Telstra, Origin Energy, Pacific National(Vic) (MDBC) (DSC)																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan, NSW State Flood Plan, Local Flood Plan																
<b>REVIEW</b>			Emergency services standard operating procedures, Charter of VRA, Tocumwal Hospital Disaster Plan Dam Safety Emergency Plan by State Water																
	Date Approved by LEMC							Review Date											

<b>IDENTIFY</b>	Hazard Category		Technological		Hazard ID	TH03	Hazard	<b>HAZARDOUS MATERIALS</b>											
	Risk Statement		There is a risk that a hazardous material incident (Road Transport) within in the Berrigan LGA may cause significant impact to the population, property and environment resulting in evacuation, with the possibility of casualties.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
														Insignificant	Minor	Moderate	Major	Catastrophic	
	Catastrophic													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		X									Unlikely	Low	Low	Moderate	High	Extreme
Insignificant					X	X						Rare		Low	Low	Moderate	High	High	
Lead Combat Agency		<b>NSWFB</b>									<b>RISK LEVEL</b>		<b>HIGH</b>						
<b>TREAT</b>	Functional Areas & Support Agencies		NSWPF, RFS, ASNSW, SES, VRA, Council, DOCS, RTA, NSW Health, DEC (EPA)																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan, NSW State HAZMAT Plan, Hazmat Sub Plan NSWFB standard operating procedures, Enforcement of dangerous goods Act, Standard operating procedures for emergency services, VRA charter, Tocumwal hospital disaster plan Designated transport routes for hazardous materials, National standard for transportation of hazardous materials																
<b>REVIEW</b>	Date Approved by LEMC							Review Date											



<b>IDENTIFY</b>	Hazard Category		Technological		Hazard ID	TH04	Hazard	<b>INFRASTRUCTURE FAILURE -POWER</b>											
	Risk Statement		There is a risk that a Total power failure for more than 6 hours within the Berrigan LGA may impact on the wider community and in particular the medically vulnerable.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
	Catastrophic		X									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							Rare	Low	Low	Moderate	High	High
Lead Combat Agency		<b>EOCON</b>				<b>RISK LEVEL</b>			<b>EXTREME</b>										
<b>TREAT</b>	Functional Areas & Support Agencies		NSWPF, Country Energy, SES, RFS, VRA, NSWFB, Council, DOCS, NSW Health, ASNSW, Telstra																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan																
<b>REVIEW</b>	Recommendations		Berrigan Council back up generator, Berrigan and Tocumwal water tanks hold enough water for 24 hours- Finley to be finished this year, Tocumwal hospital has back up power for 4 hours- after that refer to emergency procedures guide, standard operating procedures for emergency services, county energy emergency response plan																
	Date Approved by LEMC							Review Date											

<b>IDENTIFY</b>	Hazard Category		Technological	Hazard ID	TH05	Hazard	<b>INFRASTRUCTURE FAILURE –WATER (1)</b>												
	Risk Statement		There is a risk that a water contamination event will impact on the water supply ability for Council to all towns.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
	Catastrophic					X						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						Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant			X	X		X							Rare	Low	Low	Moderate	High	High
Lead Combat Agency		<b>EOCON</b>									<b>RISK LEVEL</b>			<b>EXTREME</b>					
<b>TREAT</b>	Functional Areas & Support Agencies		Council, Murray, NSW Health, DEC, DOCS, NSW DPI, CentreLink																
	Control / Mitigation Strategies Identified		<p>NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan</p> <p>Berrigan &amp; Tocumwal have water supply for 24 hours, Finley to be completed this year. Water restrictions to apply, Council plans to truck in water, Council staff on call 24 hours a day, Use of emergency generator, Tocumwal Hospital Disaster Plan, Standard operating procedures for emergency services.</p>																
<b>REVIEW</b>	Recommendations		<p>Recommendation- Council to formulate water infrastructure emergency services plan</p> <p>Council have one back up generator however con not connect to sewage pump station power supply easily. Recommendation: to investigate costs to alter connection of generator to critical infrastructure. Apply for government grant.</p>																
	Date Approved by LEMC									Review Date									

