



# Ballina Shire Council

## Emergency Risk Management Strategy



Australian Government  
Department of Transport  
and Regional Services



Adopted: 23 October 2008





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## **Introduction**

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Given the small geographical area of Ballina Shire Council (440sq.klms) and its dense population (more than 40,000), the history of natural disasters, the socio demographic trends in the communities, the Ballina Shire Council has responded to the increasing vulnerable populations and social hazards in the community through the development of the Ballina Shire Emergency Risk Management Strategy.

The Strategy identifies the level of risk across the Ballina Council area from natural, technological and biological hazards and establishes strategies which the responsible agencies, organisations and where possible, in conjunction with the community and stakeholders will implement to manage, where appropriate and reasonable to do so, the risks identified

## **Legislation and Policy**

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ERM Strategy has been developed giving consideration to and in accordance with but not limited to the following:

- ◆ ERM Guidelines; AS4360.1999 - Risk Management
- ◆ State Emergency Rescue Management Act
- ◆ State Disaster Plan
- ◆ Relevant District Plans and Policies
- ◆ Relevant Local Plans and Policies
- ◆ Local Government (General) Regulation 1999
- ◆ Rural Fires Act 1997
- ◆ NSW Fire Brigades Act
- ◆ Local Government Local Environment Plans
- ◆ Local Government Development Control Plans
- ◆ Building Code of Australia
- ◆ Local Government Social Plan
- ◆ State of Environment (SoE) Report

## **Acknowledgement and Disclaimer**

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The completion of the Ballina Emergency Risk Management Strategy was made possible with funding provided under the Local Grants Scheme. The Local Grants Scheme is intended to enhance the capability of communities to prepare for, respond to and recover from disasters and emergencies arising from any hazard.

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## **Authorisation**

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In accordance with Australian/New Zealand Standard 4360.2004 and in consultation with the Emergency Risk Management Guide, the Local Government Act 1993, State Emergency Rescue Management Act and in accordance with the Recommendations from the Council's of Australian Government - Review, this Strategy has been prepared by the Ballina Emergency Risk Management Workgroup and the study endorsed by the Ballina Local Emergency Management Committee.

The ERM Workgroup is as follows:

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Ballina Shire Council

Garry Meredith  
Ballina Shire Council

Inspector David Larkin  
NSW Police

Sonya Marks – ERM Facilitator  
Richmond Valley Council

Bob Wilcox  
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Dennis Henry  
NSW Fire Brigades

Gerry Burnage  
State Emergency Service

Emma Smith  
North Coast Area Health Service  
Ballina Hospital.

On behalf of the Ballina Local Emergency Management Committee

## Definitions

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Annual Exceedence Probability (AEP)	The chance of an event (typically a flood) of a given or larger size occurring in any one year. Usually expressed as a percentage. Eg: 1 chance in 100 per year OR 1%
Australian height datum (AHD)	A common national surface level datum (reference level) approximately corresponding to mean (average) sea level, e.g. 10 metres AHD mean 10 metres above average sea level.
Built Environment	The elements of physical construction within a community. (Source: QES Disaster Risk Management Guide).
Combat Agency	The agency identified in Displan as the agency primarily responsible for responding to a particular emergency. (Source: SERM Act)
Community	A group with a commonality of association and generally defined by location, shared experience or function.
Community Safety	A reference to providing a safer living environment in the broadest sense and is not concerned with crime prevention and law enforcement issues.
Consequence	The outcome of an event or situation expressed qualitatively or quantitatively, being a loss, injury, disadvantage or gain. (In emergency risk management – the outcome of an event or situation expressed qualitatively or quantitatively. In the emergency risk management context, consequences are generally described as the effects on persons, society, the economy and the environment.)
District Emergency Management Officer	The principal executive officer appointed to the District Emergency Management Committee and to the District Emergency Operations Controller.
Element at Risk	Things that are valued within (or by) a community and which may interact with a source of risk.

Emergency	<p>An emergency due to the actual or imminent occurrence (such as fire, flood, storm, earthquake, explosion, accident, epidemic or warlike action) which:</p> <p>endangers, or threatens to endanger, the safety of 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 significant and coordinated response. (Source: SERM Act).</p> <p>For the purposes of the definition of emergency, property in the State includes any part of the environment of the State. Accordingly, a reference in the Act to:</p> <p>Threats or danger to property includes a reference to threats or danger to the environment; and The protection of property includes a reference to the protection of the environment. (Source: SERM Act).</p>
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 sub-committee 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 a community.
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 Emergency Management Officer	The principal executive officer appointed to the Local Emergency Management Committee and to the Local Emergency Operations Controller.
Mitigation	Measures taken in advance of a disaster aimed at decreasing or eliminating its impact on society and environment.
Monitor	To check, supervise, observe critically or record the progress of an activity, action or system on a regular basis in order to identify change.

Preparation	In relation to an emergency includes arrangements or plans to deal with an emergency or the effects of an emergency. (Source: SERM Act).
Prevention	In relation to an emergency includes the identification of hazards, the assessment of threats to life and property and the taking of measures to reduce potential loss to life or property. (Source: SERM Act).
Recovery	In relation to an emergency includes the process of returning an affected community to its proper level of functioning after an emergency. (Source: SERM Act).
Residual Risk	The remaining level of risk after risk treatment measures have been taken.
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 Acceptance	An informed decision to accept the consequences and the likelihood of a particular risk.
Risk Evaluation	The process in which judgements are made on the tolerability of the risk on the basis of risk analysis and taking into account factors such as socio economic and environmental aspects. The process used to prioritise risk.
Risk Treatment Options	Measures that modify the characteristics of hazards communities or environments.
Source of Risk	Situations or conditions with potential for loss or harm to people, property or the environment.
Stakeholders	Emergency Risk Management Stakeholders are individuals or organisations that may affect, be affected by or perceive themselves to be affected by the emergency risk management process. The SEMC has grouped stakeholders into three (3) categories. They are:  Emergency Management Committee members Community Groups Community Members
Vulnerability	The degree of susceptibility and resilience of the community and environment to hazards. The degree of loss to a given element at risk or set of such elements resulting from the occurrence of a phenomenon of a given magnitude and expressed on a scale of 0 (no damage) to 10 (total loss).

# **1 Executive Summary**

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The State Emergency Management Committee (SEMC) has adopted the Emergency Risk Management Process as the basis for emergency management planning in NSW.

This Emergency Risk Management Strategy (ERMS) has been prepared by the Ballina Local Emergency Management Sub-Committee in accordance with the AS/NZ 4360.2004 and in consultation with the Emergency Risk Management Guidelines 2001 Publication (State Emergency Management Committee). The Ballina Emergency Risk Management Committee comprises representatives of Combat Agencies, Health, Police and Local Government, approved by the Ballina Local Emergency Management Committee.

Emergency Risk Management involves identifying the level of risk posed to communities, property/assets, environment and infrastructure and establishing strategies to protect these from the adverse effects of natural, technological or biological hazards. The purpose of emergency risk management is to protect the community and its values from the adverse effects of the hazards identified in the Risk Assessment. The outcome sought, is to achieve better integration of community preparedness and prevention strategies as key elements of emergency risk management, encouraging safer and more sustainable communities within the Ballina Council local government area.

The strategies established in the Emergency Risk Management Strategy address the vulnerability of assets, the safety of the community and, the protection of the land and environment, this includes animals (domestic and native) and stock.

A total of 25 Treatments (mitigation measures) have been identified and analysed and the recommendations reported on. Following analysis of the recommended treatments, 4 were rejected (based on equity, cost effectiveness and affordability, 13 are existing. The remaining 8 have been assessed for funding requirements that may be needed to assist with implementation. All treatments are linked to Risk Statements and have been prioritised – Hazards with an Extreme or High risk are to be addressed first and then Treatments implemented based on the priority allocated. Where treatments have the same Priority, further analysis and assessment has been undertaken to determine which will be implemented first.

## **2 The Project**

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### **2.1 A Vision for the Strategy**

It is the vision of the Ballina Emergency Management Committee that this Strategy will:

- Be based on comprehensive data;
- Be based on consultation with key stakeholders;
- Be based on broad community consultation;
- Be Sustainable;
- Be based on principles of Emergency Risk Management;
- Have a commitment from all Combat Agencies, Support and Functional Organisations, Council Staff and Councillors to implement;
- Be a living document which will undergo continuous review;
- Have a focus on Prevention and Preparedness to mitigate impacts as opposed to a Response focus;
- Will assist to build the resilience of the Ballina Community;
- Involve the community and stakeholders throughout the development of the ERM Strategy;

### **2.2 Implementation of ERM Strategy**

In order for the Ballina Emergency Risk Management Strategy to be successfully implemented it must be representative and supportive of the emergency management community and the community itself. This means that the emergency management community, key stakeholders and the broader community will need to:

- Feel they have had input into the Strategy;
- Be able to understand and correctly interpret the Strategy;
- Utilise the Strategy regularly in their work;
- Be able to find the information they want within or through the Strategy;
- Have a Strategy that is current and responsive to the changing community demography, culture and economy and the emergency management environment.

Implementation of the ERM Strategy is the responsibility of all Emergency Service Organisations, the Local Emergency Management Committee, Ballina Council and those private stakeholders identified within this plan in accordance with any other hazard specific Plans (eg. Bush Fire Risk Management Plan).. In the case of private property, it is the responsibility of the relevant Agencies/Organisations (Council, RFS, DPI etc.) to develop a program for communicating the ERM strategies to private land managers and ensuring that the strategies are implemented by the land managers (eg. Biosecurity measures).

All identified organisations and agencies will progressively develop additional management plans and strategies to meet their own objectives whilst maintaining consistency with this Emergency Risk Management Plan.

All identified organisations and agencies will report on implementation of the Emergency Risk Management Strategy for areas of their responsibility through a quarterly report to the Local Emergency Management Committee summarising what activities, projects are being undertaken. Emergency Risk Management is a standard Agenda item for Local Emergency Management Committee Meetings.

The success of the plan will be monitored through the Local Emergency Management Committee's quarterly reporting procedures to the District Emergency Management Committee.

### **2.3 Period of Operation**

Once approved by the Ballina Local Emergency Management Committee and District and State level Committees, this Strategy will become a "Living Document" with no expiry. The Strategy will be reviewed every 5 years or as otherwise determined by the Local Emergency Management Committee, District or State level Committees.

Risk management programs will be developed by the responsible organisations/agencies to implement the Plan and a quarterly report/audit will be submitted to the Local Emergency Management Committee and District Emergency Management Committee.

### **2.4 Why have an Emergency Risk Management Strategy**

Identification of hazards/sources of risk and how they may interact with the community, benefits the Combat Agencies and other Authorities and Organisations with an emergency management roles, in determining the most appropriate treatment to mitigate the risk, including building the resilience of the community. Further, it provides the community with important information about the hazards and how they and the other elements may be at risk from such hazards. Additionally, the Strategy links to Agency hazard specific Plans and Strategies and serves as a reference point to same.

The Strategy also provides a process through which prioritisation of mitigation strategies and projects is able to occur in order to determine funding requirements and assist in demonstrating the emergency management needs within the Ballina Local Government area.

### **2.5 Comments on Methodology**

Statistics and information on hazards/sources of risk contained in the ERM Strategy have originated from one of the following sources:

Other Plans, documents and reports with statistics specific to the Ballina Local Government area and to the Northern Rivers Emergency Management District;

Ballina Social Plan is particularly an important source given the analysis of census data and other data made available to Ballina [Ballina Community Profile]

Combat Agency Plans and Strategies, requested reports for information on the cause, characteristics and effects of hazards/sources of risk and to provide evidence for the "Likelihood" rating applied.

Emergency Management Australia, Disaster Database (online) utilised to provide supporting evidence of major events, damage and insurance costs, lives lost, people injured and property damage/destruction.

Note: Identification of hazards, elements at risk, detailed risk statements, scope of the problem and other relevant data is held in the Risk Assessment Toolbox (RAT). The Strategy has been developed utilising this data and the above sources.

## **2.6 Aim**

The aim of the Ballina Emergency Risk Management Strategy is to:

- Identify hazards/sources of risk with reasonable potential to impact the communities of Ballina Council local government area;
- Determine the likelihood of identified hazards occurring utilising historical information, input from Stakeholders and Combat Agencies, and local knowledge.
- Identify elements of the community at risk and broadly analyse how elements may be impacted. Elements include:
  - People
  - Property and Assets
  - Lifelines
  - Infrastructure
  - Local economy
  - Environment (Built, Natural and Social)
- Analyse the scope of the problem, including manageability issues such as education and awareness, traffic management, warnings etc.
- Identify the responsible Agency and/or Authority responsible for the hazard.
- Reference existing Plans and Arrangements to mitigate identified risks.
- Monitor the implementation of Treatments by Agencies and/or responsible authority.

## **2.7 Objectives**

The Ballina Emergency Risk Management Study will achieve the following objectives:

- Provide the community and stakeholders with an avenue to be involved and provide comments and historical (local) information on events where such information exists.
- Provide a means by which the Emergency Risk Management Strategy links to Plans, Arrangements and Strategies owned by the responsible Agency and/or Authorities and such are consistent with each other.
- Strengthen lines of communication between all Agencies and Organisations with a specific emergency management role and awareness of those areas of responsibility.
- Reduce the risk of damage to life, property and the environment,
- Stock/animals, infrastructure lifelines, social structures and local economy;

- Ensure that the community is well informed on the high and extreme risks generated by hazards, informed of protection measures and prepared for such events.
- Minimise the risk to the safety of emergency services personnel, functional and support agency personnel and the public by reducing the potential for any identified hazards.
- Encourage community participation in managing the risk;
- Reduce the impact of such events on the community;
- Effectively manage the varied hazards (where possible and reasonable to do so) for the protection and conservation of the natural, cultural, scenic and recreational features of the area;
- To assist Councils and communities manage development in areas where high or extreme hazards have been identified and ensure that future development have a risk assessment conducted as a fundamental planning consideration where there is the potential for increased risk to the community.

## **3 Context**

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### **3.1 Emergency Risk Management Context Statement**

The Emergency Risk Management Strategy has been developed as a result of a Risk Management Study undertaken for the Ballina Local Government Area which has an area of 480 square kilometres.

The Risk Management Study was conducted on the Shire's communities to identify and analyse hazards and sources of risk, assess the vulnerability of the communities and document, recommend and implement wherever appropriate and reasonable, treatment strategies to prevent/mitigate the likelihood and consequences of the hazards and subsequent sources of risk.

The Strategy focuses on emergencies which may require a significant and coordinated response. For the purpose of this Emergency Risk Management Strategy A Significant and Coordinated Response is defined as:

- When an EOC is required to be operational to control an emergency or to provide support to a combat agency or coordinate evacuation operations.
- When three or more liaison officers from other emergency services and for functional area services are required in a combat agency headquarters to coordinate support.
- When site control/s are established and cannot access resources through normal channels and require to access resources through an EOC.
- When a Combat Agency is required to source significant Combat Agency Resources from out of area and the community damage sustained requires the establishment of a recovery coordinating committee to manage the recovery operation.
- Where a combat agency plan makes reference to an identifiable/quantifiable trigger requiring support to be coordinated by the LEOCON or handover of control to the LEOCON.

### **3.2 ERM Management Framework**

A Workgroup comprising representatives from each of the Combat Agencies, Police, Local Government and North Coast Area Health service was established as a Sub-Committee of the Local Emergency Management Committee to undertake the ERM Study and consultation.

Sonya Marks from Richmond Valley Council was engaged as the Project Facilitator and that role involves facilitating the process, research on the various hazards utilising relevant agencies and organisations, establishment and conduct of workgroup meetings, overseeing community consultation and reporting to the appropriate levels.

### **3.3 Risk Evaluation Criteria**

The following Risk Evaluation Criteria were established as key areas of consideration, however the list is not exhaustive and not limited to that below:

*Any reasonably preventable accident/incident resulting in serious injury is unacceptable.*

*Any reasonably preventable accident/incident resulting in loss of life is unacceptable.*

*Any reasonably preventable accident/incident that will affect the health and wellbeing of a community is unacceptable.*

*Any reasonably preventable activity/incident that will have a medium to long term effect on the environment is unacceptable.*

*Any reasonably preventable activity/incident that will disrupt normal business activity for more than 5 days is unacceptable.*

*Any reasonably preventable activity/incident that will disrupt community lifelines or services for more than 12 hours is unacceptable.*

*Any reasonably preventable activity/action which could lead to the introduction and/or spread of exotic animal disease or pests to the Ballina Council area is unacceptable.*

*Any reasonably preventable activity/action which could lead to the introduction and/or spread of human disease to the Ballina Council area is unacceptable.*

*Any reasonably preventable accident/incident that will have a medium to long term effect on the local economy is unacceptable.*

*Any reasonably preventable accident/incident that will have a moderate to significant effect on education (ie. more than 2 weeks) is unacceptable.*

## **4 Communication and Consultation**

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Following commencement of the Strategy the community was advised that the LEMC working group had embarked on the project. The working group identified major stakeholders (Those identified in the DISPLAN plus NPWS, DLAWC, Rous Water, Far North Coast County Council, Dept of School Education, Rural Lands Protection Board, Workcover, EPA, Waterways, Fisheries, Health (including Hospital, Aged Care, Private Hospitals, Nursing Homes) within the community. These stakeholders were sent copies of the possible hazards and asked to identify hazards which they thought possible to occur, and these were then ranked in order for assessment with Flooding ranking the highest.

A briefing was held for Councils Senior Management Team and Councillors.

A letter was sent to all schools and educational facilities requesting copies of evacuation plans, and all agencies were requested to provide copies of all response plans.

In accordance with Councils exhibition plan, the draft plan will be referred to Council prior to being placed on public exhibition for the receipt of submissions.

Following receipt and consideration of submissions the plan will be reported to Council for adoption.

## **5 Community Description**

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### **5.1 Land Use**

Approximately 15% (7114 Hectares) of the total area of the Shire is zoned for “environmental protection” (being lands zoned for the protection of wetlands, habitat, scenic/escarpment, and ‘coastal processes’) with an additional 2.4% (1,118 Hectares) preserved within the National Parks Estate. Also, approximately 11% (5,364 Hectares) of the Shire is preserved for environmental protection for the purpose of protecting water catchments (for human consumption) and for urban buffer purposes. These lands are essentially rural in current land use. The remaining 4% of the total Shire area (1,949 hectares) is zoned for urban uses. Of this area, approximately 76% is zoned for residential, 7% industrial, 0.1% tourism and 2% business purposes, with approximately 15% being allocated for open space.

### **5.2 Infrastructure**

#### Road and other Infrastructure

Ballina Shire Council is responsible for a large network of roads:

- 229 kilometres of sealed rural road
- 117 kilometres of rural gravel surfaced road
- 217 kilometres of urban sealed road
- 63 kilometres of regional roads
- 66 bridges and major culverts
- 190 kilometres of piped stormwater
- 338 kilometres of water mains
- 304 kilometres of sewer mains
- 115 Sewerage pump stations

#### State Highways and Main Roads

- Pacific Highway

#### Rail

- No rail network exists within the Ballina Local Government Area

#### Airports

- Ballina Airport

### **5.3 Engineering Lifelines**

Within the Ballina Shire there is one Water Authority, Rous Water which manages the Rocky Creek Dam. The reticulation systems are managed by Ballina Shire Council including the provision of water for fire fighting. The reticulated system does not cover the entire Ballina Shire Local Government Area.

Within Ballina Shire there are six (6) main bridges providing major links to the major regional centre of Ballina.

#### **5.4 Communication Links**

Dissemination of information throughout the Ballina Shire Council Local Government area occurs through the following methods:

- Commercial Radio Stations (2LM, ZZZ)
- ABC north coast radio, Lismore
- Community Radio Stations (Paradise Station 101.0FM)
- Television
- Printed Media (Northern Star, Advocate, Echo(Lismore))
- Community Newsletters
- Internet
- Electronic Message signs on Pacific Highway and portable VMS trailers can also be utilised

Surveys conducted in the Northern Rivers area resulted with most people advising their primary means of obtaining emergency information was the Radio. Second most popular source was Council, followed by the Internet.

#### **5.6 Essential Services and Facilities**

Two of the most essential community services are water supply and sewerage. Rous Water is the supplier of bulk water to the Local Government Areas of Ballina (excluding Wardell), Lismore (excluding Nimbin), Byron (excluding Mullumbimby) and Richmond Valley (excluding areas to the west of Coraki), servicing an estimated population of 76,000 people. The main source of supply is Rocky Creek Dam located in the Nightcap Range north of Lismore, which has an estimated secure yield in a normal year of 11,800 ML per annum. Other Rous Water supplies include Emigrant Creek Dam and the Converys Lane, Lumley Park, and Prospect Bores in Ballina Shire, and three bores near Woodburn in Richmond Valley Shire.

Water is supplied in bulk to Ballina Shire Council, which acts as retailer to water customers, the businesses and residents of Ballina Shire. The Council also operates a number of water supply facilities itself, including Marom Creek Weir, Lindendale and Ellis Road Bores which supplies water to Wardell. The total water demand for Ballina Shire for the twelve months to 31 January 2001 was 4050 ML, which is more than one third the total secure supply of Rocky Creek Dam (BSC 2002). A number of private bores also operate, supplying water to rural landholders.

Ballina Shire Council operates four Sewage Treatment Plants (STPs). The West Ballina and Lennox Head STPs together service Ballina and Lennox Head, Alstonville STP services Alstonville and Wollongbar, and Wardell STP services Wardell. Currently sewage is treated to EPA standards and used to irrigate Ballina racecourse, Ballina Golfcourse, Saunders Oval, Kingsford Smith Park, the Chickiba Playing Fields and Wardell Recreation Grounds. The remaining treated water is released into Maguires Creek, the Richmond River and the Pacific Ocean. Further reuse options are being explored as a part of the comprehensive Urban Water Management Strategy currently being prepared and considered by Ballina Shire Council.



## 5.7 Urban Localities

Approximately 80% of Ballina Shire's population live in an urban area, and approximately 58% of the population live on the coastal fringe (within 5km of the coast or estuary). Despite the high concentration of population living near the coast, approximately 65% of Ballina Shire's coastline remains under public ownership.

The localities identified below are based on localities previously established in the Ballina Community Social Plan and the census data collection areas within those localities in order that close approximations to population and other statistics were available for the Study. Identified communities are listed below. While the Emergency Risk Assessment has been conducted on a Shire wide basis – reference is made to each of the following localities.

- Ballina Island
- East Ballina
- West Ballina
- North Ballina
- Lennox & Skennars Heads
- Wollongbar
- Alstonville
- Wardell
- Cabbage Tree Island
- Rural North
- Rural South

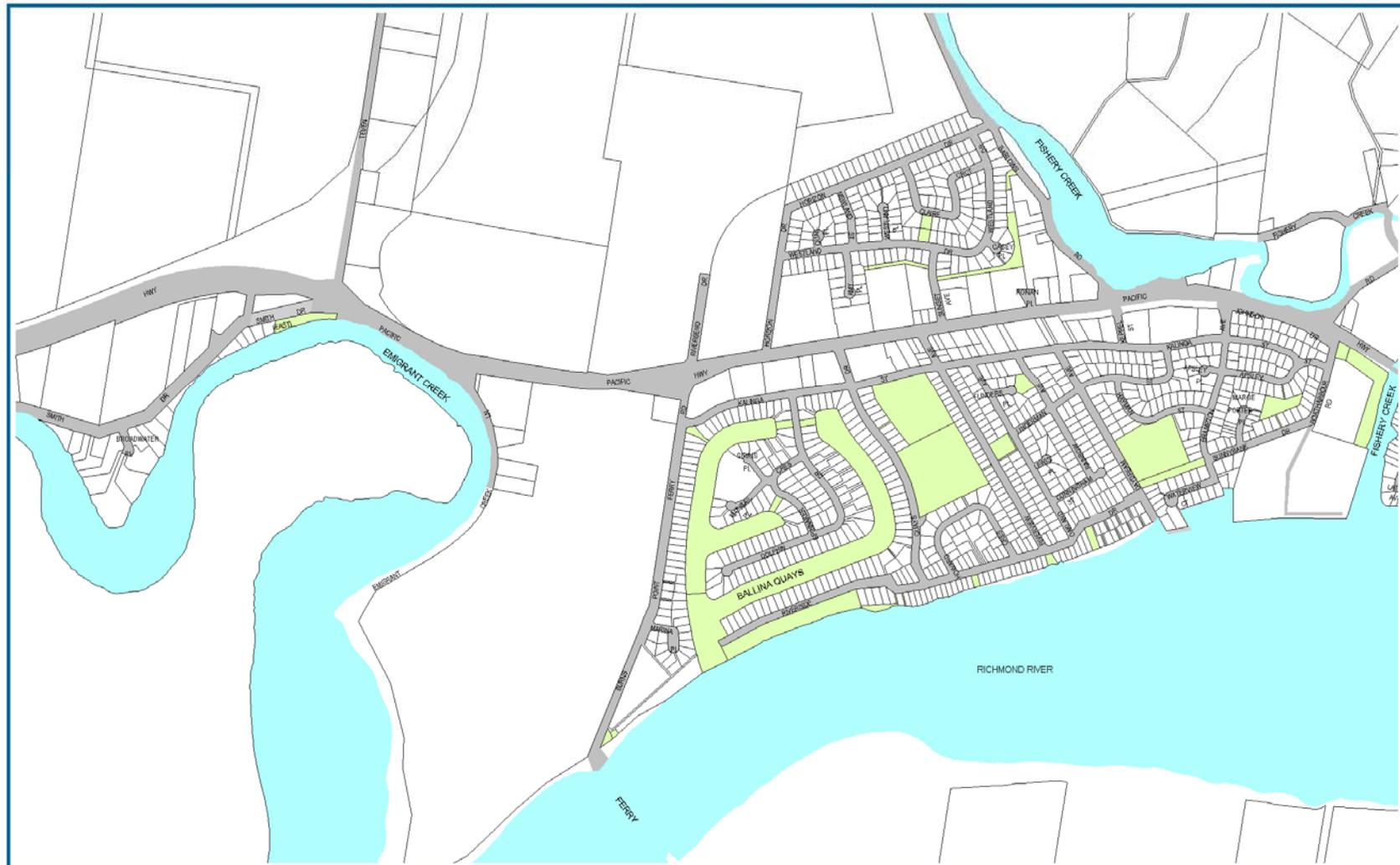


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<small>DISCLAIMER</small>		<small>© Department of Lands 2007          Although all care is taken in the preparation of this plan, Ballina Shire Council accepts no responsibility for any misprints, errors, omissions or inaccuracies.          The information contained within this plan is for pictorial representation only. Do not scale. Accurate measurements should be undertaken by survey.</small>	<small>Printed          11/05/2007</small>

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		<h2>EAST BALLINA</h2>	
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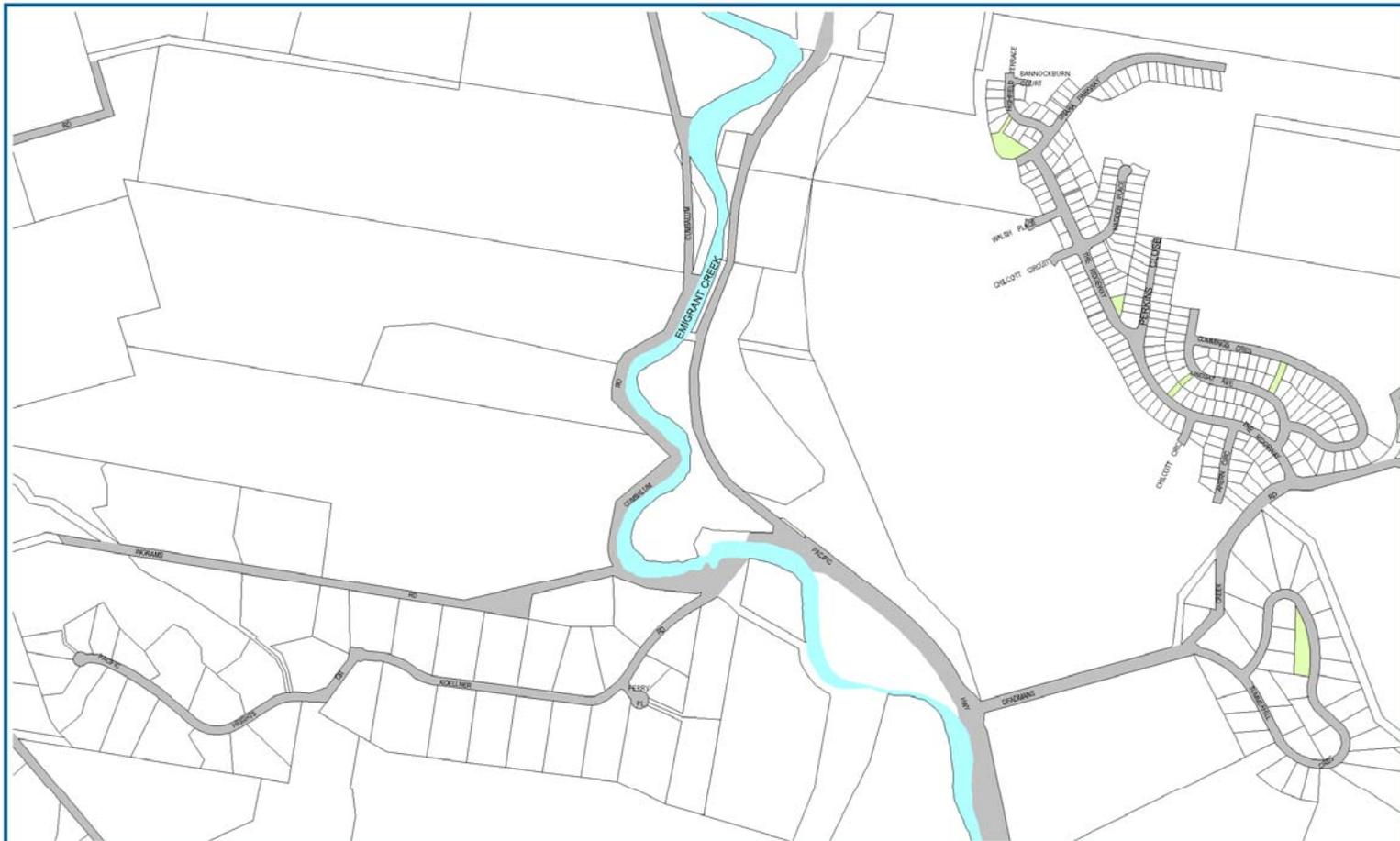
## WEST BALLINA

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		<h2>LENNOX HEAD</h2>	
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**WOLLONGBAR**

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## 6 Risk

### 6.1 Sources of Risk

The Australian Standard AS/NZA 4360 defines Risk as “a chance of something happening that will have an impact upon objectives. It is measured in terms of consequence and likelihood.”

The Ballina Shire Emergency Risk Management Workgroup considered all the possible hazards/ sources of risk (Natural, Technological and Biological Hazards (or sources of risk)) that may adversely affect a community in accordance with the checklist of possible hazards as provided in the SEMC Implementation Guide for Emergency Risk Management in NSW. The following table includes all possible Hazards/sources of risk considered.

Natural Hazards		
Avalanche	Snow Storm	East Coast Low/Cyclone
Tornado	Earthquake	Coastal erosion
Bush Fire	Grass Fire	Peat Fire
Flood	Fog	Extreme Cold
Landslip/Rock	Fall/Mudflow	Infestation – Animal
Infestation – Insect	Infestation – Plant	Severe Electrical Storm
Severe Wind Storm	Severe Rain Storm	Severe Hail Storm
Storm Surge	Tsunami	
Technological Hazards		
Aeronautical	Space Debris re-entry	Bridge Collapse
Building Collapse	Dam Failure	Hazardous Materials
Industrial Accident	Infrastructure Failure – Power	Infrastructure Failure – Water
Infrastructure Failure – Sewerage	Infrastructure Failure – Communication	Infrastructure Failure – Gas
Mine Accident	Radiological Hazards	Pollution - Chemical
Pollution – Oil/Fuel	Pollution – Hazardous Waste	Land Subsidence
Transport Accident – Air	Transport Accident – Rail	Transport Accident – Road
Transport Accident – Sea	Explosion	Fire – Residential
Fire – Industrial	Terrorism – Act of Violence	
Biological Hazards		
Pathogens	Communicable Disease – Humans	Communicable Disease – Animals
Communicable Disease – Plants		

## 6.2 Hazards / Sources of Risk Identified for Ballina Shire

The Working group considered all hazards and conducted an initial risk assessment on each included above for Ballina Shire before identifying only those which are considered to require a significant and coordinated multi agency response. These hazards are listed in the table below.

These hazards identified for the Ballina Local Government Area will be assessed at the Local level and have considerable reason or means to occur. Evidence is based on actual events or anecdotal evidence for emergency incidents which would require a significant and coordinated response

TABLE  
HAZARDS IDENTIFIED REQUIRING A SIGNIFICANT AND COORDINATED RESPONSE  
WITHIN BALLINA SHIRE

Natural	Technological	Biological
Cyclone/ East Coast Low	Bridge Collapse	Risks of Communicable Diseases for humans and animals will be assessed at the State level and local arrangements implemented to support State strategies.
Coastal Erosion	Explosion	
Bush Fire	Hazardous Materials	
Flood/Storm Surge	Infrastructure Power Failure	
Severe Storm	Infrastructure Sewerage Failure	
Tsunami	Infrastructure Water Failure	
	Transport Accident – Air	
	Transport Accident – Road	
	Transport Accident – Sea	
	Fire Industrial	

## 6.3 Hazard Description

The following 16 Tables (Table 6.3.1 to 6.3.16) describe the hazards identified for Ballina Shire Council. The tables present characteristics such as frequency, history, extent, intensity, speed of onset and duration. Information has been compiled from historical records, anecdotal evidence, studies where available and the collective experience of local agencies.

## 6.4 Hazard Description Matrix Tables

**Table 6.4.1 - East Coast Low (Cyclone)**

East Coast Low (Cyclone)	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	Tropical Cyclones develop over very warm tropical waters from pre-existing tropical weather disturbances. They have relatively long life cycles, of the order of up to about two weeks. Weather systems originating as tropical cyclones in the Coral Sea or the Gulf of Carpentaria do sometimes affect New South Wales bringing very strong winds, flooding rains, very high seas and storm surges. High seas and storm surges may cause erosion of sand dunes and in severe cases may expose landward areas to sea water inundation. [Source: State Storm Plan]	
	Frequency	Seasonal	A capability will be necessary for seasonal phasing of planning, training and exercising. Public education will need more intensity immediately prior to the season.
	Duration	1 day – a week	Dependent on the characteristic of the Low, the event may last 1 day (ie. Characteristic of a cyclone) where significant effects are experienced, or up to a week if the Low is slow to move away.
	Speed of Onset	Gradual build up	Due to their quick development and short life cycle, warnings issued for East Coast Lows will usually have less lead time than their tropical counterparts.
	Scope	Affects large areas	East Coast Lows affect large portions of the Northern Rivers Emergency Management District.
	Intensity	Moderate to severe	East Coast Lows experienced in the past vary in intensity, however the region has experienced lows equivalent to a Category 1 and 2 Cyclone. Cyclone 'Nancy' 3rd February 1990 'Violet' 7th March 1995 'Yali' 26th March 1998 – 1974 (Cyclone) off Brisbane. March 2001 – Low with wind strength characteristic of a Category 2 Cyclone. The Ballina local government area experiences the effects of East Coast Lows (low depressions). However, such Lows have, in recent years, brought gale force winds and have been the equivalent of Category 1 and Category 2 cyclones. [Source: State Storm Plan]
	Predictability	High	Monitoring undertaken by the Bureau of Meteorology (BoM) is able to determine with a high degree of accuracy day, time and location of impact.
	Forewarning	6 – 24 Hours	Due to their quick development and short life cycle, warnings issued for East Coast Lows will usually have less lead time than their tropical counterparts [Source: State Storm Plan]
	Manageability	Mitigation measures	Naturally occurring.

**Table 6.4.2 - Coastal Erosion**

Coastal Erosion	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects		Erosion of the foreshore can occur as result of short term storm demand and/or longer term shoreline recession. Often these influences occur together and are difficult to separate. During major storm events, high waves and elevated water levels lead to rapid erosion of the upper beach and dune. The short term storm demand for a single storm or a series of closely spaced storms has been assessed as typically around 200m <sup>3</sup> /m in terms of the beach/dune erosion quantity above mean sea level(MSL). The actual recession distance is dependent on the height of the dune and the status of the beach / nearshore profile with respect to recent erosion or accretion in the form of a beach berm. For a beach with a dune crest height of 6m above MSL and little or no berm, this equates to a recession distance of about 35m. The beaches of Ballina Shire are also subject to potential longer term trends of recession to varying degrees as a result of differentials in the rate of longshore transport and the predicted impacts of climate change including sea level rise. The highest rates of long term recession of between 0.3 and 0.7m/yr have been assessed for the southern and central sections of Lennox [Source: <i>Ballina Coastline Management Study and Management Plan</i> ]
	Frequency	Continuous /Seasonal	Coastal erosion is occurring all the time, however the annual storm season which occurs primarily between October and March influences the degree of coastal erosion which may occur at any given time. East Coast Lows also may significantly influence coastal erosion.
	Duration	Short term to Long Term	While impacts of coastal erosion range from short term to longer term, duration can be described as continuous.
	Speed of Onset	Variable	Coastal Erosion may occur quickly or be more gradual, largely influenced by the abovementioned factors.
	Scope	Coastal areas	Ballina Shire Council has 10 Beaches: Seven Mile, Boulder, Sharps, Angela, Shelly, Lighthouse, South Ballina, Beswicks, Robins and Patches. Coastal areas of Lennox Head would also be impacted.
	Intensity	Short to Long Term	<b>Short Term Beach Erosion</b> - Landward limit of the active beach zone due to severe storms or a series of storms in succession. <b>Long Term Shoreline Recession</b> - Long term average rate of shoreline recession (or accretion). Source: <i>Ballina Coastline Management Study and Management Plan</i> ]
	Predictability	High	Monitoring of coastal areas, dunal systems, modelling and the Ballina Coastline Management Study allows high predictability and identification of vulnerable areas.
	Forewarning	High	Through monitoring and further studies.
	Manageability	Mitigation measures	Naturally occurring. Monitoring, mitigation where possible and studies, such as the Ballina Coastline Management Study and Management Plan.