<b>IDENTIFY</b>	Hazard Category		Technological	Hazard ID	TH06	Hazard	<b>INFRASTRUCTURE FAILURE –WATER (2)</b>												
	Risk Statement		There is a risk that in the event of a failure/contamination event in the Mulwala Canal the townships of Finley & Berrigan and the rural surrounds will be impacted.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
	Catastrophic					X			X			Almost Certain		High	High	Extreme	Extreme	Extreme	
	Major		X				X			X	X	X		Likely	Moderate	High	High	Extreme	Extreme
	Moderate							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		<b>EOCON</b>				<b>RISK LEVEL</b>			<b>EXTREME</b>										
<b>TREAT</b>	Functional Areas & Support Agencies		Council, Murray, NSW Health, DEC, DOCS, NSW DPI, CenterLink																
	Control / Mitigation Strategies Identified		<p>NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan Blue Green Algae Sub-Plan</p> <p>Berrigan &amp; Tocumwal have water supply for 24 hours, Finley to be completed this year. Water restrictions to apply, Council plans to truck in water, Council staff on call 24 hours a day, use of emergency generator, standard operating procedures for emergency services. Tocumwal hospital to take all patients in district as would not affect hospital there.</p>																
<b>REVIEW</b>	Recommendations		<p>Recommendation – Council to formulate water infrastructure emergency services plan</p> <p>Council have one back up generator however con not connect to sewage pump station power supply easily. Recommendation: to investigate costs to alter connection of generator to critical infrastructure. Apply for government grant.</p>																
	Date Approved by LEMC					Review Date													

<b>IDENTIFY</b>	Hazard Category		Technological	Hazard ID	TH07	Hazard	<b>INFRASTRUCTURE FAILURE – SEWERAGE &gt;24 HOURS</b>												
	Risk Statement		There is a risk that a major power failure lasting more than 24 hours would put pressure on the pump stations and the reticulation system that could result in untreated discharge.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
														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		X				Unlikely	Low	Low	Moderate	High	Extreme
Insignificant						X						Rare		Low	Low	Moderate	High	High	
Lead Combat Agency		<b>EOCON</b>									<b>RISK LEVEL</b>		<b>HIGH</b>						
<b>TREAT</b>	Functional Areas & Support Agencies		Council, Murray, NSW Health, DEC, DOCS, NSW DPI, CenterLink																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan																
<b>REVIEW</b>			Berrigan Council Sewage infrastructure emergency plan in place (done for Y2K). Council have one back up generator however can not connect to sewage pump station power supply easily. Recommendation: to investigate costs to alter connection of generator to critical infrastructure. Apply for government grant.																
			Emergency services standard operating procedures, Tocumwal hospital disaster plan, Use available resources to maintain public health.																
Date Approved by LEMC											Review Date								

<b>IDENTIFY</b>	Hazard Category		Technological	Hazard ID	TH08	Hazard	<b>INFRASTRUCTURE FAILURE – TELECOMMUNICATIONS</b>												
	Risk Statement		There is a risk that if the Telecommunications system failed for more than 24 hours there would be significant disruption to the community including the loss of the 000 emergency number.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
	Catastrophic		X									Almost Certain		High	High	Extreme	Extreme	Extreme	
	Major	X				X			X	X	X	X		Likely	Moderate	High	High	Extreme	Extreme
	Moderate													Possible	Low	Moderate	High	Extreme	Extreme
	Minor													Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant			X	X		X	X						Rare	Low	Low	Moderate	High	High
Lead Combat Agency	<b>EOCON</b>										<b>RISK LEVEL</b>	<b>EXTREME</b>							
<b>TREAT</b>	Functional Areas & Support Agencies		NSWPF, ASNSW, SES, RFS, NSWFB, Telstra, NSW Health, DOCS																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan																
<b>REVIEW</b>	Recommendations		Emergency services standard operating procedures for communications failure, Telstra standard operating procedures, VRA to provide HF communication radios and set up town communication centres, NSWFB radio contact with Wollongong. Tocumwal hospital emergency procedures guide Recommendation: to formalise emergency communication strategy.																
	Date Approved by LEMC								Review Date										