**Table 6.4.3 - Flood**

Flood	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	Flooding may be defined, in an emergency management context, as an overflowing or influx of water from its normal confines onto land not usually submerged and which as a consequence threatens human life, property or activity. In the New South Wales context there are four potential mechanisms which may cause flooding: Heavy Rainfall, Storm Surge, Tsunami and Dam Failure. Floods occur frequently in New South Wales. In terms of average annual dollar damage to infrastructure, property and production, and probably also in terms of deaths and injuries to human beings, flooding constitutes the most serious natural hazard faced by the community in this state.	
	Frequency	Frequently	There are many different types and origins of flood-producing weather systems and different parts of the state are affected by different kinds of storm activity in different seasons of the year. The state's flood-producing mechanisms are complex and there is no single clear-cut flood season. Rather, different regions have general tendencies towards flooding at particular times of the year. As a rule, the northern parts of the state have more frequent flooding during the summer and autumn months. The Ballina LGA has experienced a number of significant floods. They have been managed with support of other services. Since March 1974.
	Duration	1 – 10 Days	Generally duration is between 1 – 3 Response downtime during peak of storm, cyclone (east coast low) time immediately following main event required to carry out initial assessment
	Speed of Onset	Gradual to 1 hour (flash flooding)	Flash flooding occurs in the Teven Valley and in the 1980s residents had to be evacuated and the School and a bridge at the Teven Golf Course were both washed away.
	Scope	Could affect large numbers of the population – majority of LGA.	Flooding impacts a large portion of the Ballina Shire Local Government area and the Communities of Teven, Cabbage Tree Island and others in low lying areas are adversely impacted. External assistance may be an early requirement Depends on assessment of damage resource capability and availability and numbers of requests for assistance
	Intensity	Minor to severe	Potential for loss of life, a variety of injuries is more likely. Short term accommodation of some may be necessary for residents with severe damage to their homes. Also short term accommodation for stranded travelers. [Short term: 1-2 days]
	Predictability	Adequate through Historical records climatology and meteorological observation	Monitoring undertaken by the Bureau of Meteorology (BoM) and the State Emergency Service within a local context, is able to determine with a moderate degree of accuracy river height predictions, however this is heavily influenced by the weather conditions. Severe weather warnings issued by BoM - times can vary
	Forewarning	12 hours plus	TV crawlers Radio announcements Websites for mass notification of vulnerable areas such as caravan parks, marina's, schools hospital, Nursing homes Loud speakers from vehicles door to door Telephone tree in isolated communities SEWS Warning
	Manageability	Nil	Emphasis should be on effective preparedness and response planning mitigation measures will be an important part in cyclonic situations Education of the community

**Table 6.4.4 - Storm Surge Flooding**

Storm Surge Flooding	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	Whilst there are some similarities with mainstream flooding, the destructive forces accompanying a major storm surge event mean the attendant risk to life and limb and potential for structural damage can be expected to be substantially greater.	
	Frequency	Rare	Actual occurrence is rare but storm surge warnings issued by BoM resulting from an East Coast Low (Cyclone).
	Duration	Unknown	Difficult to determine, could be tidal.
	Speed of Onset	Gradual	Normally on the tide.
	Scope	Coastal low lying areas	Could affect large numbers of the population. Low lying areas along coast and waterways throughout Ballina to Wardell and Tiven potentially.
	Intensity	Minor to severe	Such systems may cause flooding of low-lying areas and erosion which may damage property and dunal systems. Potential for loss of life, a variety of injuries is more likely. Short term accommodation of some may be necessary for residents with severe damage inundation to their homes. Also short term accommodation for stranded travelers if roads cut.
	Predictability	Moderate	Surge height cannot be predicted with any certainty and areas likely to be affected cannot be clearly identified in advance.
	Forewarning	Approximately 2 hours	Warnings of unusually large waves and storm surges are issued for the NSW coastline when onshore waves in the surf zone are expected to reach at least 5 metres within the next 24 hours or a storm surge of 0.5 metres or greater is anticipated. [Source: State Storm Plan]
	Manageability	Nil	Emphasis should be on effective preparedness and response planning mitigation measures will be an important part in surge management Education of the community

**Table 6.4.5 - Severe Storm**

Severe Storm	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	Severe storms can be divided into two types, severe thunderstorms and land gales. By definition, Severe thunderstorms produce flash flooding or damaging hailstones (> 2cm diameter), or destructive wind gusts (90kph +) or tornadoes, or intense lightening, or a combination of any of the above. Thunderstorms develop when dense cold air overlies less dense, warm, moist air, resulting in strong upward currents and conversion of heat energy into wind and electrical potential. When the atmosphere is especially unstable and windflow can provide the most efficient input of energy to the cloud, a severe thunderstorm develops. [Source: Emergency Management Australia]	
	Frequency	Seasonal Mostly between October and March Occurs at anytime.	Every year the Northern Rivers area experiences a storm season. The Ballina local government area experiences severe thunder and wind storms. In January 2001 Casino (87 klms west of Ballina) was impacted by what has been described as a 'Supercell' which caused much damage and destruction; Dunoon "tornado" 2007, Lismore severe storm causing significant damage to buildings.
	Duration	Variable – 30 minutes plus	Severe storms can last anywhere from 15 to 30 minutes upwards to 1 or 2 hours. The more severe storms tend to be short in duration with greater impacts.
	Speed of Onset	Gradual	Storms can usually be observed building over a period of hours, however conditions in the days preceding influence their development.
	Scope	Localised	Severe storms are very localised events, not usually affecting wide areas (ie. Parts of the local government area).
	Intensity	Variable	There is potential for loss of life, however varying severity of injuries is more likely. Evacuations are unlikely, however relocation of some people may be necessary if their homes are badly damaged. Statistically, lightning poses a greater threat to individuals than most other natural hazards. On average, it causes 5 to 10 deaths and over 100 injuries in Australia each year. Deaths and injuries also occur when boats are hit by thunderstorm squalls, trees or limbs fall, buildings are damaged, or debris is hurled about in high winds and causing more physical damage (including vehicles, buildings and crops) than any other natural hazard. [Source: Emergency Management Australia].
	Predictability	High	Adequate through historical records, climatology and meteorological observations. Forecasts are able to be made days in advance determining the likelihood of thunderstorms developing.
	Forewarning	1 – 8 hours	TV crawlers Radio announcements, Internet. Severe Thunderstorm warnings are issued in a timely manner wherever possible.
	Manageability	Mitigation Measures	Emphasis should be on effective preparedness and response planning, mitigation measures will be an important part in severe storm situations and Education of the community.

**Table 6.4.6 - Bush Fire**

Bush Fire	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	The start of normal fire seasons coincides with strong south west to north west winds which often prevail during late winter and spring (Aug/Sep). The majority of serious bush fires occur from this period until the onset of summer rains, which normally start from December and continue through to Autumn. Longer fire seasons are experienced when summer rainfall is lower than normal, with the bush fire season extending through summer to early autumn. Serious bush fires have occurred late in the season under dry summer conditions. Dangerous bush fire seasons are most commonly associated with two or more of the following factors in combination: Occurrence of an extended drought period; lower than average rainfall through winter, persistent SW to NW winds in late winter/early spring, prolific fuel occurrence from strong growing seasons the previous summer and spring/summer thunderstorm activity in dry years. [Source: Ballina Bush Fire Risk Management Plan, 2001]	
	Frequency	Variable	Ballina Council is considered generally to be an area of moderate to major fire risk, with significant fires generally occurring on a five year repeat cycle. The Bush Fire Danger Period extends from 1 September ~ 30 March each year unless otherwise advertised. During the past 10 years, there have been a number of Bush Fire Emergencies declared throughout the Ballina Local Government area.
	Duration	1 – 3 weeks	Major campaigns are normally a minimum of one (1) week and upwards to 2 or 3 weeks. This timeframe is heavily influenced by a number of factors. Resource requirements, weather conditions, topography, assets at risk etc. This type of campaign fire in the Ballina LGA is unlikely.
	Speed of Onset	Variable	Speed of Onset within the context of progression of fire (rate of spread) is influenced by vegetation type and distribution, moisture levels, temperature, wind speed and direction, topography etc. Bush fire ignition is instant.
	Scope	Variable	Bush fires can be relatively localised only burning over several hundred hectares to 1,000s of hectares. Refer to Bush Fire Hazard Map which shows areas deemed as bush fire prone land.
	Intensity	Variable	Low intensity to wildfire which produces vast amounts of radiant heat, windy to gale conditions, crown fires (burning across tree tops) and fire storms.
	Predictability	Moderate	Bush fire prone land maps have been developed to indicate those areas most likely to experience bush fire and there is an annual bush fire danger period during which time, the risk of ignition increases.
	Forewarning	Variable	Dependent on bush fire behaviour, warning to a community may be reduced from several days (possible impact) to hours (almost certain impact).
	Manageability	Mitigation Measures	Emphasis should be on effective preparedness and response planning, mitigation measures will be an important part and Education of the community.

**Table 6.4.7 - Tsunami**

Tsunami	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	Tsunamis are seismic sea waves. Their name is a Japanese word meaning 'harbour waves'. They are often incorrectly called 'tidal waves' (rare events linked to tides). A tsunami is a series of travelling ocean waves of extremely long length and period. They are caused by under-sea events like earthquakes, landslides and volcanic eruptions; or by other natural events such as ocean meteorite impacts, or large landslides into bays or lakes. (The effect in a lake is known as a 'seiche'). A tsunami is like the effect of a stone landing in a pond. Waves radiate out in ever-widening circles. As a tsunami crosses a deep ocean, length from crest to crest may be 150 km but the height may be under a metre, unfelt by ships nor seen from the air, and may reach speeds up to 1,000 km/h. The waves' energy extends from deep ocean floor to surface. As tsunamis enter shallow water near coastlines, wave speeds drop as energy is compressed into much shorter distances. Wave heights increase dramatically up to 40 metres, threatening life and property, as they strike the shore with devastating force. Between multiple waves, which may vary in size, sea-level may actually drop well below normal. Great destruction may arise even though the tsunami may have been caused thousands of kilometres away.	
	Frequency	Rare	On average, a tsunami is recorded in Australia every two years, but most are too small to be seen by people. The tsunami threat to Australia varies from 'low' for most of our coastline to 'medium' along the northern half of WA. However a history of a major tsunami is a rare event.
	Duration	Variable	Focus on recovery.
	Speed of Onset	Variable	Largely dependent on the location of the seismic event (ie. Distance from Australia and direction).
	Scope	East Coast of Australia	A tsunami of major proportions, such as the 2004 Boxing Day tsunami could be expected to impact large parts of the east coast of Australia. The warning issued in 2007 had coastal communities from far north Queensland south to Sydney on alert.
	Intensity	Variable	On average, a tsunami is recorded in Australia every two years, but most are too small to be seen by people. The tsunami threat to Australia varies from 'low' for most of our coastline to 'medium' along the northern half of WA.
	Predictability	Low	While it is possible to determine whether a tsunami may occur as a result of a seismic event, it is very difficult to determine the size of the tsunami as was the case in Australia in 2007.
	Forewarning	Variable	Tsunamis generated in distant locations will generally give people enough time to move to higher ground. For locally-generated tsunamis, where you might feel the ground shake, you may only have a few minutes to move to higher ground.
	Manageability	Nil	Monitoring and ongoing research.

**Table 6.4.8 - Bridge Collapse**

Bridge Collapse	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	Catastrophic collapse would be expected to be the result of collision by vehicle/ship and a resulting fire. Effects may be loss of life/injury or community disruption due to closure of transport routes for significant period.	
	Frequency	Rare	
	Duration	Variable	Dependent on structural damage and/or total or partial loss of bridge. Depends upon extent of damage and availability of alternate routes.
	Speed of Onset	Gradual to Spontaneous	Potential for a bridge collapse may be identified during another event (eg. Flood) and as such could be deemed gradual, however spontaneous collapse is the greater risk.
	Scope	Site specific	
	Intensity	Variable	
	Predictability	High	With the exception of a road accident occurring on the structure, it is possible to predict which bridges are at risk of collapse caused by flooding, bush fire or reduced structural integrity.
	Forewarning	Variable	Dependent on the type of event impacting the Bridge. There may be no warning of such an incident.
	Manageability	High	Through ongoing monitoring and maintenance programmes as well as a bridge replacement programme. During and immediately following an event (eg. Flood, bush fire) inspections carried out on Bridges located within the impact zone can be assessed for structural integrity to determine if any risk of collapse exists.

**Table 6.4.9 - Hazardous Materials**

Hazardous Materials	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects		Hazardous materials are defined as ‘anything that, when produced, stored, moved, used or otherwise dealt with without adequate safeguards to prevent it from escaping, may cause injury or death or damage to life, property or the environment (Fire Brigades Act 1989). Causes can range from road transport incidents through to industrial and even residential incidents. Each sort of incident has its own unique characteristics and has to be dealt with accordingly. The effects depend on the substance and the scale of the incident, whether it be a minor spill in a backyard to a major spill involving heavy transport on a highway with contamination to nearby waterways.
	Frequency	Variable	An average of 1 hazardous materials incident / month (usually road transport). Most incidents had already occurred and all had the potential to become a larger incident.
	Duration	Variable	This is largely dependent on the type of Hazardous Material involved and could be of relatively short duration (ie. several hours) to a more protracted event (ie. Greater than 5 hours), sometime extending over days.
	Speed of Onset	Variable	Dependent on the type of substance involved.
	Scope	Variable	Standard Operating Procedures will dictate any exclusion zones and any need for temporary relocation or evacuation. The number of people etc., potentially affected may only be determined when an event occurs.
	Intensity	Variable	Dependent on the type, volume and amount of substance involved. Whether it occurs in open space or heavily populated areas.
	Predictability	Low	While Regulations and other monitoring programmes are in place to reduce this type of event occurring, it is impossible to predict when or where a hazardous material emergency will occur. Certainly with the Pacific Highway traversing the regional centre of Ballina and the heavy vehicle transport which occurs, it still cannot be determined “where” an event may occur or when, this also applies to industrial areas.
	Forewarning	Variable	Hazmat incidents can be classified as ‘actual’ or ‘impending’ incidents. An actual incident is one that has occurred (i.e. a fuel tanker roll over) which has no forewarning. An impending incident is one that has the ability to escalate to a larger incident (i.e. a fractured container of material with a slow leak that could ruptured and cause a large spill). A constant monitoring of these types of situations will give some forewarning.
	Manageability	High	Focus should be on Response and Recovery, however Regulatory bodies need to ensure that policing of compliance by businesses and transport industry is occurring and identify any gaps to improve same to reduce risk to the greater community.

**Table 6.4.10 - Infrastructure Power Failure**

Infrastructure Power Failure	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	The cause of a major power failure may result for a variety of reasons. Lightning strike, cyclone (east coast low), severe storms, sabotage, infrastructure inadequacies, accident etc. A major power failure might occur as a result of an event outside of the Ballina Shire area but will impact parts of or the entire population of the Ballina Shire local government area and in some instances, a large portion of the Northern River area. A prolonged power failure could result in loss of perishable stock for businesses, impact tourism, certainly the residents, especially those with medical conditions reliant on power. A major fail can have dire implications for water and sewerage services.	
	Frequency	Rare	In terms of a prolonged major power outage, this is rare, however power failure occurs on a regular basis.
	Duration	Variable	Dependent on the cause of the failure, this type of event may last only an hour up to several days. Such was the case in the 2001 Severe Hail storm in Casino where the power was lost for a minimum of 18 hours and up to 72 hours.
	Speed of Onset	Instant	A power failure occurs instantly. Power one second, none the next.
	Scope	Variable	Dependent on where the fail occurs will depend on which areas are impacted or if the entire Ballina LGA is affected.
	Intensity	Low	Such an event does not impact with the intensity of other sources of risk such as a storm, explosion etc. The intensity is felt following the fail and this will vary.
	Predictability	Moderate	While it cannot be determined exactly when a power failure might occur, events such as severe storms, east coast lows etc., enable assumptions to be made that it is quite possible a power failure will occur.
	Forewarning	Nil	No warning.
	Manageability	High	Regular monitoring and maintenance of infrastructure, highly trained and qualified personnel to deal with any issues/concerns.

**Table 6.4.11 - Infrastructure Water Failure**

Infrastructure Water Failure	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	Water failure can occur as a result of many and varied reasons. A severe storm resulting a prolonged power failure can have a domino effect, resulting in a water failure. Contamination of the water supply could result in the infrastructure being shut down, deliberate act of sabotage or the infrastructure itself could fail. Such an event could impact parts of or the entire urban population (ie. Those with reticulated water supply). Critical services and facilities such as hospitals and other care facilities are at risk as too is tourism and the commercial sector which relies heavily on a potable water source for the business.	
	Frequency	Rare	A major water failure has been assessed as rare. While it has occurred historically, the majority of events have been minor.
	Duration	Variable	Dependent on the cause of the fail. Hours to days.
	Speed of Onset	Variable	Dependent on the source of risk (ie. Severe storm, deliberate sabotage, algae bloom etc).
	Scope	Variable	It may be that only a portion of the Ballina LGA would be impacted. Certainly those in rural areas where there is no reticulated water supply would be free of any impacts.
	Intensity	High	The impact could potentially be experienced across the entire Ballina Shire LGA.
	Predictability	Variable	Through While it cannot be determined exactly when a water failure might occur, events such as severe storms, east coast lows etc., enable assumptions to be made that it is quite possible a power failure will occur and subsequently impact to water supply.
	Forewarning	Variable	Dependent on what is the cause. Events such as an algae bloom would enable the ability to forewarn of any potential 'shut down' of the water supply if the bloom threatened the source.
	Manageability	High	Regular monitoring and maintenance of infrastructure, testing of water supply by suitably trained and qualified personnel to deal with any issues/concerns. Ongoing improvement to infrastructure.

**Table 6.4.12 - Sewerage Failure**

Sewerage Failure	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	Sewerage failure can occur as a result of many and varied reasons. A severe storm resulting a prolonged power failure can have a domino effect, resulting in a sewerage treatment plant (STP) failure. Deliberate act of sabotage or the infrastructure itself could fail. Such an event could impact parts of or the entire urban population. Critical services and facilities such as hospitals and other care facilities are at risk as too is tourism and the commercial sector if a major fail should occur.	
	Frequency	Rare	A major sewer failure has been assessed as rare. While it has occurred historically, the majority of events have been minor.
	Duration	Variable	Dependent on the cause of the fail. Hours to days.
	Speed of Onset	Variable	Dependent on the source of risk (ie Severe storm, deliberate sabotage, equipment failure).
	Scope	Variable	It may be that only a portion of the Ballina LGA would be impacted. Certainly those in rural areas where there is no reticulated sewerage system would be free from any impacts.
	Intensity	High	The impact and disruption could potentially be experienced across the entire Ballina Shire LGA.
	Predictability	Variable	Though while it cannot be determined exactly when a sewage failure might occur, events such as severe storms, east coast lows etc, enable assumption sot be made that it is quite possible a power failure will occur and subsequently impact the sewage system.
	Forewarning	Variable	Dependent on what is the cause.
	Manageability	High	Regular monitoring and maintenance of infrastructure, testing of treatment process by suitably trained and qualified personnel to deal with any issues/concerns. Ongoing improvement to infrastructure.

**Table 6.4.13 - Transport Accident - Road**

Transport Accident - Road	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	Usually caused by driver fatigue, speed, road conditions, other drivers actions. Typically 1 or more semi trailers or b doubles involved on highway location. Effects will depend of number and types of vehicles involved, cargo being transported, size of the incident area and location (Main highway, local roads). Transport accidents such as those experienced at Kempsey and Cowper where Passenger Coach buses were involved would be significant and protracted.	
	Frequency	About 1/ month.	
	Duration	Hours or days	Clean up of site by emergency services and salvage crews could take from several hours to days. Many incidents involving heavy transport usually become hazardous materials incidents due to the types of cargo carried.
	Speed of Onset	Instant	No comment.
	Scope	Variable	Depend on impact, number of vehicles and loads carried. Closing a highway or evacuating a residential area due to hazmat will have a big impact.
	Intensity	Variable	Closing a highway or evacuating a residential area due to hazmat will have a big impact.
	Predictability	Nil	It is impossible to predict such an event, however large volumes of heavy transport through area combined with speed and road conditions almost guarantee regular incidents. Certain times of the year such as Christmas, Easter holidays are higher risk periods.
	Forewarning	Nil	No comment.
	Manageability	Moderate	Focus on driver education, media campaigns, and Police operations. Highway upgrades occurring are assisting to reduce the likelihood of a major road transport accident, however significantly more work is needed.

**Table 6.4.14 - Transport Accident - Air**

Transport Accident - Air	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	Mechanical failure, weather conditions, pilot error. Characteristics will vary. Effects will depend on size of aircraft, persons carried and location of accident.	
	Frequency	Rare	No major incidents but a few minor (1 / year)
	Duration	Variable	Depends on size of aircraft and impact
	Speed of Onset	Fast	Usually fast unless pilots are able to give warning of fault
	Scope	Variable	This may be site specific (runway) or spread over considerable area. Emergency services have standard operating procedures and the Ballina Airport has an emergency response plan.
	Intensity	Variable	Depends on size of aircraft and impact. Quantity of fuel and passengers carried.
	Predictability	Nil	This type of event cannot be predicted.
	Forewarning	Low	Maybe forewarning of mechanical failure prior to landing
	Manageability	High	Pre incident plans by emergency services, Emergency response plan for airport, Emergency Exercises to ensure personnel are suitably trained, equipment is adequate and to identify any other issues that need attention/resolution.

**Table 6.4.15 - Explosion**

Explosion	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	Usually brought about by an explosive mixture of fuel and air being ignited. Characteristics will depending on what was the fuel type and quantity. Effects will depend on the intensity of the explosion and the proximity to other buildings etc	
	Frequency	Rare	About 1 / year. Have only been minor incidents with small quantities of fuel
	Duration	Variable	Explosion is usually instantaneous but resulting damage and debris will require possibly many hours to render safe.
	Speed of Onset	Rapid	No comment.
	Scope	Variable	The area impacted is influenced by the type of substance involved and amount. SOPs for exclusion zones depending on incident type and identified dangers.
	Intensity	Variable	Depends of fuel amount and size.
	Predictability	Nil	Unpredictable
	Forewarning	Nil to Low	Usually no forewarning, however an explosion may result from another primary event and in this instance, there may be forewarning.
	Manageability	High	Pre incidents plans for identified risk (Gas bulk storage, fuel stations, silos, etc)

**Table 6.4.16 - Industrial Fire**

Industrial Fire	FACTOR	ANALYSIS	PLANNING IMPLICATIONS
	Cause, Characteristics and Effects	Industrial fires occur in warehouses, businesses and manufacturing plants usually located in an area specifically set aside for industry. Causes can be from poor maintenance, industrial accident or human error. Only common characteristic is that buildings are usually large in size and in close proximity to each other. Effects will be dependant on the fuel load within the building and if the fire can be contained to the building of origin.	
	Frequency	Avg. 1pa	About 1 / year. (Depends on financial viability of business versus insurance payout).
	Duration	Variable	Depends on size of fire, fuel, access etc. From less than 1 hour to more than 5 hours.
	Speed of Onset	Variable	Depends on type and quantity of fuel load in building
	Scope	Variable	SOPs will dictate any exclusion zones depending on building contents.
	Intensity	Variable	Depends on type and quantity of fuel load in building
	Predictability	Nil to Low	Unpredictable. Pre incident planning helps identify high risk buildings.
	Forewarning	Nil	Usually no forewarning
	Manageability	High	Pre incident plans to identify risks. Focus on protecting nearby properties as a priority.

## 6.5 Elements at Risk

The workgroup considered, for each of the hazards identified, the elements at risk, being:

People  
Lifelines and Infrastructure  
Environment

Property and Assets  
Animals and Stock  
Socioeconomic

The results are summarised in the following table 6.4.1:

Element at Risk	PEOPLE						PROPERTY & ASSETS			LIFELINES and INFRASTRUCTURE					ANIMALS STOCK &					ENVIRONMENT				SOCIECONOMIC					
	Life	Health	Psychological	Evacuation (incl. Medivac)	Displaced	Isolated	Damage	Destruction	Looting	Road Networks	Utilities	Emergency Services	Essential Services	Key Facilities	Injury	Life	Isolation	Evacuation	Health	Long Term damage	Med. Term Damage	Short Term Damage	Destruction	Loss of job	Business closure	Business Recovery	Tourism	Social networks	Financial hardship
<i>Elements are most likely to be impacted in the following ways by the hazards listed.</i>																													
<b>Hazard</b>																													
<i>Cyclone (low)</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X	X		X	X	X	X
<i>Flood /Storm Surge</i>	X	X		X	X	X	X	X	X		X		X			X	X	X			X			X		X	X	X	X
<i>Severe Storm</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X							X	X	X		X	X	X	X
<i>Coastal Erosion</i>							X	X												X			X				X		
<i>Bush Fire</i>	X	X	X	X	X	X	X	X		X	X			X	X	X	X	X	X	X	X	X		X		X	X		X
<i>Bridge Collapse</i>	X	X	X		X	X		X				X		X								X							
<i>Trans. Accident Air</i>	X	X	X	X	X		X	X		X	X	X	X	X							X								
<i>Trans. Accident Road</i>	X	X	X	X	X					X	X																		
<i>Power Failure</i>	X	X		X		X			X		X	X	X	X												X			
<i>Sewerage Failure</i>		X		X	X		X			X	X			X				X	X		X					X	X		
<i>Water Failure</i>	X	X								X	X	X	X					X								X	X		X
<i>Explosion</i>	X	X	X	X	X		X	X		X	X	X	X	X	X	X		X			X	X		X	X	X			X
<i>Industrial Fire</i>	X	X	X	X	X		X	X		X	X		X									X		X	X	X			X
<i>Hazardous Materials</i>	X	X		X	X		X			X	X	X	X	X	X	X		X	X		X								
<i>Tsunami</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X

## 7 Risk Analysis and Assessment

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The ERM Working Group undertook the following process, utilising the electronic Risk Assessment Toolbox database:

- ❖ Hazard Identification
- ❖ Hazard description
- ❖ Identification of Elements at Risk
- ❖ Determination of likelihood of hazard occurring
- ❖ Determination of Loss and Damage Criteria
- ❖ Consideration of Risk Treatment options
- ❖ Assessment of vulnerability of the elements at risk

The complete Risk Assessment from the toolbox is included in Appendix A.

### 7.1 Likelihood

Part of the Risk Assessment is to determine the Likelihood of an event/source of risk to occur. The Likelihood + Consequence = Risk Level. The following definitions have been extracted from the *NSW Emergency Risk Management Guide*.

Likelihood	
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 - 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 or 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 occur or be exceeded once every 500 years or more. Can approach the theoretical upper limits of severity.

## 7.2 Loss and Damage Criteria

The following list indicates the common types of potential losses and damage. These were key considerations in assessing risk to the Community and relating the criteria to the Elements (ie. Within the context of that element). People, property, infrastructure/lifelines, natural environment, animals and social links and economy.

### **Safety**

Threats of death or injury – people, animals and stock

### **Home/Shelter**

Threats to safe, appropriate accommodation – people, animals, stock

### **Health/Well-being**

Threats to short to long-term being, in terms of physical health and psychological and emotional well-being - people

### **Food**

Threats to an adequate and uncontaminated supply of food – people, animals and stock

### **Contaminated Water**

Threats to adequate and uncontaminated supply of water – people, animals, natural environment, marine life.

### **Sewage and Waste Disposal**

Threats to a continued safe disposal of waste and an avoidance of environmental health risks – people, animals and stock, natural environment.

### **Social Links**

Threats to networks and links which sustained daily community life, which provide a sense of order and meaning and which allow access to support and services.

### **Information**

Threats to sources or outlets of information about existing or emergency management services.

### **Access**

Threats to transport systems and utilities as well as physical infrastructure, such as roads and bridges. Isolation issues.

### **Income/Economic Opportunity**

Threats to the capacity to earn a livelihood through the loss of employment, loss of customers or the loss of assets.

*[Source: Assessing Resilience and Vulnerability in the context of emergencies: Guidelines – Department of Human Services]*

## 7.3 Risk Treatment Options

Ballina Shire Council, emergency services and other identified stakeholders, recognise that risks assessed as Extreme or High need to be reviewed as a priority and treatments to prevent or mitigate that risk determined.

The following Table ~ Standard Treatment Options details the Treatments which are recommended as a minimum for Hazards/Sources of risk with the corresponding Risk Levels. This is not an exhaustive list and will be influenced by the specific Regulations and Agency/Organisational Policy:

**Table 7.3.1 - Risk Treatment Options**

Risk Level	Minimum Treatment Recommended
Extreme	Normal DISPLAN and Recovery arrangements will apply Community Education/Awareness campaigns where appropriate Warning system/mechanism where reasonable and appropriate Road Closures and Evacuation Plan/s Recovery Management Plan/s Rehabilitation plans Conduct Annual Exercise (multi-agency) Review of existing Plans and Arrangements.
High	Normal DISPLAN and Recovery arrangements will apply Community Education/Awareness campaigns where appropriate Warning mechanisms where appropriate Road Closures and Evacuation Plan/s where appropriate Conduct Annual Exercise (multi-agency) Tabletop Review of existing Plans and Arrangements.
Moderate	Normal DISPLAN and Recovery arrangements will apply Community Education/Awareness Campaigns where appropriate. Review of existing Plans and Arrangements.
Low	Normal DISPLAN and Recovery arrangements will apply Review of existing Plans and Arrangements.

The above listed Treatment Options are highly dependent on the circumstances (ie. hazard, what and how the elements are at risk), one or more options may or may not be implemented or additional options where appropriate to do so.

A Hazard Checklist and subsequent initial risk assessment is included on all urban and rural communities within the Ballina Shire Council area, as identified in the Ballina Social Plan. The Emergency Risk Management Study considered and included the following, utilising the Risk Assessment Toolbox (database)

Identified Hazards and relevant historical information to show cause, characteristics and effects; likelihood of a hazard/source of risk impacting the community;

#### Elements at Risk

- People
- Property/Assets
- Lifelines
- Infrastructure
- Natural Environment
- Social Environment
- Animals/Stock

## 7.4 Summary of Risk Levels Determined for Hazards

The following Table summarises the Risk Levels which have been determined through an assessment process of looking at what might occur, what elements will be impacted to determine a consequence rating which in turn, provides the Risk Level.

Hazard	Likelihood	Consequence	Risk Level	Priority	Element Priority	
Flood (includes storm surge)	Likely	Moderate	Moderate to High	2	People	1
					Property	1
					Lifelines	1
					Economy	2
					Environ	4
					Animals	5
Severe Storm	Almost Certain	Major	Extreme	1	People	1
					Property	1
					Lifelines	1
					Economy	2
					Environ	3
					Animals	4
Bush Fire	Possible	Minor	Moderate	3	People	2
					Property	2
					Lifelines	2
					Economy	3
					Environ	4
					Animals	5
East Coast Low (Cyclone)	Possible	Moderate	High	2	People	1
					Property	1
					Lifelines	1
					Economy	2
					Environ	2
					Animals	5
Tsunami	Unlikely	Major	High	2	People	1
					Property	1
					Lifelines	1
					Economy	2
					Environ	2
					Animals	4
Coastal Erosion	Almost Certain	Major	Extreme	1	People	1
					Property	1
					Lifelines	1
					Economy	1
					Environ	2
					Animals	4
Transport Accident Air	Unlikely	Major	High	2	People	1
					Property	3
					Lifelines	3
					Economy	1
					Environ	2
					Animals	4

<b>Hazard</b>	<b>Likelihood</b>	<b>Consequence</b>	<b>Risk Level</b>	<b>Priority</b>	<b>Element Priority</b>	
Transport Accident Road	Likely	Major	Extreme	1	People Property Lifelines Economy Environ Animals	1 3 2 3 2 4
Hazardous Materials	Possible	Moderate	High	2	People Property Lifelines Economy Environ Animals	1 2 2 3 1 4
Explosion	Rare	Moderate	Moderate	3	People Property Lifelines Economy Environ Animals	1 2 1 2 1 4
Industrial Fire	Possible	Moderate	High	2	People Property Lifelines Economy Environ Animals	1 2 1 2 1 4
Infrastructure Power Failure	Unlikely	Moderate	Moderate	3	People Property Lifelines Economy Environ Animals	2 3 1 1 2 4
Infrastructure Sewerage Failure	Likely	Moderate	High	2	People Property Lifelines Economy Environ Animals	1 3 1 2 1 4
Infrastructure Water Failure	Rare	Moderate	Moderate	3	People Property Lifelines Economy Environ Animals	2 3 1 1 4 4
Bridge Collapse	Unlikely	Moderate	Moderate	3	People Property Lifelines Economy Environ Animals	1 4 3 4 2 4

Where Priorities are the same for either the Hazard/Source of risk, the decision of order to Treat/Mitigate the Risk will be based on the Priority placed on the Element at risk.

EXAMPLE: Water Failure and Bridge Collapse both have the same Risk Level and Priority, however People are determined as the single most important element at risk and therefore, treatment or mitigation of the risk of Bridge Collapse would be addressed before Water Failure.

Individual Risk Statements have not been prioritised but instead the Risk Statements assessed and an overall priority for the Element determined.

## **7.5 Summary of Risk Assessment Data**

A review of the initial Risk Assessment conducted for the Ballina Local Government Area follows with recommendations for review of Risk Levels where it is appropriate to do so. This review will be concluded following exhibition of the Final Draft of the Emergency Risk Management document and the Risk Assessment and through consultation with key stakeholders identified at the commencement of the Emergency Risk Management Project.

The risk to people across the Ballina Local Government area has initially been identified as 'High' in the majority of the assessments conducted. This is due to the criteria with which the assessment has been conducted on as per the Emergency Risk Management Guidelines, where a 'Major' consequence level has been required to be selected when 'loss of life' is a real possibility, a fact which is highlighted by past events in the Ballina LGA or other localities. For example, in the January 2008 Floods, five (5) lives were lost in various parts of NSW and Queensland and when this is placed against the criteria in the ERM Guidelines, a High or Extreme risk level is returned. However, in real terms, this risk level can in fact be misleading, given the education and awareness campaigns and programmes conducted by the various emergency services and organisations, enabling the community to make informed decisions in the face of adversity and reducing their vulnerability.

A revision of Flood, Bush Fire, Severe Storm, East Coast Low and Storm Surge is recommended to establish a Risk Level that is reflective of the communities experience, knowledge and resilience to these types of event. Further, when consideration is given to the existing Plans and Arrangements in place for these types of hazards/sources of risk, the final risk level is able to be reviewed to a Moderate to Low risk in most communities within the Ballina LGA. Communities that are more vulnerable due to their location and topography are Teven and Tintenbar Valleys, Uralba and Cabbage Tree Island. Individuals who are more vulnerable are tourists or new residents to the area that may not have experienced any or all of the hazards/sources of risk which have been assessed.

In terms of displacement and/or evacuation, there are existing plans and arrangements in place at all levels of Government which address these aspects of an emergency/disaster. However, it has been identified that available resources required to assist the community in times when evacuation is required may be stretched to capacity, certainly in an event such as flooding as this type of event extends beyond a single local government area, as was the case in the January 2008 Floods and moderate to major floods in preceding times. While emergency services and support organisations may be running at capacity and resources are stretched in a large emergency, communication through the local media assists greatly, providing the community with up-to-date information on the situation and contact details of where to seek assistance and the location of centres to go to for help.

Coastal Erosion poses more risk to property, infrastructure and the natural environment, certainly in the Lennox Head community. Studies have been conducted and community consultation undertaken. The risk to people/lives has initially been assessed as 'High' but following a review and through further consultation, this risk level could be reviewed to a

Moderate to Low risk as the community is very aware of the coastal erosion issue, certainly residents and businesses that will become directly affected during the next 20 years as per the findings within the Ballina Council Erosion Plan.

Another element considered at risk are Animals. In the majority of the Hazards/Sources of Risk assessed, animals (domestic and livestock) have a Moderate to Low risk. There are existing Plans and Arrangements in place through the Department of Primary Industries to address the welfare needs of animals, including those which may be evacuated with owners.

The hazards/sources of risk which have been more difficult to assess and therefore can pose a greater risk to the community are technological or 'man made'. Air and Road Transport Accidents, Hazardous Materials and explosions occur with little or no warning and as a result, the risk to human life is higher. However, given that these types of events occur only 'now and again', with the exception of hazardous material incidents, the real risk to the community could be revised to Moderate to Low. Industry standards and other control and monitoring measures are in place to minimise the risk of an emergency/disaster resulting from these technological sources of risk.

Power, Water and Sewer (Infrastructure Failure) has resulted in Low risk to the communities of the Ballina Local Government area. Existing Plans and Arrangements are designed to minimise the impacts to the community when these events occur. The risk of the Ballina LGA water supply being interrupted for a prolonged period of time is Low. However a significant power outage and subsequent fail of the sewerage treatment system has attained a Moderate to High risk level as both are susceptible to the impacts of severe storms primarily and other risks. The risk of a major and prolonged fail, independent of any other event can be considered low.

### **Emerging Trends**

As each assessment was conducted a trend of manageability issues began to emerge, which applies to the majority of the hazards/sources of risk assessed. These are:

- Education and Awareness – ability to educate the community and raise awareness.
- Human resources to assist the community.
- Animal Welfare
- Importance of Business Continuity.
- Communication/dissemination of emergency information.
- Emergency Accommodation.
- Overloading or placing strain on local medical services.
- Biosecurity
- Social networks
- Economic Recovery

### **Conclusion**

The Risk Assessment has highlighted several areas where attention to Treatments/Mitigation measures is required, however these are of a relatively minor nature as the majority of hazards/sources assessed already have plans and arrangements in place to address the PPRR needs of the Community – ie Preparation, Planning, Response and Recovery.

## 7.6 Summary of Risk Assessment, Proposed Treatment and Priority

NOTE: The treatments proposed do not introduce any new risks.