<b>IDENTIFY</b>	Hazard Category		Technological		Hazard ID	TH09	Hazard	<b>TRANSPORT ACCIDENT – ROAD</b>											
	Risk Statement		There is a risk that a serious road accident could result in multiple injuries and the potential for fatalities, with disruption to main transport route through the townships of Berrigan LGA.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
	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						Unlikely	Low	Low	Moderate	High	Extreme
	Insignificant		X	X	X		X							Rare	Low	Low	Moderate	High	High
Lead Combat Agency		<b>NSWPF</b>					<b>RISK LEVEL</b>		<b>HIGH</b>										
<b>TREAT</b>	Functional Areas & Support Agencies		NSWFB, SES, ASNSW, Council, RFS, RTA, Accredited Rescue Agency, DEC, NSW Health, DOCS																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan																
<b>REVIEW</b>			Council traffic plans, Council staff on call 24 hours a day, formal arrangements in place with RTA on RTA roads, VRA primary rescue, NSWFB secondary rescue, emergency services standard operating procedures, Police community education programs, police duty officers manual																
			RTA detour strategies, District Murray River crossing subplan																
Date Approved by LEMC							Review Date												

<b>IDENTIFY</b>	Hazard Category		Technological		Hazard ID	TH10	Hazard	<b>TRANSPORT ACCIDENT – WATERWAYS</b>											
	Risk Statement		There is a risk that an accident occurring on the waterway of the rivers in the Berrigan LGA shire could result in multiple injuries and the potential for fatalities.																
<b>ANALYSE / EVALUATE</b>	<b>CONSEQUENCE RATING MATRIX</b>											<b>RISK LEVEL MATRIX</b>							
		People	Social Impact	Evacuation	Property	Community Services	Animals	Environmental	Financial	Resources	Operational Management	Frequency Distribution	Likelihood	Consequences					
														Insignificant	Minor	Moderate	Major	Catastrophic	
	Catastrophic													Almost Certain	High	High	Extreme	Extreme	Extreme
	Major	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		X	X	X	X	X	X					Rare		Low	Low	Moderate	High	High	
Lead Combat Agency		<b>NSWPF</b>				<b>RISK LEVEL</b>		<b>MODERATE</b>											
<b>TREAT</b>	Functional Areas & Support Agencies		NSW Maritime, ASNSW, NSWFB, VRA, SES																
	Control / Mitigation Strategies Identified		NSW State Disaster Plan, District Disaster Plan, Disaster Recovery Plan (Human Resources), NSW State Health Plan, Berrigan Local Disaster Plan																
<b>REVIEW</b>			Police standard operating procedures, Police duty officers manual, Emergency services standard operating procedures, Police divers available if required.																
	Date Approved by LEMC						Review Date												

## 5.5 Summary of Assessments

EXTREME	6	HIGH	9	MODERATE	1	LOW	0
<b>RISK MATRIX</b>							
<b>Likelihood</b>	<b>Consequences</b>						
	Insignificant	Minor	Moderate	Major	Catastrophic		
Almost Certain	High	High	Extreme	Extreme	Extreme		
Likely	Moderate	High	High	Extreme	Extreme		
Possible	Low	Moderate	High	Extreme	Extreme		
Unlikely	Low	Low	Moderate	High	Extreme		
Rare	Low	Low	Moderate	High	High		



## 5.6 Hazard by Agency

### Emergency Operations Controller

HAZARD ID	HAZARD	RISK RATING	AGENCY	DATE REFERRED
TH01	Building Collapse	MODERATE	EOCON	October 2006
TH02	Dam Failure	HIGH	EOCON	October 2006
TH04	Infrastructure Failure - Power	EXTREME	EOCON	October 2006
TH05	Infrastructure Failure – Water (1)	EXTREME	EOCON	October 2006
TH06	Infrastructure Failure – Water (2)	EXTREME	EOCON	October 2006
TH07	Infrastructure Failure – Sewerage >24 Hours	HIGH	EOCON	October 2006
TH08	Infrastructure Failure - Telecommunications	EXTREME	EOCON	October 2006