Hazard/ Source of Risk	Element at Risk	Summary Statement	Proposed Treatment	Priority
<b>FLOOD</b> Storm Surge, East Coast Low / Cyclone  <b>RISK LEVEL</b> High - Extreme	<b>A. People</b>	The risk assessment study revealed that People are most at risk of becoming isolated or requiring medium to longer term emergency accommodation. The Ballina Island CBD and immediate surrounds are at greatest risk to inundation of flood waters due to the area being low lying. There is a risk of injury or loss of life. Emotional and psychological impacts are also considered a risk.	1. Preparation, ongoing monitoring and reviewing of a Community Services Directory. 2. Community Education/Awareness campaigns where appropriate 3. Audible Warning system/mechanism where reasonable and appropriate 4. Road Closures(Pacific & Bruxner Hwy) and Evacuation Plan/s 5. Conduct Annual Exercise (multi-agency) as part of the Review process and to test the Emergency Operations Centre operational effectiveness and personnel 6. Review of existing Plans and Arrangements and monitor to ensure currency.	<b>2 – A,D</b>
	<b>B. Property Economic</b>	Property is considered to be at a High risk of inundation of flood waters which would damage and/or destroy dependent on the intensity of the event. The CBD is at risk and businesses would be expected to suffer stock losses and other internal damage. Temporary Business closures or permanent would potentially have an impact on employment and certainly it could be expected that there would be a significant downturn in Tourism. Certainly individuals and families in lower income brackets would be at risk of being under insured or not having insurance.		<b>1 – A, C</b>
	<b>C. Animals/Stock</b>	A low risk exists for domestic animals and stock requiring relocation or evacuation with owners.		<b>1 – A, D</b>
	<b>D. Lifelines and Infrastructure (Built environment)</b>	The assessment revealed that a High risk is present for Lifelines (ie. Public transport, social networks, meeting places such as parks, community halls, medical and health services) and Infrastructure. The road network being damaged and/or destroyed, water and sewerage services. Energy and communications are also at risk, but are considered low.		<b>1 – A</b>
	<b>E. Environment (natural)</b>	A low risk exists for the natural environment with the most vulnerable being the coast (erosion ) however this is not in every occurrence.		<b>2 - A</b>
				<b>1 – A,B,C,D,E</b>

Hazard/ Source of Risk	Element at Risk	Summary Statement	Proposed Treatment	Priority
<b>BUSH FIRE</b> And <b>PEAT FIRE</b> <b>RISK LEVEL</b> <b>Moderate</b>	<b>A. People</b>	The assessment of Bushfire and Peat Fires, in consultation with the NSW Rural Fire Service revealed that people are most at risk of becoming affected by smoke (increased risk for those with respiratory conditions). Peat Fires produce pungent smoke which may affect large numbers of people residing within 5klm of the fire. Most affected are again, those with respiratory conditions. Evacuation may be necessary or temporary relocation for areas most affected, however it cannot be determined until an event is occurring which communities are at risk. Detailed information on Bush Fire risk can be found in the <i>Bush Fire Risk Management Plan</i>	7. Community Education program on how to prepare and protect themselves - refer to NSWFB and NSW RFS 8. Hazard reduction program approvals - refer to RFS 9. Communications plan with schools (Community Liaison person - agency based). (6) Review of Existing Plans and arrangements and monitor to ensure currency.	<b>1 – A, B, C</b>  <b>2 – A,B,C,D,E</b>  <b>1 – A</b>
	<b>B. Property Economic</b>	The risk of property (dwellings, vehicles) being damaged or destroyed from impacts of ember attack or fire front.	10. Ongoing training to ensure Combatant personnel are suitably trained and equipped to respond to this type of event.	<b>2 – A,B,C,D,E</b>
	<b>C. Animals/Stock</b>	A low risk was identified – relocation of stock may be necessary and domestic animals which may be evacuated with their owners and to koala and other native animals.	11. Support personnel/agencies are trained to an appropriate level to provided effective support.	<b>1 – A,B,C,D,E</b>
	<b>D. Lifelines and Infrastructure (Built environment)</b>	The assessment revealed that there is potential for a power outage to occur caused by burnt power lines or poles – in terms of the Ballina Local Government area this would have a minor impact as the power loss would not be Shire wide. In a large scale event, the road network is at risk of being closed for a short period of time (less than 4 hours) but again, subject to the nature of the event and weather conditions, which has a strong influence on bush fires. The assessment also revealed a low risk to telecommunication.	(1)Preparation, ongoing monitoring and reviewing of a Community Services Directory	<b>2 – A,B,C,D,E</b>

<b>E. Environment (natural)</b>	The natural environment is considered to be at low risk from the impacts of a bush or peat fire. There is an identified risk of koala habitat being damaged and some nature reserves. However the ability of these systems/habitats to regenerate following a bush fire was considered as part of the assessment.		
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Hazard/ Source of Risk	Element at Risk	Summary Statement	Proposed Treatment	Priority
<b>TSUNAMI</b>  <b>RISK LEVEL</b> <b>High</b>	<b>A. People</b>	While a direct impact of a Tsunami like the 2004 Indonesian Tsunami would be catastrophic, the proposed treatments relate to a Warning, risks highlighted from the 2007 tsunami warning. Schools and/or childcare centres closing, leaving children vulnerable. Uncertainty within the community and confusion, also complete disregard of the warning. A Tsunami impacting (based on 2004 – Indonesia) would be catastrophic with mass casualties.	12. Develop a Tsunami Warning Plan – including communications matrix 13. Develop a Tsunami Warning education workshops for the community and emergency services personnel. 14. Development of a Recovery and Rehabilitation plan in consultation with the relevant agencies and organisations.	<b>1 – A, B</b>
	<b>B. Property Economic</b>	A Warning can impact the economy with businesses closing up during this period, tourists deciding to leave the area, however this is seen as a low risk. An impact would be catastrophic.		<b>1 – A, B</b>
	<b>C. Animals/Stock</b>	There is no risk to animals or stock as a result of a warning, however a direct impact would be catastrophic.		<b>1 – A, B, C, D, E</b>
	<b>D. Lifelines and Infrastructure (Built environment)</b>	There is no risk as a result of a warning, however a direct impact would be catastrophic.		
	<b>E. Environment (natural)</b>	There is no risk as a result of a warning, however a direct impact would be catastrophic.		

Hazard/ Source of Risk	Element at Risk	Summary Statement	Proposed Treatment	Priority
<b>COASTAL EROSION</b>  <b>RISK LEVEL</b> <b>Extreme</b>	<b>A. People</b>	The risk assessment revealed that the Community of Lennox Head is at most risk from the impacts of Coastal Erosion. Homes that may be lost as result would require emergency accommodation and other assistance to those community members impacted. A full study has been undertaken and full details are available in the <i>Ballina Coastline Hazard Definition Study</i> .	15. Refer to Ballina Coastline Interim Measures and Actions plan, DCP 17, pending completion of Coastline Management Study and Coastline Management Plan.	<b>1-A,B,D</b>
	<b>B. Property Economic</b>	There would be an impact to businesses directly affected by the erosion, potential loss of income from tourists (short term). There is also the risk of increased unemployment.		
	<b>C. Animals/Stock</b>	A low risk was identified – evacuation, relocation of domestic animals with their owners.		
	<b>D. Lifelines and Infrastructure (Built environment)</b>	There is a moderate risk to services being disrupted and/or damaged as a result of coastal erosion.		
	<b>E. Environment (natural)</b>	As the title of the source of risk depicts, the coastal area is at greatest risk. Refer to the <i>Ballina Coastline Hazard Definition Study</i> .		

Hazard/ Source of Risk	Element at Risk	Summary Statement	Proposed Treatment	Priority
<b>TRANSPORT ACCIDENT - AIR</b>  <b>RISK LEVEL</b> <b>High</b>	<b>A. People</b>	Life is identified as being at High risk from this type of event as a result of injury, psychological trauma and loss of life.	16. Ongoing testing and review of the Ballina Airport Emergency Plan. 17. Conduct annual exercise at the airport in accordance with regulations, Aerodrome Manual and Airport Emergency Plan	<b>1 – A,C,E</b>  <b>1 – A,C, E</b>
	<b>B. Property Economic</b>	No risk was identified to property or assets on the assumption that the most likely site for a transport air accident would be the Ballina Airport. This will be revised at each review period.		
	<b>C. Animals/Stock</b>	No risk identified.		
	<b>D. Lifelines and Infrastructure (Built environment)</b>	A moderate risk was identified with the possibility of power being disrupted for a short time.		
	<b>E. Environment (natural)</b>	There is a low risk of contaminants such as oil, aviation fuel entering natural drains and stormwater.		

Hazard/ Source of Risk	Element at Risk	Summary Statement	Proposed Treatment	Priority
<b>TRANSPORT ACCIDENT - ROAD</b>  <b>RISK LEVEL</b> <b>Extreme</b>	<b>A. People</b>	This type of emergency has been assessed on anecdotal evidence as there has not been a major transport road accident. A case study of Cowper and Kempsey Bus Crashes were undertaken to identify areas of vulnerability and to determine manageability systems and mitigation measures. There is a high risk of loss of life, injury, psychological trauma for both those directly impacted and responders, media, as well as the wider community.	18. (5)Conduct a Tabletop exercise as part of the Review process and to test the Emergency Operations Centre operational effectiveness and personnel. 19. Identification of suitable detour routes as part of a Road Closure Plan. (10) Ongoing training to ensure Combatant personnel are suitably trained and equipped to respond to this type of event.	<b>1 – A, D, E</b>
	<b>B. Property Economic</b>	No risk to property and/or assets identified at the time this study was conducted.		<b>2 – A, D</b>
	<b>C. Animals/Stock</b>	No risk has been identified to animals/stock with the exception of the incident involving a stock transporter.		<b>1 – A, D, E</b>
	<b>D. Lifelines and Infrastructure (Built environment)</b>	The assessment identified that there would be an impact to the local road network (road closures, detours) as well as a lower risk of power being lost (only to a part of the Ballina community, dependent on site of accident).		
	<b>E. Environment (natural)</b>	The risk of contaminants or pollutants (eg. fuel) entering the stormwater drainage system or waterways.		

Hazard/ Source of Risk	Element at Risk	Summary Statement	Proposed Treatment	Priority
<b>HAZARDOUS MATERIALS</b>  <b>RISK LEVEL</b> <b>High</b>	<b>A. People</b>	Dependent on the nature and the scope of the event, it was identified that people would require either evacuation or temporary relocation. It was also identified that there is a risk of inhalation or contact with hazardous substances. The most likely location would be the Industrial complex or a point on the Highway which traverses Ballina.	(5) Conduct an exercise as part of the Review process and to test the Emergency Operations Centre operational effectiveness and capacity of services and agencies to manage.	<b>2 – A,B,D,E</b>
	<b>B. Property Economic</b>	There is a low risk to property and a moderate risk to the economy with short term impacts due to isolation of an area and/or road closures.	20. Development of a Road Closure & Evacuation Plan specific to the Industrial Complex.	<b>1 – A,B,D,E</b>
	<b>C. Animals/Stock</b>	No risk was identified within the context of this study - ie. Requiring a significant and coordinated response for animal welfare issues.	(6) Review of Existing Plans and Arrangements and monitor to ensure currency.	<b>2 – A,B,D,E</b>
	<b>D. Lifelines and Infrastructure (Built environment)</b>	A moderate risk exists for property and a low risk to the economy of the Ballina area. It was identified that Ballina Hospital has a low risk of a forced closure should contaminated casualties present at Accident and Emergency. This risk is subject to the type of hazardous material involved. It is identified that this type of emergency, certainly on the Highway would result with road closures (up to 12 hours)	(10) Ongoing training to ensure Combatant personnel are suitably trained and equipped to respond to this type of event.	<b>1-A,B,D,E</b>
	<b>E. Environment (natural)</b>	The risk of contaminants entering waterways is identified as low when existing plans and arrangements are considered. There is a greater risk of contaminants entering the atmosphere which is more difficult to suppress and manage.		



Hazard/ Source of Risk	Element at Risk	Summary Statement	Proposed Treatment	Priority
<b>INDUSTRIAL FIRE</b>  <b>RISK LEVEL</b> <b>High</b>	<b>A. People</b>	The assessment revealed that this type of event, while having a likelihood rating of possible given that the means and opportunity exists, is still considered to be highly unlikely (ie. An event requiring a significant and coordinated response as per definition). People are at risk of injury, loss of life and of short term evacuation and/or temporary relocation and/or displacement – certainly where route to airport is impacted by road closure.	(21) Develop and conduct discussion/tabletop exercise based on this type of incident to further identify manageability issues and to assist in development and/or review of existing plans and arrangements. 22. Design and Development of Road Closure and Evacuation Plan for Industrial area.	<b>1 – A,B,D,E</b>  <b>2 – A,B,D,E</b>
	<b>B. Property Economic</b>	Property directly impacted by such an event. Economic impacts would be considered, on a whole to the Ballina LGA, to be minor to moderate, however this is influenced by the type of industry impacted and its economic importance to the Ballina LGA. There is a risk of employment loss and financial hardship.	(6) Ongoing review and monitor of existing Plans and Arrangements to ensure currency.	<b>1-A,B,D,E</b>
	<b>C. Animals/Stock</b>	No risk was identified to animals or stock as a result of this type of event.	(10) Ongoing training to ensure Combatant personnel are suitably trained and equipped to respond to this type of event.	<b>1-A,B,D,E</b>
	<b>D. Lifelines and Infrastructure (Built environment)</b>	This type of event has the potential to impact through power loss in a major industrial fire. Potential to impact water and sewer services, however only if power cut is unable to be isolated to the immediate and surrounds of the incident site.		
	<b>E. Environment (natural)</b>	There is a low risk to the environment given existing plans, arrangements and regulatory controls which would minimise and/or prevent the escape of contaminants/toxins into stormwater and water ways. There is a higher risk of toxic fumes entering the atmosphere. Dependent on nature of materials involved in this type of event.		

Hazard/ Source of Risk	Element at Risk	Summary Statement	Proposed Treatment	Priority
<b>POWER FAILURE</b>  <b>RISK LEVEL</b> <b>Moderate</b>	<b>A. People</b>	The assessment identified that there is a low risk to people as this type of event having a prolonged timeframe would be rare taking into account existing plans and arrangements.	23. Awareness programme on Business Continuity to be facilitated by Country Energy for businesses.	<b>2 –A,B,C</b>
	<b>B. Property Economic</b>	The highest risk is the loss of perishable stock which would have a short term economic impact on the ability to trade, however this is only where commercial sector businesses and wholesale suppliers have emergency back up power source, or business continuity plans which also include adequate insurance coverage.		
	<b>C. Animals/Stock</b>	No risk was identified to property at the time this study was undertaken.		
	<b>D. Lifelines and Infrastructure (Built environment)</b>	There is a low risk of increase of break ins and looting during a prolonged power outage and a manageability issued identified was having the necessary resources to patrol the commercial and industrial sectors as a priority.		
	<b>E. Environment (natural)</b>	A low risk to the environment was identified and the main source of risk would come from the sewerage treatment plant and infrastructure failing in a prolonged outage.		

Hazard/ Source of Risk	Element at Risk	Summary Statement	Proposed Treatment	Priority
<b>SEWERAGE FAILURE</b>  <b>RISK LEVEL High</b>	<b>A. People</b>	The assessment identified there is a low risk of people being impacted by potential health risk due to surcharging/overflow through contaminants entering the estuary system and/or of people coming into contact with raw sewage due to surcharging/overflow of sewer junctions in residential and commercial sectors.	24. Full assessment of the Sewerage Treatment Plant and associated infrastructure to determine extent of any upgrades required or other measures to be implemented to mitigate the risk.	<b>1 – B,D,E</b>
	<b>B. Property Economic</b>	No risk to property and assets were identified at the time this study was undertaken. A low risk to the economy was identified (ie. Downturn in tourism spending during clean up) however this is anticipated to be short term.		
	<b>C. Animals/Stock</b>	No risk to animals/stock were identified at the time this study was undertaken.		
	<b>D. Lifelines and Infrastructure (Built environment)</b>	The infrastructure itself is the main risk with the task of being able to supply emergency power to maintain pumps and the ability to restore operations within a reasonable timeframe.		
	<b>E. Environment (natural)</b>	A risk of sewerage overflowing into waterways and beaches was identified as well as risk of marine and birdlife being impacted due to overflow into estuary system and the ability to recover same.		

Hazard/ Source of Risk	Element at Risk	Summary Statement	Proposed Treatment	Priority
<b>WATER FAILURE</b>  <b>RISK LEVEL</b> <b>Moderate</b>	<b>A. People</b>	The water to Ballina Shire LGA is supplied by Rous Water. There is a low risk of a major fail where people would be put at risk, up to approximately 46,000 people if fail exceeds 12 hours. There is a much lower risk of people suffering dehydration if failure occurs on days of extreme temperatures if emergency domestic water supply cannot be provided or significant delays occur. Most at risk would be the very young (infants) and the elderly.	25. Ongoing monitor and review (ie. Communication) with Rous Water. 26. Identification of emergency water supply sources and emergency contact arrangements in place.	<b>2 – A,D</b>  <b>1 – A,D</b>
	<b>B. Property Economic</b>	No risk was identified to property at the time this study was undertaken.		
	<b>C. Animals/Stock</b>	No risk was identified to animals/stock at the time this study was undertaken.		
	<b>D. Lifelines and Infrastructure (Built environment)</b>	<p>The assessment identified that there is a risk of the Sewerage Treatment Plant being impacted through the ability to treat the biological processes of the sewerage treatment plant within 24-48 hours.</p> <p>Emergency Services are at risk of being impacted (eg. Fire fighting provisions) as well as Hospitals being impacted - those procedures, areas reliant on water. The ability to provide bulk water for fire fighting operations. The main manageability issue is the ability to provide emergency water supply to these essential services.</p>		
	<b>E. Environment (natural)</b>	No risk was identified to environment at the time this study was undertaken – except where the sewerage treatment plant fails (see Sewerage Failure).		

## 7.7 Treatment Options - Analysis (Risk Treatment Plans)

Hazard/ Source of Risk	Is Hazard preventable or the Likelihood occurrence reduced?	Avoid	Transfer Or Share	Can Consequence/impact be mitigated
FLOOD Storm Surge, East Coast Low / Cyclone	Naturally occurring, therefore no ability to prevent.	No	No	Yes. There is the ability to reduce the vulnerability of the community.

Proposed Treatment	Equitable	Cost Effective	Afford.	Implementation Challenges	Adopt Reject	Responsible for Managing Implementation	Funding Requirements and Considerations
<b>Treatment 1</b> Preparing, ongoing monitoring and reviewing of Community Services Directory ( <b>currently on web</b> )	Yes	Yes	Yes	No challenges present with implementation as it is an existing treatment and is absorbed through Council's normal core business- Required for hazards of FLOOD, BUSHFIRE	Adopt	Ballina Council through LEMC	
<b>Treatment 2</b> Community Education and Awareness Campaign where appropriate	Yes	Yes	Yes	Budgets within Emergency Services and other respondent and support Agencies exist for community education and awareness	Existing Arrang ement	State Emergency Service	
<b>Treatment 3</b> Audible Warning system /mechanism where appropriate	No	No	No	An audible warning system would not benefit the entire community unless established throughout the LGA and while this would prove beneficial the occurrence rate of major events where this type of system would be used is low and therefore justification for funding expenditure can not be justified.	Reject	<b>Not applicable</b>	<b>Not applicable</b>
<b>Treatment 4</b> Road Closure (Pacific Hwy) and Evacuation Plan	Yes	Yes	Yes	This treatment can be incorporated with existing emergency management practices and is able to be facilitated through the Local Emergency Management Committee. RTA has prepared road closure plan for Pacific Hwy & Bruxner Hwy in preparation.	Existing Arrang ement	RTA SES through Flood Plan	

Proposed Treatment	Equitable	Cost Effective	Afford.	Implementation Challenges	Adopt Reject	Responsible for Managing Implementation	Funding Requirements and Considerations
<b>Treatment 5</b> Conduct Annual Exercise (multi-agency) as part of the Review process and to test the Emergency Operations Centre operational effectiveness and personnel	Yes	Yes	Yes	Major exercises involve. planning, including risk assessments of proposed exercise sites and other logistical requirements. Funding is budgeted for within Agencies and Organisations – the amount of funding required will be dependent on the exercise proposed. If a large exercise is proposed then an Exercise Committee is established to design, develop and execute the exercise. Exercises are required for hazards of FLOOD,HAZARDOUS MATERIALS, TRANSPORT ACCIDENT –ROAD, EXPLOSION	<b>Existing Arrange ment</b>	LEMC	Funding may need to be sought dependent on the scale of the exercise and identification of specific benefits to the community and emergency services and support agencies and organisations. Engaging external assistance to manage this process may need to be a consideration.
<b>Treatment 6</b> Ongoing Review of Existing Plans and Arrangements and Monitor to ensure currency	Yes	Yes	Yes	Available resources to undertake this role to ensure that Plans remain current (ie. Reflective of the community needs) and where required, in accordance with Regulations, Legislation. Required for hazards of : AIRPORT,FLOOD, BUSHFIRE, HAZARDOUS MATERIALS,EXPLOSION,INDUSTRIAL FIRE.	<b>Existing Arrange ment</b>	All Agencies and organisations responsible for Emergency Plans and Arrangements	Agencies and Organisations responsible for funding for review of Plans and Arrangements

Hazard/ Source of Risk	Is Hazard preventable or the Likelihood occurrence reduced?	Avoid	Transfer Or Share	Can Consequence/impact be mitigated
<b>BUSH FIRE</b>	Can be naturally occurring or deliberate act therefore this is no ability to prevent but deliberate ignitions can be reduced.	No	No	Yes. There is the ability to mitigate the number of ignitions caused by hazard reduction burns being lost or ignition resulting in large bush fires.

Proposed Treatment	Equitable	Cost Effective	Afford.	Implementation Challenges	Adopt Reject	Responsible for Managing Implementation	Funding Requirements and Considerations
<b>Treatment 7</b> Community Education program on how to prepare and protect themselves	Yes	yes	yes	As identified by NSW Rural Fire Service	<b>Existing</b>	NSW Rural Fire Service	As identified by NSW Rural Fire Service
<b>Treatment 8</b> Hazard reduction program	Yes	yes	yes	As identified by NSW Rural Fire Service and Ballina Shire Hazard Reduction Ctee	<b>Existing</b>	NSW Rural Fire Service	As identified by NSW Rural Fire Service
<b>Treatment 9</b> Communications plan with schools (Community Liaison person - agency based).	Yes	yes	yes	As identified by NSW Rural Fire Service and NSW Fire Brigades	<b>Existing</b>	NSW Fire Brigades NSW Rural Fire Service	As identified by NSW Rural Fire Service and NSW Fire Brigades
<b>Treatment 6</b> Review of existing Plans and Arrangements and monitor to ensure currency.	Yes	Yes	Yes	Available resources to undertake this role to ensure that Plans remain current (ie. Reflective of the community needs) and where required, in accordance with Regulations, Legislation. Required for hazards of : AIRPORT,FLOOD, BUSHFIRE, HAZARDOUS MATERIALS,EXPLOSION,INDUSTRIAL FIRE.	Adopt	NSW Fire Brigades NSW Rural Fire Service	Agencies and Organisations responsible for funding for review of Plans and Arrangements

<b>Proposed Treatment</b>	<b>Equitable</b>	<b>Cost Effective</b>	<b>Afford.</b>	<b>Implementation Challenges</b>	<b>Adopt Reject</b>	<b>Responsible for Managing Implementation</b>	<b>Funding Requirements and Considerations</b>
Treatment 10 Ongoing training to ensure Combatant personnel are suitably trained and equipped to respond to this type of event	Yes	Yes	Yes	As determined by the relevant Agencies and Organisations. Existing Arrangements	<b>Existing</b>	NSW Fire Brigades NSW Rural Fire Service	No funding required. Absorbed through core business of each of the respective Agencies and Organisations.
<b>Treatment 11</b> Support personnel/agencies are trained to an appropriate level to provided effective support.	Yes	Yes	Yes	As determined by the relevant Agencies and Organisations. Existing arrangements.	<b>Existing</b>	NSW Fire Brigades NSW Rural Fire Service	No funding required. Absorbed through core business of each of the respective Agencies and Organisations

Hazard/ Source of Risk	Is Hazard preventable or the Likelihood occurrence reduced?	Avoid	Transfer Or Share	Can Consequence/impact be mitigated
<b>TSUNAMI and Tsunami Warning</b>	No. Naturally occurring – no control	No	Yes State Level	Yes. There is the ability to reduce the consequences of both the impact from a Tsunami and certainly a Tsunami Warning.

Proposed Treatment	Equitable	Cost Effective	Afford.	Implementation Challenges	Adopt Reject	Responsible for Managing Implementation	Funding Requirements and Considerations
<b>Treatment 12</b> Develop a Tsunami Warning Plan – including Communications	Yes	yes	LEMC com.	Ensuring that any Warning and Communication Plan compliments State or Federal warnings issued with community needs highlighted within a Local level plan.	Adopt	Local Emergency Management Committee in close consultation with State Emergency Service	
<b>Treatment 13</b> Develop a Tsunami Warning education workshop for the community and emergency services personnel.	Yes	No	No	It is unlikely that there would be strong interest for such a program. Given the rarity of this type of event, the establishment of a program (cost considerations) offset on outcomes, such an program cannot be justified.	Reject	Not applicable.	Not applicable.
<b>Treatment 14</b> Development of a Recovery and Rehabilitation plan in consultation with the relevant agencies and organisations	Yes	Yes	No	This treatment can be incorporated with existing emergency management practices and is able to be facilitated through the Local Emergency Management Committee. However existing resources will impact the timeframe for which this treatment is able to be developed and implemented. Any recovery and rehabilitation plan would need to compliment State and Federal Plans.	Reject- reass after prepara tion of Tsunami warning Plan	LEMC	.

Hazard/ Source of Risk	Is Hazard preventable or the Likelihood occurrence reduced?	Avoid	Transfer Or Share	Can Consequence/impact be mitigated
<b>COASTAL EROSION</b>	No. Naturally occurring – no control	No	No	Yes. The impact to coastal communities and coast itself can be mitigated.

Proposed Treatment	Equitable	Cost Effective	Afford.	Implementation Challenges	Adopt Reject	Responsible for Managing Implementation	Funding Requirements and Considerations
Treatment 15 Development of Coastline Management Plan	Yes	Yes	Yes	Ballina Council has already completed a <i>Ballina Coastline Hazard Definition Study</i> and are proceeding to prepare Coastline Management Plan	<b>Existing</b>	Ballina Shire Council	Funding may be required for future studies modelling and implementation.

Hazard/ Source of Risk	Is Hazard preventable or the Likelihood occurrence reduced?	Avoid	Transfer Or Share	Can Consequence/impact be mitigated
<b>TRANSPORT ACCIDENT - AIR</b>	No. Manmade or technological hazards/sources of risk are not necessarily preventable but the likelihood of the occurrence can be significantly reduced.	No	No	Yes. Plans and arrangements, along with regulatory controls and standards can mitigate the impact of this type of event.

Proposed Treatment	Equitable	Cost Effective	Afford.	Implementation Challenges	Adopt Reject	Responsible for Managing Implementation	Funding Requirements and Considerations
<b>Treatment 16</b> Ongoing testing and review of the Ballina Airport Emergency Plan.	Yes	Yes	Yes	No challenges identified – existing treatment and requirement.	<b>Existing</b>	Ballina Airport (Ballina Shire Council.)	No funding required. Absorbed through core business of the Organisation.
<b>Treatment 17</b> Conduct annual exercise at the airport in accordance with regulations.	Yes	Yes	yes	No challenges identified – existing treatment and requirement. Requirement of Aerodrome Manual	<b>Existing</b>	Ballina Airport (Ballina Shire Council.)	

Hazard/ Source of Risk	Is Hazard preventable or the Likelihood occurrence reduced?	Avoid	Transfer Or Share	Can Consequence/impact be mitigated
<b>TRANSPORT ACCIDENT - ROAD</b>	No. Manmade or technological hazards/sources of risk are not necessarily preventable but the likelihood of the occurrence can be significantly reduced.	No	No	Yes. Plans and arrangements, along with regulatory controls and industry standards can mitigate the impact of this type of event.

Proposed Treatment	Equitable	Cost Effective	Afford.	Implementation Challenges	Adopt Reject	Responsible for Managing Implementation	Funding Requirements and Considerations
<b>Treatment 18 (5)</b> Conduct a Tabletop exercise as part of the Review process and to test the Emergency Operations Centre operational effectiveness and personnel.	Yes	Yes	Yes	No perceived challenges to implement. Discussion Exercise can form part of the Local Emergency Management Committee Meeting.	Adopt	Local Emergency Management Committee	No funding requirements.
<b>Treatment 19</b> Identification of suitable detour routes as part of a Road Closure Plan.	Yes	Yes	Yes	Standard Detour plans exist for Pacific Hwy and are being prepared for Bruxner Hwy by RTA. Local area small enough for agencies to determine on site	Adopt	RTA, appropriate agency.	
<b>Treatment 10</b> Ongoing training to ensure Combatant personnel are suitably trained and equipped to respond to this type of event	Yes	Yes	Yes	As determined by the relevant Agencies and Organisations. Existing arrangements	Adopt	NSW Fire Brigades NSW Rural Fire Service Ambulance SES Police	No funding required. Absorbed through core business of each of the respective Agencies and Organisations

Hazard/ Source of Risk	Is Hazard preventable or the Likelihood occurrence reduced?	Avoid	Transfer Or Share	Can Consequence/impact be mitigated
<b>HAZARDOUS MATERIALS / EXPLOSIONS</b>	No. Manmade or technological hazards/sources of risk are not necessarily preventable but the likelihood of the occurrence can be significantly reduced.	No	Yes Workcover	Yes. Plans and arrangements, along with regulatory controls and industry standards can mitigate the impact of this type of event.

Proposed Treatment	Equitable	Cost Effective	Afford.	Implementation Challenges	Adopt Reject	Responsible for Managing Implementation	Funding Requirements and Considerations
<b>Treatment 5</b> Conduct Annual Exercise (multi-agency) as part of the Review process and to test the Emergency Operations Centre operational effectiveness and personnel	Yes	Yes	Yes	No challenges as this treatment can form part of the normal Local Emergency Management Committee Annual exercise programme	Adopt	Local Emergency Management Committee	No funding requirements.
<b>Treatment 20</b> Development of a Road Closure & Evacuation Plan specific to the Industrial Complex.	Yes	Yes	Yes	This treatment can be incorporated with existing emergency management practices and is able to be facilitated through the Local Emergency Management Committee. However industrial area not large enough to warrant plan which would be too complex for scale of response required- Agencies can handle as part of response.	Reject		
<b>Treatment 6</b> Review of existing Plans and Arrangements and monitor to ensure currency	Yes	yes	yes	Available resources to undertake this role to ensure that Plans remain current (ie. Reflective of the community needs) and where required, in accordance with Regulations, Legislation. Required for hazards of : AIRPORT,FLOOD, BUSHFIRE, HAZARDOUS MATERIALS,EXPLOSION,INDUSTRIAL FIRE.	Adopt	NSW Fire Brigades	Agencies and Organisations responsible for funding for review of Plans and Arrangements

<b>Proposed Treatment</b>	<b>Equitable</b>	<b>Cost Effective</b>	<b>Afford.</b>	<b>Implementation Challenges</b>	<b>Adopt Reject</b>	<b>Responsible for Managing Implementation</b>	<b>Funding Requirements and Considerations</b>
<b>Treatment 21</b> Develop and conduct discussion exercise to further identify manageability issues and to assist in development and/or review of existing plans and arrangements.	Yes	Yes	Yes	No perceived challenges to implement. Discussion Exercise can form part of the Local Emergency Management Committee Meeting.	Adopt	Local Emergency Management Committee	No funding requirements.
<b>Treatment 10</b> Ongoing training to ensure Combatant personnel are suitably trained and equipped to respond to this type of event	Yes	Yes	Yes	As determined by the relevant Agencies and Organisations. Existing arrangements	<b>Existing</b>	All Agencies and Organisations	

Hazard/ Source of Risk	Is Hazard preventable or the Likelihood occurrence reduced?	Avoid	Transfer Or Share	Can Consequence/impact be mitigated
<b>INDUSTRIAL FIRE</b>	No. Manmade or technological hazards/sources of risk are not necessarily preventable but the likelihood of the occurrence can be significantly reduced.	No	No	Yes. Plans and arrangements, along with regulatory controls and industry standards can mitigate the impact of this type of event.

Proposed Treatment	Equitable	Cost Effective	Afford.	Implementation Challenges	Adopt Reject	Responsible for Managing Implementation	Funding Requirements and Considerations
<b>Treatment 5</b> Conduct Annual Exercise (multi-agency) as part of the Review process and to test the Emergency Operations Centre operational effectiveness and personnel	Yes	Yes	Yes	No perceived challenges to implement. Discussion Exercise/tabletop can form part of the Local Emergency Management Committee Meeting.	Adopt	Local Emergency Management Committee	No funding requirements
<b>Treatment 20</b> Identification of suitable detour routes as part of a Road Closure Plan. for Industrial area.	Yes	Yes	Yes	This treatment can be incorporated with existing emergency management practices and is able to be facilitated through the Local Emergency Management Committee. However industrial area not large enough to warrant plan which would be too complex for scale of response required- Agencies can handle as part of response	Reject	NSW Police and Ballina Council in consultation with Emergency Services	Funding may need to be sought to install a casual/part time staff to undertake the development of Plan/s identified.
Treatment 6 Ongoing review and monitor of existing plans and arrangements to ensure currency.	Yes	Yes	Yes	Available resources to undertake this role to ensure that Plans remain current (ie. Reflective of the community needs) and where required, in accordance with Regulations, Legislation. Required for hazards of : AIRPORT,FLOOD, BUSHFIRE, HAZARDOUS MATERIALS,EXPLOSION,INDUSTRIAL FIRE.	Existing	NSWFB	

Proposed Treatment	Equitable	Cost Effective	Afford.	Implementation Challenges	Adopt Reject	Responsible for Managing Implementation	Funding Requirements and Considerations
<b>Treatment 10</b> Ongoing training to ensure Combatant personnel are suitably trained and equipped to respond to this type of event	Yes	Yes	Yes	As determined by the relevant Agencies and Organisations. Existing arrangements	<b>Existing</b>	All Agencies and Organisations	

Hazard/ Source of Risk	Is Hazard preventable or the Likelihood occurrence reduced?	Avoid	Transfer Or Share	Can Consequence/impact be mitigated
<b>POWER, WATER &amp; SEWERAGE FAILURE</b>	No. Manmade or technological hazards/sources of risk are not necessarily preventable but the likelihood of the occurrence can be significantly reduced.	No	No	Yes. Plans and arrangements, along with regulatory controls and industry standards can mitigate the impact of this type of event.

Proposed Treatment	Equitable	Cost Effective	Afford.	Implementation Challenges	Adopt Reject	Responsible for Managing Implementation	Funding Requirements and Considerations
Treatment 22 Awareness programme for Business Continuity.	Yes	yes	Yes	Prepare letter to Country Energy	Adopt	Country Energy in consultation with LEMC	
Treatment 23 Identification of site or establishment and/or review of plans and arrangements to dispose of perishable stock on mass.	Yes	Yes	Yes	Identification only. Incorporate in DISPLAN and/or Landfill management Plan.	reject	Ballina Shire Council	
Treatment 24 Full assessment of the Sewerage Treatment Plant and associated infrastructure to determine extent of any upgrades required or other measures to be implemented to mitigate the risk.	Yes	Yes	Yes	Forms part of Ballina Shire Council's core business.	<b>Existing</b>	Ballina Shire Council	.

<b>Proposed Treatment</b>	<b>Equitable</b>	<b>Cost Effective</b>	<b>Afford.</b>	<b>Implementation Challenges</b>	<b>Adopt Reject</b>	<b>Responsible for managing Implementation</b>	<b>Funding Requirements and Considerations</b>
Treatment 25 Ongoing monitor and review (ie. Communication) with Rous Water. Identification of emergency water supply sources and emergency contact arrangements in place.	Yes	Yes	No	Administrative process. Resource availability to undertake compilation of contact lists and maintaining same.	Adopt	Ballina Shire Council in consultation with Rous Water	.

## **8 Vulnerability and Resilience**

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### **8.1 Definition**

Resilience is the capacity of a group or organisation to withstand loss or damage or to recover from the impact of an emergency or disaster. Vulnerability is a broad measure of the susceptibility to suffer loss or damage.

The higher the resilience, the less likely damage may be, and the faster and more effective recovery is likely to be. Conversely, the higher the vulnerability, the more exposure there is to loss and damage. (Source: Department of Human Services publication, Assessing Resilience and Vulnerability in the context of emergencies: Guidelines)

Vulnerability Assessment of the Elements at risk - to include but not limited to:

- Proximity to the source of risk
- Mobility/Disability considerations
- Age / Income
- Culturally and Linguistically Diverse (CALD) Groups
- Access to resources before, during and following an event
- Knowledge/Awareness within Community of hazards/risks

### **8.2 Purpose**

The purpose of conducting a Resilience and Vulnerability assessment was to determine the strengths of particular areas, communities or groups, in terms of resources, skills, networks and community agencies. These strengths and local capabilities may be used and further developed to minimise the negative consequences of an emergency. Prevention and Preparedness activities, as well as recovery activities can be supported. By identifying the vulnerabilities of specific areas, prevention, preparedness, response and recovery activities may be managed. Resilience and vulnerability assessment is a necessary component of effective emergency management planning. However it is unlikely that any assessment, or community audit, will capture every potential need or identify every person who, in some circumstance, may be exposed to a risk or to the possibility of some loss. (Source: Department of Human Services publication, Assessing Resilience and Vulnerability in the context of emergencies: Guidelines).P12

The resilience and vulnerability assessment has been carried out to determine the following:

- Management Capacity
- Time and Opportunity (eg. to undertake recovery activities)
- Physical capacity (eg. support to others, machinery)
- Access to services (eg. establishing transport systems, access to same, interpreters)
- Expertise (eg. access to specialist services – tradespeople, financial counsellors)

#### **Support**

Personal support (eg. outreach services, advisers and counsellors)

Community support (eg. community development officers)

**Who is Vulnerable?**

Vulnerable groups are those who may have special needs during the response to and recovery following an event.

The groups listed below are generalisations. This list is not exhaustive, it attempts to broadly group areas of possible need within the Ballina Local Government Area.

**The aged (particularly the frail)**

In terms of mobility and physical capacity. Note: The aged are not vulnerable just because they are elderly.

**The very young**

In terms of managing their own lives and recovery and in terms of understanding the event.

**The disabled (intellectual, psychiatric and physical)**

In terms of managing their own recovery and in getting access to information and resources.

**The poor, or people with limited resources to meet essential needs**

In terms of having the financial and physical resources to achieve recovery or to protect themselves against loss through, for example, insurance.

**Non-English Speakers (NESB) / Culturally & Linguistically Divers (CALD)**

In terms of understanding the potential risks and in gaining access to information.

**The socially isolated**

In terms of having family or friends that can provide personal and physical support.

**The physically isolated**

In terms of having easy, cheap and fast access to resources, or in terms of being able to call on assistance from other members of the community or from agencies.

**People dependent on technology-based life support systems and seriously ill**

In terms of being dependent on systems over which they have no control and In terms of already being in need and having a very low capacity to carry out protective or recovery activity.

**Large Families and Single Parent Families**

In terms of complex family needs and dynamics and increased costs for prevention and recovery. Single Parent Families in terms of having to manage a range of demands with limited support.

**People with limited coping capacity**

In terms of low or reduced capacity to manage life events.

**People with inadequate accommodation**

In terms of being already in straitened circumstances and with existing high levels of need and support.

**Those on holiday (Australian), particularly those in tents and caravan resorts.**

In terms of being absent from their own communities and resources.

**People with marginal coping capacity**

People with limited coping capacity to deal with stress and disruption, with limited economic resources or who have previously experienced significant stress, trauma or loss in their lives. This group may already be on the margins of successful life management or day-to-day coping

by loss, damage or threat to life, safety, property or income caused by an emergency or disaster, and the new disaster may disrupt them even more.

**People affected by an emergency**

In terms of need (medical, psychological, material etc.) generated by the event.