### State Emergency Service

HAZARD ID	HAZARD	RISK RATING	AGENCY	DATE REFERRED
NH04	Flood	EXTREME	SES	October 2006
NH05	Severe Storm – Wind	HIGH	SES	October 2006
NH06	Severe Storm – Rain	HIGH	SES	October 2006
NH07	Severe Storm – Hail	HIGH	SES	October 2006

### Rural Fire Service

HAZARD ID	HAZARD	RISK RATING	AGENCY	DATE REFERRED
NH01	Bush Fire – Urban Interface – Isolated Communities	HIGH	RFS	October 2006
NH02	Bush Fire – Urban Interface – Major Towns	EXTREME	RFS	October 2006
NH03	Grass Fire – Rural	HIGH	RFS	October 2006

### New South Wales Police Force

HAZARD ID	HAZARD	RISK RATING	AGENCY	DATE REFERRED
TH09	Transport Accident – Road	HIGH	NSWPF	October 2006
TH10	Transport Accident – Waterways	MODERATE	NSWPF	October 2006

### New South Wales Fire Brigade

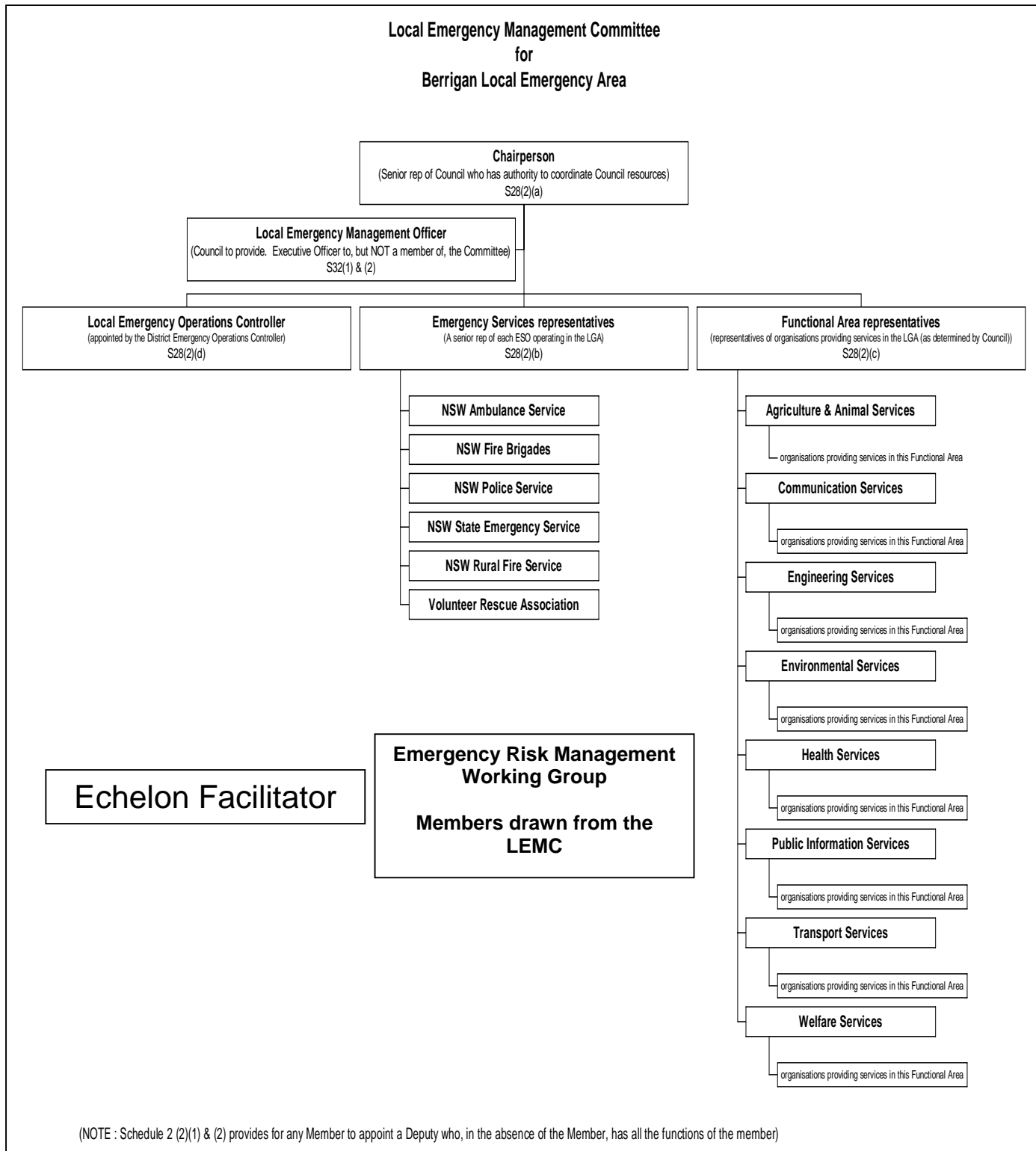
HAZARD ID	HAZARD	RISK RATING	AGENCY	DATE REFERRED
TH03	Hazardous Materials	HIGH	NSWFB	October 2006