ELEMENT	Who/What is Vulnerable	Comment	Actions to increase Resilience (Existing or Proposed)
People and Social Environment	Aged	Ballina Shire has a higher than average proportion of its population comprised of older persons (aged over 65 years) relative to other local government areas in Australia. The number of older persons residing in Ballina Shire is anticipated to increase significantly over the forthcoming 20-year period. Older persons have higher rates of disability, social isolation and mobility constraints, which make them more vulnerable.	Community services such as 'Meals on Wheels' and 'Commonwealth Community Aged Care Packages' provide opportunities to reduce social isolation and provide physical and emotional support to seniors. These services also serve as a potential point of contact and source of information regarding the personal circumstances of aged persons that might be useful to emergency services organisations. Council initiated community events such as Seniors Week, Rivafest and Heritage Week provide opportunities for people, including the aged, to engage in community activities and thus reduce social isolation. Appropriate housing remains a significant challenge going forward, particularly due to the anticipated increase in the number of older persons. The Review of the Ballina Local Environmental Plan (underway) will consider how the local planning framework might facilitate the provision of appropriate, accessible and affordable housing for the elderly.
	Young	Young people often must rely on public transport and family for getting from place to place. The dispersed character of settlement in the region makes younger people vulnerable due to this lack of mobility.	Emergency mass transport may help reduce the vulnerability of younger persons (and others that lack mobility) during emergencies. The high level of mobile phone use by younger persons may provide opportunities for contact and information dissemination during emergencies.
	The disabled (intellectual, psychiatric and physical) and People with limited coping capacity	The ABS defines a person as having a disability 'if he/she has a specified limitation, restriction or impairment, which has lasted, or is likely to last, for at least six months and which restricts an everyday activity'. The Ballina Shire LGA. Accessibility refers to more than just a person's ability to gain physical access to	Ballina Shire Council through the Ballina Shire Access Committee has worked on improving the physical accessibility within our area. The committee is where council and community representatives meet to discuss issues of concern to residents who

		buildings. It can also refer to having an inclusive policy that encourages people with a disability to participate fully in the community. The issue of accessibility was raised throughout the consultation phase of this plan.	have a disability. The committee also provides Council with recommendations on disability access issues.  Council is committed to ensuring all new developments comply with the regulations set down to meet the minimum standards of accessibility. It was suggested during the consultation that a mobility map identifying access routes around the shire be produced. The mobility map should then be made available to the community. [Ballina Social Plan]
	Culturally and Linguistically Diverse (CALD)	In Ballina Shire there are residents from some 50 different countries. Data from the 2001 Census indicates that a total of 3,398 people or 9.6% of the total Ballina Shire population identified themselves as being born in a country other than Australia. By way of comparison the NSW percentage is 23%.	See Appendix B
	The socially isolated	Social isolation can occur for various reasons, such as prejudice, disability, physical location and mobility constraints. Persons experiencing social isolation may include the elderly, persons with disabilities, those living in rural areas, and stay at home parents with young children.	Council initiated community events and activities seek to reduce social isolation of residents by providing opportunities for social contact and the development of a 'sense of community'. The provision of appropriate meeting places such as parks and playgrounds and community centres can help reduce social isolation. A number of Community Centres are being developed in Ballina Shire to cater for the demand for community spaces and facilities, particularly from community groups.
	The physically isolated	In terms of having easy, cheap and fast access to resources, or in terms of being able to call on assistance from other members of the community or from agencies. Accessibility refers to more than just a person's ability to gain physical access to buildings. It can also refer to having an inclusive policy that encourages people with a disability to participate fully in the community. The issue of accessibility was raised throughout the consultation phase of the Social Plan.	To the extent to which physical isolation may be a product of insufficient appropriate housing, the provision of appropriate housing may help reduce the physical isolation experienced by some residents.

ELEMENT	Who/What is Vulnerable	Comment	Actions to increase Resilience (Existing or Proposed)
People and Social Environment cont.	People dependent on technology-based life support systems and seriously ill	In terms of being dependent on systems over which they have no control and In terms of already being in need and having a very low capacity to carry out protective or recovery activity.	Community service organisations which support people dependent on technology-based life support systems and the seriously ill may provide a first point of call for emergency service organisations to provide advice and appropriate support during emergencies.
	People with inadequate accommodation	In terms of being already in straitened circumstances and with existing high levels of need and support. The housing needs of people vary and change as they move through different stages of their life cycle. Of the lone parent households in Ballina, 82% of these had a female as the parent. It is often very difficult for women with dependant children to access appropriate and affordable housing. The lack of rental history severely limits the opportunity for these women to access housing in the private rental market. An alternative for women who are lone parents would be to seek out accommodation through the Department of Housing One of the difficulties identified in building connections in communities was the fact that many households need two incomes to cover the cost of housing. This diminishes the level of community involvement and does not allow for a great deal of interaction. This then brings about Social Isolation. [Ballina Social Plan]	The Review of the Ballina Local Environmental Plan (underway) will consider how the local planning framework might facilitate the provision of appropriate, accessible and affordable housing. This will necessarily involve providing for a mixture of appropriate housing types to accommodate a broad range of household and family types.
	Those on holiday (Australian), particularly those in tents and caravan resorts.	In terms of being absent from their own communities and resources.	Emergency planning should include contingencies for the dissemination of information to holiday-goers, including to those occupying formal and informal camping grounds.

ELEMENT	Who/What is Vulnerable	Comment	Actions to increase Resilience (Existing or Proposed)
People and Social Environment cont.	People affected by an emergency	In terms of need (medical, psychological, material etc.) generated by the event.	The Ballina Local DISPLAN, Northern Rivers DISPLAN and Plans and Policies developed and held by contributing agencies and organisations provide information on how to access such services and provision of same. Monitoring and reviewing these Plans, Policies and Procedures on a Quarterly or Annual basis against the demography of the Ballina LGA will ensure that any needs generated by an event are able to be met.
	Management Capacity	Time and Opportunity (eg. to undertake recovery activities); Physical capacity (eg. support to others, machinery); Access to services (eg. establishing transport systems, access to same, interpreters) Expertise (eg. access to specialist services – tradespeople, financial counsellors).	Access to transport for parents and their children has been identified as a significant issue. Many families are unable to access services due to limited public transport options. Stakeholders identified that many families find the cost and frequency of local transport services as being prohibitive in their attempts to access services. [Ballina Social Plan]
	Large Families and Single Parent Families	In terms of complex family needs and dynamics and increased costs for prevention and recovery. Single Parent Families in terms of having to manage a range of demands with limited support.	Community events and facilities can provide support to vulnerable families by providing venues for social networking, education opportunities and accessing community services and information.
	Proximity to Hazards	In terms of living near or within bush fire prone areas, flood affected areas, proximity to industrial areas, under flight path or living in close proximity to an airport, bulk storage for hazardous materials, highways etc.  Throughout the Ballina LGA there is a mix of commercial, residential and industrial areas which adjoin, as is the case in any urban centre. Those on low incomes and in public housing are generally found to be located closer to sources of potential risk and have limited management capacity or reduced ability to recover, therefore making them more vulnerable.	There are many plans currently in place to regulate, monitor and respond to sources of risk. To find more detailed information refer to the links contained at the end of this document for Emergency Services and other regulatory bodies. Further, community education is undertaken mainly with respect to naturally occurring hazards.

ELEMENT	Who/What is Vulnerable	Comment	Actions to increase Resilience (Existing or Proposed)
Infrastructure and Critical Services	Water Supply	Possible vulnerability from contamination of dams and reservoirs: vulnerability from lack of power to Rous Supply or major main breaks	Water monitoring programme reduces the vulnerability, providing opportunity for early identification of any contaminates. In addition, reservoirs are roofed and security fenced; there is the ability to cross feed from other reservoirs to allow isolation if required and to gravity feed for a period of time if power fails to pumps.
Infrastructure and Critical Services cont.	Sewerage	Major vulnerability of system is to failure of power supply, due to limited storage in pumping stations and Sewerage treatment plants. Management of pumping stations can minimise surcharges within urban areas, however can cause discharge of untreated sewage into River and estuary.	Power failures are managed by Council providing standby generators to keep all 115 pump stations operational and to provide some level of treatment at treatment plants; Radio is used to advise residents to be sparing with water use or not to flush toilet if blackout occurs.
	Road Networks	Can be vulnerable from damage by storm and flood, preventing access to services.	Focus needs to be on Recovery. Council have emergency staff available for call out to reopen roads and arrange detours.
	Critical Bridges	Critical bridges in terms of main access and servicing the community. These exist on the Pacific Highway-Wardell, Emigrant Ck, Fishery Creek and Canal Bridge. <ul style="list-style-type: none"> <li>- Emigrant Creek Bridge</li> <li>- Duck Creek Bridge</li> <li>- Missingham Bridge</li> <li>- Prospect Bridge</li> <li>- Wardell Bridge</li> <li>- Canal Bridge</li> </ul>	Monitoring/Maintenance programmes ensure the structural integrity of bridges, in particular those considered critical. Emergency detour routes are provided for some closures where available; VMS signs are installed on Highway to give advance warning.
	Hospitals	In terms of becoming isolated, requiring quarantining or damage and destruction.  Ballina Hospital is the major health/care facility in the Ballina LGA.	Significant presence of medical providers in Ballina would be able to provide emergency treatment for some conditions. Ballina Hospital has contingencies to reduce vulnerability to its infrastructure and patients but to deal with those affected in the community from an external source of risk and who would require medical assistance.

ELEMENT	Who/What is Vulnerable	Comment	Actions to increase Resilience (Existing or Proposed)
Natural Environment	Coastal zones	Dunal systems	Coastline Hazards definition study and interim Action Plans, plus LEP conditions limiting development in critical zones. Dune care groups carry out preventative maintenance works.
	Estuary/Wetlands	In terms of exposure to sources of risk (ie. Proximity to industrial areas, factories etc) short, medium and long term damage Richmond River Estuary, North Ck Estuary, Tuckean Swamp, Lake Ainsworth, Prospect and Chickiba wetlands	The Fisheries Management Act 1994 plus amendments covers all fisheries aspects, The SEPP 14 – Coastal wetlands covers SEPP 14 wetlands, The threatened species conservation act 1995 covers threatened species and EEC's, the Marine Parks Act covers marine park areas, Protection of the Environment Operations act all monitor exposure to sources of risk and regulate same to ensure risk is minimised or removed. Further, Ballina Shire Council has developed Plans and Policies relating to the various Reserves and Estuaries which they are responsible for.

## **References**

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**Ballina Shire Coastline Management Study and Management Plan** which includes *Ballina Coastline Hazard Definition Study, WMB (2003)*

Emergency Risk Management Guide, *State Emergency Management Committee (SEMC)*

Ballina Bush Fire Risk Management Plan

### **Ballina Shire Social Plan**

### **Ballina Shire Facts and Figures**

Emergency Management Australia Website, [www.ema.gov.au](http://www.ema.gov.au)

Ballina Shire Council Website, [www.ballina.nsw.gov.au](http://www.ballina.nsw.gov.au)

Local Government Act, 1993

State Emergency Rescue Management Act

## **Other Relevant and Important Links**

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**Ballina Strategic Tourism Plan July 2002 – June 2005.**

### **Community Groups and Social Clubs**

#### **Schools**

#### **Environmental Volunteer Groups**

#### **Ballina Shire Caravan Parks and Camping Grounds**

#### **State Emergency Service – NSW Website**

#### **NSW Rural Fire Service – Public Website**

#### **NSW Fire Brigades – Public Website**

## **APPENDIX A - RISK ANALYSIS & ASSESSMENT DATA (Risk Assessment Toolbox)**

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Technological hazards/sources of risk (ie Man made) pose the greatest risk to the communities in Ballina local government area, certainly to those communities in closer proximity to the highways, industrial areas etc. The reason is that these type of events generally occur without warning (eg Accident involving hazardous substances).

The risk levels returned from the assessment are merely an indication. For example, where a risk level is Extreme this is because of the elements identified at risk and the impact that the event would have on the community, despite it being unlikely for such an event to occur.

Naturally occurring hazards/sources of risk, pose the second highest risk to the communities of the Ballina Local Government area as the Speed of Onset, Extent, Intensity are variable and it can be difficult to predict exactly when and where these types of events will occur. Cyclones (east coast lows) and floods are more predictable as they develop over a longer period of time, whereas, for example, a severe storm, while it can be largely predicted as it forms, the exact location and severity is still difficult to determine.

The communities of Teven, Tintenbar Valley, Uralla and Cabbage Tree Island are considered to be at higher risk than other communities being lower lying areas and more exposed to inundation and subsequently may require evacuation or temporary relocation.

A full summary of the Risk Assessments, Treatment Priority and Analysis is included in Section 7.6.

**Appendix A- Risk Analysis and Assessment Data (#1049397)**

EVENT	COMMUNITY	RISK LEVEL	PRIMARY AGENCY
Flood	Ballina LGA	Extreme	State Emergency Service
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
Ballina Shire Local DISPLAN and Recovery Arrangements Ballina Shire Local Flood Plan Schools - Emergency & Evacuation Plans	Northern Rivers DISPLAN and Recovery Arrangements	State Flood Plan Agriculture and Animal Services Supporting Plan Endorsed: Livestock Flood Relief - the Flood Operating Plan	
<b>PEOPLE (High)</b>			
<p><b>Risk</b>                      The risk of people losing their lives as a result of becoming trapped in flood waters.                      The risk of people becoming displaced due to road networks being closed due to flood related activities.                      The risk of people of in the Teven and Tintenbar Valleys, Uralba and Cabbage Tree Island areas requiring evacuation.                      The risk of people requiring emergency assistance/treatment (ie. Routine emergency) medivac.                      The risk of people being exposed to raw sewage in the event of a sewerage failure. (see separate risk assessment).                      The risk of people on dialysis requiring medivac.                      The risk of students becoming displaced or requiring relocation.</p>			
<p><b>Scope</b>                      Ability to educate the community on the dangers of entering flood waters.                      Ability to get supporting emergency services, support and functional area personnel in from out of area to the affected areas within a reasonable timeframe (12 hours).                      Potential to overload the health system.                      Ability to provide appropriately trained personnel for road closure barricades etc.                      Ability to identify suitable evacuation centres.</p>			
<p><b>Actions</b>                      Ensuring that schools have appropriate policies and/or MOA in place for relocation of students.                      Review of the Local Disaster Plan as per current practices.                      Refer to DoCS to ensure Welfare plans and arrangements. (note: security at EvacCentres).                      Refer to Ballina Council to review plans for STP.                      Local DISPLAN and Recovery arrangements apply - review as per current practice.                      Refer to Health                      Refer to LEMC to review and/or develop a Road Closure and Evacuation Plan for the flood affected areas of Ballina where it is deemed reasonable and appropriate to do so.</p>			

<b>PROPERTY/ ASSETS (High)</b>
<p><b>Risk</b>  The risk of homes across the Ballina LGA being damaged or destroyed by flood waters.  The risk of businesses in the commercial, industrial and retail sectors being damaged or destroyed.  The risk of caravans from various Caravan Parks requiring relocation out of flood.  The risk of personal assets such as vehicles, personal belongings, personal papers etc., being damaged or destroyed by flood.  The risk of local parks and other community assets (eg. Halls) being damaged or destroyed.</p>
<p><b>Scope</b>  Ability to educate community on the need for adequate insurance.  Ability to relocate large numbers of caravans and residents to higher ground.  Identification of a suitable location to relocate caravans to.</p>
<p><b>Actions</b>  Refer to the State Emergency Service to check Plans and Programmes are in place and being implemented.  Refer to the State Emergency Service to check that a protocol exists for the evacuation of caravan parks.</p>
<b>ENVIRONMENT (Low Risk)</b>
<p><b>Risk</b>  The risk of coastal erosion (see separate risk assessment for Coastal Erosion)  The risk of &gt;&gt; Nature Reserve/s being damaged by flood.</p>
<p><b>Scope</b>  Recovery a coastal - dunal systems after an event.  Protecting homes at risk of falling into the ocean.</p>
<p><b>Actions</b>  Development control measures.</p>
<b>LIFELINES / INFRASTRUCTURE (Low Risk)</b>
<p><b>Risk</b>  The risk of the sewerage system experiencing a major fail during a flood event.  The risk of school infrastructure being damaged or destroyed by flood waters.  The risk of &gt;&gt; bridges being damaged or destroyed by flood waters.  The risk of road networks across the Ballina LGA being damaged or destroyed by flood waters.  The risk of road networks remaining closed due to debris carried by flood waters.  The risk of Ballina Council's sewerage system failing during a flood.</p>
<p><b>Scope</b>  Ability to get supporting emergency services, support and functional area personnel in from out of are to the affected areas within a reasonable timeframe (12 hours).  Ability to provide fuel supplies to emergency and response vehicles and craft.</p>

<p><b>Actions</b> Refer to Ballina Council to check any existing Plans and arrangements for the sewerage system.</p>
<p><b>ANIMALS/ STOCK (Low Risk)</b></p>
<p><b>Risk</b> The risk of domestic animals being rescued and evacuated with their owners. The risk of stock needing to be rescued or relocated. The risk of stock becoming isolated.</p>
<p><b>Scope</b> The ability to provide feed for stock which have been relocated or become isolated. The ability to provide a suitable holding area for stock. The ability to provide a suitable facility for care and wellbeing of domestic animals and pets.</p>
<p><b>Actions</b> Refer to Department of Primary Industries to check existing Plans and arrangements. Refer to Department of Primary Industries and Ballina Council to ensure suitable sites have been identified for a large scale animal evacuation/care facility.</p>
<p><b>SOCIAL / ECONOMIC (High Risk)</b></p>
<p><b>Risk</b> The risk of business in the Ballina LGA suffering financial losses from flood. The risk of unemployment rising due to businesses closing permanently or for a prolonged period.</p>
<p><b>Scope</b> Ability to educate the business community on the importance of having adequate insurance. Ability to educate the business community on the importance of having a Business Continuity Plan. Ability to provide sufficient warning to the business community to enable protection of stock.</p>
<p><b>Actions</b> Refer to the Chamber of Commerce to ensure that these matters are being addressed with their members. Refer to the State Emergency Service to ensure continuation of education/awareness within the Business Community in conjunction with Ballina Council.</p>

EVENT	COMMUNITY	RISK LEVEL	PRIMARY AGENCY
Severe Storm - Wind, Rain, Hail, Electrical	Ballina LGA	Extreme	State Emergency Service
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
Ballina Local DISPLAN and Recovery Arrangements. Ballina Coastline Interim Measures and Action Plan Ballina Shire Caravan Park Evacuation Plan Coastline Hazard Definition Study`	Northern Rivers DISPLAN and Recovery Arrangements	NSW State Health Plan Agriculture and Animal Services Supporting Plan State Welfare Plan NSW State Storm Plan	
<b>PEOPLE (High)</b>			
<p><b>Risk</b>  The risk of people losing their lives from airborne debris and large hail rocks.  The risk of people being suffering injury from hail rocks and airborne debris (minor to severe)  The risk of people requiring short to medium term emergency accommodation.  The risk of people becoming displaced due to road closures (debris)  The risk of people becoming caught in a severe storm in vehicles.  The risk of people needing medivac.  The risk of people (residents) of nursing and aged care facilities requiring evacuation/relocation.  The risk of people living in caravan parks requiring relocation and/or emergency accommodation.</p>			
<p><b>Scope</b>  Ability to educate the community on what to do to before, during and after a severe storm event.  Ability to provide short to medium term emergency accommodation.  Ability to clear road networks within a reasonable timeframe (12 hours)  Ability to educate the community on what to do if caught out in vehicles.  Possible strain on medical services and facilities - caring for injured.  Ability to evacuate/relocate residents from nursing and aged care facilities (lack of appropriate transport and accommodation).</p>			
<p><b>Actions</b>  Refer to the State Emergency Service to ensure continuation of community education and awareness programmes relating to Severe Storm in conjunction with Ballina Council.</p> <p>Refer to Department of Community Services (DoCS) to ensure Welfare Plans and other associated plans are current and incorporate treatments - where reasonable and appropriate - for the risks identified.</p> <p>Refer to Ballina Council to check that appropriately trained personnel have been identified to assist with removal of debris.</p> <p>Refer to nursing and aged care facilities to ensure that appropriate plans are in place for off-site evacuation or temporary relocation.</p>			
<b>PROPERTY/ ASSETS (High)</b>			
<b>Risk</b>			