# 6 Appendices

## Appendix 1

### Management Framework



## Appendix 2

### Supporting Plans

Name of Plan	Issue date	Agency Responsible
NSW State Disaster Plan	2006	State Government
NSW State Bush Fire Plan	2002	RFS
NSW State HAZMAT Plan	1993	NSWFB
NSW State Storm Plan	2000	SES
NSW State Flood Plan	2001	SES
NSW State Health Plan	1997	Public NSW Health
NSW Health State Major Incident Disaster Plan (AMBPLAN)	2005	NSW Health
Disaster Recovery Plan (Human Services)	1992	DOCS
State Aviation Emergency Sub Plan	2004	NSWPF
District Disaster Plan	2006	SES
District Snow Plan	2006	SES
Berrigan District Flood Plan		
Berrigan Local Disaster Plan		
Dam Safety Emergency Plan		

## Appendix 3

### Press Release/Letter Drop

# Public Meeting 7.00pm Wednesday 16<sup>th</sup> August Berrigan Shire Council Chambers

**Berrigan Shire Local Emergency Management Committee are currently in the process of developing an Emergency Risk Management Study for the Local Government Area of Berrigan.**

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.

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.

To ensure that any plans developed reflect the community you are invited to participate in a workshop aimed at reviewing existing identified hazards and providing a forum for you to have your say about what hazards impact on your community.

If you are unable to attend on the evening you will still be able to provide feedback by going to the website of the facilitators Echelon Australia ([www.echelonaustralia.com.au](http://www.echelonaustralia.com.au)) and follow the links to the Berrigan ERM project.

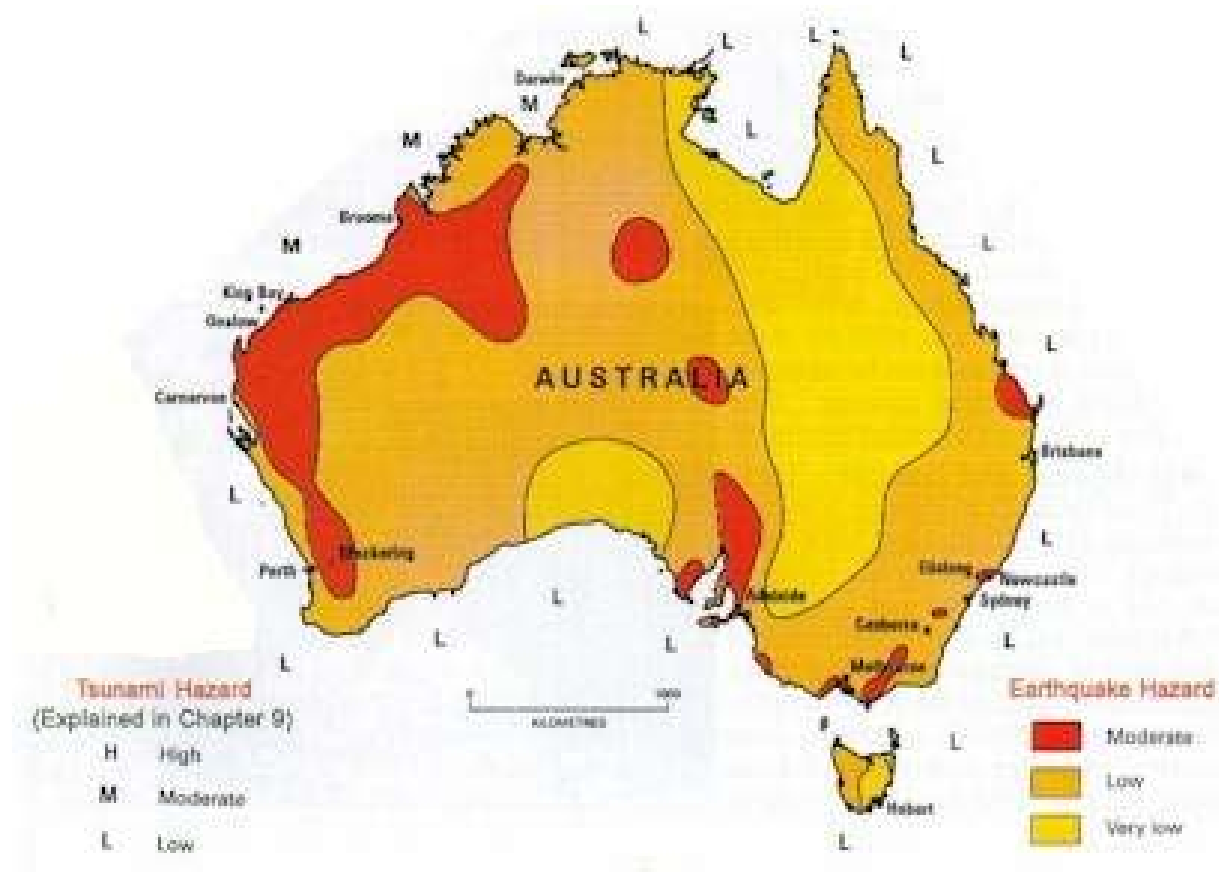
Regards,

***Bob Walker***

Bob Walker  
Project Manager  
Echelon Australia

## Appendix 4

### Tsunami and Earthquake zone within Australia



Source – Hazards, Disasters and Survival, Emergency Management Australia

## Appendix 5

### Members of the Local Emergency Management Committee and Working Group

Title	First Name	Last Name	Agency
Mr	John	Elphinstone	NSW VRA
Mr	Fred	Exton	Council
Mr	Ian	Fox	NSW RFS
Mr	Kevin	Gabriel	DEMO
Mr	Ian	Hovenden	NSW SES
Mr	Gary	Lewis	NSWPF
Mr	Bruce	Purves	ASNSW
Mr	Mervyn	Reed	NSWFB
Ms	Anne	Seamer	Tocumwal
Mr	Matthew	Tischler	NSWPF
Ms	Kelwyn	Wilson	NSW RFS

### Facilitators

Title	First Name	Last Name	Agency
Mr	Bob	Walker	Echelon Australia
Ms	Karin	Sutton	Echelon Australia

## Appendix 6

### Consequence Descriptors

<b>Area No. 1: PEOPLE – Fatalities / Injuries</b>	
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.

<b>Area No. 2: SOCIAL IMPACT – Number of people impacted</b>	
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.

<b>Area No. 3: EVACUATION</b>	
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.



<b>Area No. 4: PROPERTY – Impact / Damage</b>	
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.

<b>Area No. 5: COMMUNITY SERVICES – Loss / Damage</b>	
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.

<b>Area No. 6: ANIMALS – Fatalities / Injuries</b>	
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.

<b>Area No. 7: ENVIRONMENT – Loss / Damage</b>	
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.

<b>Area No. 8: FINANCIAL IMPACT – Cost / Damage</b>	
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.

<b>Area No. 9: RESOURCES – Availability</b>	
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.

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

## Appendix 7

### Likelihood Descriptions

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 8

### 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**

Means the State Emergency and Rescue Management Act, 1989. (As amended / SERM Act).

#### **Agency**

Means a government agency or a non-government agency.

#### **Annual Expedience 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 chance in 100 per year or 1% AEP.

#### **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 Berrigan 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

**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 and the Local Emergency Operations Controller for emergencies affecting that particular local area.

**Local Emergency Operations Controller (EOCON)**

Means a NSWPF 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 9

### Abbreviations

<b>ADF</b>	Australian Defence Force
<b>ASNSW</b>	Ambulance Service New South Wales
<b>ARTC</b>	Australian Rail Transport Corporation
<b>AUSPRED</b>	Australian Pandemic Response Emergency Document
<b>BASI</b>	Bureau Air Safety Investigation
<b>CASA</b>	Civil Aviation Safety Authority
<b>DEC</b>	Department of Environment and Conservation
<b>DEMO</b>	District Emergency Management Officer
<b>DEOCON</b>	District Emergency Operation Controller
<b>DOTARS</b>	Department of Transport and Regional Services
<b>DISPLAN</b>	Disaster Plan
<b>DOCS</b>	Department of Community Services
<b>DPI</b>	Department of Primary Industry
<b>EOC</b>	Emergency Operations Centre
<b>EPA</b>	Environmental Protection Authority
<b>FMD</b>	Foot in Mouth Disease
<b>GWAHS</b>	Greater Western Area Health Service
<b>HAZMAT</b>	Hazardous Materials
<b>LGA</b>	Local Government Area
<b>LEMC</b>	Local Emergency Management Committee
<b>LEMO</b>	Local Emergency Management Officer
<b>LEOCON</b>	Local Emergency Operations Controller
<b>NSWFB</b>	New South Wales Fire Brigade
<b>NSWPF</b>	New South Wales Police Force
<b>PPRR</b>	Planning, Preparation, Response and Recovery
<b>RFS</b>	Rural Fire Service
<b>SEMC</b>	State Emergency Management Committee
<b>SERM ACT</b>	State Emergency & Rescue Management Act, 1989 (as amended)
<b>SES</b>	State Emergency Services
<b>SOPS</b>	Standard Operating Procedures
<b>USAR</b>	Urban Search and Rescue

## Appendix 10

## Risk Statements

HAZARD	LEAD COMBAT AGENCY	RATING	RISK STATEMENT
<b>NATURAL</b>			
<b>Bushfire- Urban Interface – Isolated Communities.</b>	<b>RFS</b>	<b>HIGH</b>	There is a risk that a significant bushfire impacting on Time Out holiday village and camping sites along the river could result in considerable loss of life and property and the need for evacuation of up to 3000 people during peak holiday periods.
<b>Bushfire- Urban Interface – Major Towns</b>	<b>RFS</b>	<b>EXTREME</b>	There is a risk that a significant bushfire impacting on the urban interface in Barooga & Tocumwal residential areas could result in loss of life and loss of property and the need for evacuation of residential and vulnerable communities and disruption to major transport routes.
<b>Grass Fire - Rural</b>	<b>RFS</b>	<b>HIGH</b>	There is a risk that a significant grassfire could result in destruction or damage to economic assets, being lands used for primary production and associated livestock, tourist destinations, including minor disruption to major transport routes
<b>Flood</b>	<b>SES</b>	<b>EXTREME</b>	There is a risk that in a 1 in 100 year flood event the township of Tocumwal will be impacted upon to the extent that significant evacuation of the town will be required. Up to 2000 people may need to be evacuated and relocated for up to 4 four weeks.
<b>Severe Storm - Wind</b>	<b>SES</b>	<b>HIGH</b>	There is a risk that if a severe wind event occurs within the Berrigan LGA there may be major building damage and some casualties and environmental damage to crops and trees etc
<b>Severe Storm – Rain</b>	<b>SES</b>	<b>HIGH</b>	There is a risk that if a severe rain storm event occurs within the Berrigan LGA there may be some building damage, and localised flooding to urban areas, with temporary road closures and possible evacuations
<b>Severe Storm – Hail</b>	<b>SES</b>	<b>HIGH</b>	There is a risk that if a severe hail storm event occurs within the Berrigan LGA there may be some building and crop damage, with minor casualties and possible evacuations.



HAZARD	LEAD COMBAT AGENCY	RATING	RISK STATEMENT
<b>TECHNOLOGICAL</b>			
<b>Building Collapse</b>	<b>EOCON</b>	<b>MODERATE</b>	There is a risk that if a multi story single building collapsed within the Berrigan LGA it may result in multiple casualties, gas leak and fire.
<b>Dam Failure</b>	<b>EOCON</b>	<b>HIGH</b>	There is a risk that a major dam failure of the Hume Dam would require an evacuation of up to 4000 people from the townships of Barooga & Tocumwal including rural areas, resulting in the loss of all infrastructure.
<b>Hazardous Materials</b>	<b>NSWFB</b>	<b>HIGH</b>	There is a risk that a hazardous material incident (Road Transport) within in the Berrigan LGA may cause significant impact to the population, property and environment resulting in evacuation, with the possibility of casualties.
<b>Infrastructure Failure – Power</b>	<b>EOCON</b>	<b>EXTREME</b>	There is a risk that a Total power failure for more than 6 hours within the Berrigan LGA may impact on the wider community and in particular the medically vulnerable.
<b>Infrastructure Failure – Water (1)</b>	<b>EOCON</b>	<b>EXTREME</b>	There is a risk that a water contamination event will impact on the water supply ability for Council to all towns.
<b>Infrastructure Failure – Water (2)</b>	<b>EOCON</b>	<b>EXTREME</b>	In the event of a failure/contamination event in the Mulwala Canal the townships of Finley & Berrigan and the rural surrounds will be impacted.
<b>Infrastructure Failure – Sewerage – &gt; 24 Hours</b>	<b>EOCON</b>	<b>HIGH</b>	There is a risk that a major power failure lasting more than 24 hours would put pressure on the pump stations and the reticulation system that could result in untreated discharge
<b>Infrastructure Failure – Telecommunications</b>	<b>EOCON</b>	<b>EXTREME</b>	There is a risk that if the Telecommunications system failed for more than 24 hours there would be significant disruption to the community including the loss of the 000 emergency number.
<b>Transport Accident – Road</b>	<b>NSWPF</b>	<b>HIGH</b>	There is a risk that a serious road accident could result in multiple injuries and the potential for fatalities, with disruption to main transport route through the townships of Berrigan LGA.
<b>Transport Accident – Waterways</b>	<b>NSWPF</b>	<b>MODERATE</b>	There is a risk that an accident occurring on the waterway of the rivers in the Berrigan LGA shire could result in multiple injuries and the potential for fatalities.

## Appendix 11

### Recommendations

<b>Hazard ID</b>	<b>HAZARD</b>	<b>RATING</b>	<b>RECOMMENDATIONS</b>
NH01	Bushfire – Urban Interface – Isolated Communities	High	LEMC to send assessment to Victorian equivalent for their information and comment.
NH04	Flood	Extreme	LEMC to develop a community recovery & evacuation plan
TH04	Infrastructure Failure – Power	Extreme	LEMC to develop a application for Disaster Mitigation Funding Grant to cover cost of generator fittings
TH05	Infrastructure Failure- Water	Extreme	LEMC to develop a application for disaster mitigation funding grant to cover cost of generator fittings
TH08	Infrastructure Failure - Telecommunications	Extreme	LEMC to formalise Emergency communication strategy