<p>The risk of buildings being damaged or destroyed from gale winds.</p> <p>The risk of buildings being damaged or destroyed from water entering the premises.</p> <p>The risk of vehicles being extensively damaged or destroyed.</p> <p>The risk contents of buildings being damaged or destroyed by a severe storm event.</p> <p>The risk of the Lennox Head CBD being undermined through coastal erosion.</p> <p>The risk of crops and plantations being severely damaged and/or destroyed by wind and hail.</p>
<p><b>Scope</b></p> <p>Ability to educate the community on what to do to before, during and after a severe storm event.</p> <p>Ability to educate the community on what to do if caught out in vehicles.</p> <p>Possible strain on medical services and facilities - caring for injured.</p> <p>Ability to educate the community on the need for adequate home and contents insurance.</p> <p>Ability of people who fall within socioeconomic disadvantaged groups to obtain adequate insurance.</p> <p>Ability to protect the Lennox Head CBD.</p> <p>Ability to ensure that new retirement village developments, caravan parks etc., have a development condition ensuring emergency evacuation and response plans are developed and tested.</p>
<p><b>Actions</b></p> <p>Refer to State Emergency Service and Ballina Shire Council to continue implementing Community education/awareness programmes.</p>
<p><b>ENVIRONMENT (Low)</b></p>
<p><b>Risk</b></p> <p>The risk of nature reserves in the Ballina Shire LGA being damaged or destroyed.</p> <p>The risk of significant coastal erosion occurring (refer to assessment on Coastal Erosion)</p> <p>The risk of damage or loss to native habitat.</p>
<p><b>Scope</b></p> <p>The ability to recover/rehabilitate nature reserves</p> <p>The ability to recover the coast areas in the Ballina Shire area.</p>
<p><b>Actions</b></p> <p>Refer to Ballina Shire Council to look at the coastal erosion issues associated with Lennox Head.</p> <p>Refer to National Parks and Wildlife Service to check plans.</p>
<p><b>LIFELINES / INFRASTRUCTURE (Low)</b></p>
<p><b>Risk</b></p> <p>The risk of road networks being damaged from flash flooding.</p> <p>The risk of schools in the Ballina LGA being significantly damaged.</p> <p>The risk of the sewerage system failing.</p> <p>The risk of a prolonged power failure (more than 5 hours)</p> <p>The risk of loss of water supply to areas in the Ballina LGA.</p> <p>The risk of Emergency Services premises being extensively damaged.</p> <p>The risk of medical facilities being extensively damaged.</p> <p>The risk of a fuel shortage for emergency vehicles due to power loss.</p> <p>The risk of delay in activating the Emergency Operations Centre due to power loss.</p>
<p><b>Scope</b></p> <p>Prioritisation of routes in the road network to be recovered within reasonable timeframes.</p> <p>Ability to recover educational facilities within a reasonable timeframe.</p>

<p>Ability to protect the sewerage system and prevent a major fail.  Ability to restore the power to affected areas within a reasonable timeframe.  Ability to protect the domestic water supply.  Ability to sustain fuel supplies to emergency vehicles.  Provision of emergency power supply to the Emergency Operations Centre.</p>
<p><b>Actions</b>  Refer to RTA and Ballina Council to look at prioritisation of road network for recovery works.  Refer to Department of Education to check mitigation, response and recovery plans are in place and current.  Refer to Ballina Council for matters relating to the sewerage and water infrastructure.  Refer to Country Energy to address the risk of power loss.  Refer to LEMC to consider the risk of fuel shortage to emergency vehicles.  Refer to Ballina Council to consider the risk of no emergency power supply to EOC.  Refer to North Coast Area Health Service to ensure appropriate plans are in place with respect to their facilities being extensively damaged.  Refer to all Emergency Services to look at Business Continuity in the event of ES premises being extensively damaged.</p>
<p><b>ANIMALS/ STOCK (Low)</b></p>
<p><b>Risk</b>  The risk of domestic animals and pets being injured or killed from large hail rocks.  The risk of native animals being injured or killed from large hail rocks.  The risk of stock being injured or killed by large hail rocks.  The risk of stock becoming stranded due to flash flooding.</p>
<p><b>Scope</b>  Ability to detect and care for injured animals and stock.  Strain on veterinarian services and delays in providing care to injured animals and stock.</p>
<p><b>Actions</b>  Refer to Department of Primary Industries.</p>
<p><b>SOCIAL / ECONOMIC (Moderate)</b></p>
<p><b>Risk</b>  The risk of socioeconomic disadvantaged groups experiencing financial hardship due to having no insurance or inadequate insurance.  The risk of loss of employment in the agricultural and horticultural industries through loss of crops and plantations.</p>
<p><b>Scope</b>  Raising awareness of the need to have adequate insurance.  Raising awareness of ability to obtain emergency financial assistance.</p>
<p><b>Actions</b>  Refer to Ballina Shire Council to produce an information brochure in conjunction with the Services for distribution to the community.  Refer to DoCS to ensure that their plans are in place for emergency financial assistance.</p>

EVENT	COMMUNITY	RISK LEVEL	PRIMARY AGENCY
Fire - bush	Ballina LGA	Moderate	Rural Fire Service
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
Ballina Shire Caravan Park Evacuation Plan Bush Fire Risk Management Plan (BFRMP) Ballina Shire DISPLAN`	Northern Rivers DISPLAN		
<b>PEOPLE (Moderate Risk)</b>			
<p><b>Risk</b>  The risk of unknown numbers people requiring first aid for possible smoke inhalation.  The risk of people becoming displaced due to road closures.  The risk of people requiring evacuation from their homes.  The risk of teachers and students at the &gt;&gt; School requiring evacuation due to smoke.  The risk of teachers and students at the &gt;&gt; School requiring evacuation due to smoke.  The risk of the &gt;&gt;Caravan Park being impacted by embers.  The risk of the &gt;&gt; Retirement Village being impacted by smoke and embers.</p>			
<p><b>Scope</b>  Ensuring people know what to do should fire threaten and how to protect themselves- pre-fire season.  Educating school students on bush fire safety.  Communication to schools on current situation during an a bush fire event.  Communication to Caravan Parks and Retirement Villages.</p>			
<p><b>Actions</b>  Community Education program on how to prepare and protect themselves - refer to NSWFB  Community Education program on how to prepare and protect themselves - refer to NSW RFS  Hazard reduction program / approvals - refer to NSWFB and NSW RFS  Communications plan with schools (Community Liaison person - agency based).  Refer to schools to ensure appropriate plans are in place for this type of event.  Refer to all Caravan Park/s to ensure appropriate plans are in place.  Review and monitor current and existing plans to ensure currency.  Review and monitor risks identified and development/implement treatments where reasonable and possible to do so.  Combatant personnel are suitably trained and equipped to respond to this type of event.  Support personnel/agencies are trained to an appropriate level to provided effective support.</p>			
<b>PROPERTY/ ASSETS (Moderate Risk)</b>			
<p><b>Risk</b>  The risk of property (dwellings, vehicles) being damaged or destroyed from impacts of ember attack or fire front.</p>			
<p><b>Scope</b>  Ensuring residents have adequately prepared their homes.</p>			

Ensuring residents know how to protect their prepared homes.
<b>Actions</b> Community Education program on preparing homes - refer to NSWFB Community Education program on preparing homes - refer to NSW RFS Hazard reduction program / approvals - refer to NSWFB and NSW RFS
<b>ENVIRONMENT (Low Risk)</b>
<b>Risk</b> The risk of short term damage to sensitive areas of land (check with Council on these areas). The risk of koala habitat being destroyed by fire throughout the Ballina LGA. The risk of the >> Nature Reserve being damaged from bush fire.
<b>Scope</b> Ability to protect environmentally sensitive areas and koala habitat.
<b>Actions</b> Refer to NPWS to check plans and provide comments on existing arrangements and other treatments being developed or currently implemented.
<b>LIFELINES / INFRASTRUCTURE (Low Risk)</b>
<b>Risk</b> The risk of a power outage caused by burnt power lines or poles - minor impact [See assessment for Infrastructure - Power Failure] The risk of additional secondary roads being closed due to smoke hazard and to provide access for emergency vehicles. The risk of local roadnetworks being temporarily closed - < 4 hours. The risk of telecommunications being impacted.
<b>Scope</b> Ability to restore power within a reasonable timeframe - < 6 hours. Ability to restore telecommunications within a reasonable timeframe.
<b>Actions</b> Refer to Country Energy to check plans. Refer to Telstra to check plans.
<b>ANIMALS/ STOCK (Low Risk)</b>
<b>Risk</b> The risk of domestic animals and other pets requiring evacuation with owners. The risk of stock on properties requiring relocation as a result of smoke or fire threat.
<b>Scope</b> Identification of a suitable locations to care for the animals. Transportation of the animals. Knowing the numbers of animals, their species in the at risk areas. Ability to warn stock and animal owners and provide them with necessary information. Effective communication with all Animal Welfare organisations or groups. The risk of biosecurity being breached (eg. Cutting of fences and moving stock across properties).
<b>Actions</b> Refer to Dept. Primary Industry (formerly NSW Agriculture) to check plans. Refer to Council to supply details of domestic (companion animals) - numbers. Landholder education/awareness program to be implemented by NSW Ag and other Animal Welfare groups and organisations.

**SOCIAL / ECONOMIC (Low Risk)**

**Risk**

The risk of insurances not being adequate or in place - financial hardship for residents or landowners and stock owners.

**Scope**

Ensuring community know who to contact and where to go for assistance.

**Actions**

Refer to Dept. of Community Services to ensure plans are in place and reviewed.

Develop a Communication/Information Plan.

Refer to Rural Assistance Authority to ensure appropriate plans are in place.

EVENT	COMMUNITY	RISK LEVEL	PRIMARY AGENCY
East Coast Low (Cyclone)	Ballina LGA	High	State Emergency Service
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
LOCAL LEVEL PLANS Ballina Shire Local DISPLAN and Recovery Arrangements Ballina Shire Local Flood Plan  DOES BALLINA HAVE A: Vegetation Plan (Dune Care) Coastline Management Plan	DISTRICT LEVEL PLANS Northern Rivers DISPLAN and Recovery Arrangements	STATE LEVEL PLANS State Flood Plan Agriculture and Animal Services Supporting Plan Endorsed: Livestock Flood Relief - the Flood Operating Plan Animal Welfare Plan	
<b>PEOPLE (High)</b>			
<b>Risk</b> The risk of people losing their lives as a result of becoming trapped in flood waters. The risk of people becoming displaced due to road networks being closed due to flood related activities. The risk of people of in the Teven and Tintenbar Valleys, Uralba and Cabbage Tree Island areas requiring evacuation. The risk of people requiring emergency assistance/treatment (ie. Routine emergency) medivac. The risk of people being exposed to raw sewage in the event of a sewerage failure. (see separate risk assessment). The risk of people on dialysis requiring medivac. The risk of students becoming displaced or requiring relocation.			
<b>Scope</b> Ability to educate the community on the dangers of entering flood waters. Ability to get supporting emergency services, support and functional area personnel in from out of area to the affected areas within a reasonable timeframe (12 hours). Ability to provide adequate supplies of vaccination if required and providing a outreach service during flood times. Potential to overload the health system. Ability to provide appropriately trained personnel for road closure barricades etc. Ability to identify suitable evacuation centres.			
<b>Actions</b> Ensuring that schools have appropriate policies and/or MOA in place for relocation of students. Review of the Local Disaster Plan as per current practices. Refer to DoCS to ensure Welfare plans and arrangements. (note: security at EvacCentres). Refer to Ballina Council to review plans for STP. Local DISPLAN and Recovery arrangements apply - review as per current practice. Refer to Health Refer to LEMC to review and/or develop a Road Closure and Evacuation Plan for the flood affected areas of Ballina where it is deemed reasonable and appropriate to do so.			

<b>PROPERTY/ ASSETS (High)</b>
<p><b>Risk</b>  The risk of homes across the Ballina LGA being damaged or destroyed due to severe weather.  The risk of businesses in the commercial, industrial and retail sectors being damaged or destroyed.  The risk of caravans requiring relocation from all Parks as a result of severe weather.  The risk of personal assets such as vehicles, personal belongings, personal papers etc., being damaged or destroyed by severe weather.  The risk of local parks and community assets (eg. Halls) being damaged or destroyed)</p>
<p><b>Scope</b>  Inability to relocate caravans and mobile homes to higher ground.  Ensuring that Caravan Park owners/managers have suitable emergency preparedness and response plans in place.  The ability to educate business owners on being prepared, response plan and business continuity.  Ensure appropriate and timely warnings and advice to the community.  Ability to educate community on what items to take with them (eg. Personal papers, medication etc)  Ability to communicate information to the community in relation to operational priorities.</p>
<p><b>Actions</b>  Refer to the State Emergency Service to check Plans and Programmes are in place and being implemented.  Refer to the State Emergency Service to check that a protocol exists for the evacuation of caravan parks.  Refer to relevant Business Groups with regard to business preparedness and continuity.</p>
<b>ENVIRONMENT (Moderate)</b>
<p><b>Risk</b>  <b>The risk of coastal erosion.</b>  <b>The risk of national parks, marine park and other reserves being damaged by severe weather.</b>  <b>The risk of cultural and/or heritage sites being adversely impacted by severe weather.</b>  <b>The risk of contaminants entering water courses.</b></p>
<p><b>Scope</b>  Inability to reestablish coastal - dunal systems after an event.  Inability to protect buildings at risk of falling into the ocean specifically Lennox Head.  Ability to contain contaminants from entering water courses.</p>
<p><b>Actions</b>  Refer to Ballina Shire Council to provide details of development Control Measures, existing plans and arrangements with respect to coastal erosion risk.</p>
<b>LIFELINES / INFRASTRUCTURE (Moderate)</b>
<p><b>Risk</b>  The risk of school infrastructure being damaged or destroyed by severe weather event.  The risk of road networks across the Ballina LGA being damaged or destroyed by a severe weather event.  The risk of road networks across the Ballina LGA remaining closed for an extended period of time.  Risk of Communications, Sewerage, Water and Power Infrastructure Failing during a severe weather event (see separate Risk Assessments for Communications, Sewerage, Water and Power Failure).</p>
<p><b>Scope</b></p>
<p><b>Actions</b>  Refer to Department of Education and/or local schools to check existing plans and arrangements.  Refer to RTA and Ballina Council to provide comment on existing plans and arrangements on road networks.  Refer to Ballina Council to check any existing Plans and arrangements for the sewerage system.</p>

<b>ANIMALS/ STOCK (Low)</b>
<p><b>Risk</b>  The risk of animal/ stock losses across the Ballina LGA.  The risk of animal/ stock being injured and requiring care and or destruction throughout Ballina LGA.  The risk of animal/ stock requiring relocation in areas throughout the Ballina LGA.</p>
<p><b>Scope</b>  Identification of a suitable site to dispose of animal/ stock carcasses.  Ability to transport and relocate animal and stock including portable yards and temporary animal accomodation.  Ability to identify owners of stock and animals.</p>
<p><b>Actions</b>  Refer to Ballina Shire Council to locate suitable site in consultation with Department of Primary Industries.  Refer to Department of Primary Industries to check plans and arrangements.</p>
<b>SOCIAL / ECONOMIC (Moderate)</b>
<p><b>Risk</b>  The risk of business in the Ballina LGA suffering financial losses due to flooding caused by Low.  The risk of unemployment rising due to businesses closing permanently or for a prolonged period.  The risk of a down turn in tourism causing a financial impact on the Ballina LGA.</p>
<p><b>Scope</b>  Ability to educate the business community on the importance of having a Business Continuity Plan.  Ability to provide sufficient warning to the business community to enable protection of stock.  The ability to educate business owners on being prepared, response plan and business continuity.</p>
<p><b>Actions</b>  Refer to relevant Business Groups with regard to business preparedness and continuity.  Refer to the State Emergency Service to check Plans and Programmes are in place and being implemented.  Refer to appropriate authority for tourism.</p>

<b>EVENT</b>	<b>COMMUNITY</b>	<b>RISK LEVEL</b>	<b>PRIMARY AGENCY</b>
Storm Surge	Ballina LGA	Moderate	State Emergency Service
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
LOCAL LEVEL PLANS Ballina Shire Local DISPLAN and Recovery Arrangements Ballina Shire Local Flood Plan`	DISTRICT LEVEL PLANS Northern Rivers DISPLAN and Recovery Arrangements	STATE LEVEL PLANS State Flood Plan Agriculture and Animal Services Supporting Plan Endorsed: Livestock Flood Relief - the Flood Operating Plan Animal Welfare Plan	
<b>PEOPLE (High)</b>			
<p><b>Risk</b>  The risk of people becoming displaced due to road networks being closed due to flood related activities.  The risk of approximately &gt;&gt;&gt; residents in the Ballina Island, Lennox Head areas requiring evacuation.  The risk of approximately &gt;&gt; visitors (peak holiday) in the Ballina Island and Lennox Head areas requiring evacuation.  The risk of people being exposed to raw sewage in the event of a sewerage failure. (see separate risk assessment for Infrastructure Failure - Sewerage).  The risk of people with critical/ongoing medical needs accessing health services.  The risk of students being released from school early and unavailability of carers to receive them.</p>			
<p><b>Scope</b>  Ability to provide adequate supplies of food and medication if required and providing a outreach service.  Potential to overload the health system.  Ability to provide appropriately trained personnel for road closure barricades etc.  Ability to identify suitable evacuation centres.  Ability to provide warnings to the CALD groups.  Ability to provide additional garbage collection for removal of debris and general clean up.</p>			
<p><b>Actions</b>  Refer to Health Service to indicate plans and arrangements for accessing medical needs (critical/ongoing)  Refer to Ballina Shire Council to advise on a - Sewerage Emergency Management Plan  Refer to Ballina Shire Council and SES to produce Awareness Brochure for distribution to community  Refer to educational facilities to check what plans and arrangements are in place for early release.  Refer to Ballina Shire Council and SES to conduct inspections of identified evacuations centre.  Refer to SES and Ballina Shire Council to develop multi-lingual information/warning material.  Refer to all Agencies to provide list of existing plans and arrangements for this event.  Refer to DPI and Ballina Shire Council Health Department regarding insect control.  Refer to Ballina Shire Council in refernce to clean up and debris removal arrangements.</p>			
<b>PROPERTY/ ASSETS (Home)</b>			
<p><b>Risk</b>  The risk of homes being damaged or destroyed due to storm surge specifically in the Lennox Head area</p>			

<p>The risk of businesses in the commercial, industrial and retail sectors being damaged or destroyed.</p> <p>The risk of caravans requiring relocation from all Parks as a result of storm surge.</p> <p>The risk of personal assets such as vehicles, personal belongings, personal papers etc., being damaged or destroyed by severe weather.</p> <p>The risk of local parks and community assets (eg. Halls) being damaged or destroyed)</p>
<p><b>Scope</b></p> <p>Inability to relocate caravans and mobile homes to higher ground.</p> <p>Ensuring that Caravan Park owners/managers have suitable emergency preparedness and response plans in place.</p> <p>The ability to educate business owners on being prepared, response plan and business continuity.</p> <p>Ensure appropriate and timely warnings and advice to the community.</p> <p>Ability to educate community on what items to take with them (eg. Personal papers, medication etc)</p> <p>Ability to communicate information to the community in relation to operational priorities.</p>
<p><b>Actions</b></p> <p>Refer to the State Emergency Service to check Plans and Programmes are in place and being implemented.</p> <p>Refer to the State Emergency Service to check that a protocol exists for the evacuation of caravan parks.</p> <p>Refer to relevant Business Groups with regard to business preparedness and continuity.</p>
<p><b>ENVIRONMENT (Moderate)</b></p>
<p><b>Risk</b></p> <p>The risk of coastal erosion.</p> <p>The risk of national parks, marine park and other reserves being damaged by severe weather.</p> <p>The risk of cultural and/or heritage sites being adversely impacted by severe weather.</p> <p>The risk of contaminants entering water courses.</p>
<p><b>Scope</b></p> <p>Inability to reestablish coastal - dunal systems after an event.</p> <p>Inability to protect buildings at risk of falling into the ocean specifically Lennox Head.</p> <p>Ability to contain contaminants from entering water courses.</p>
<p><b>Actions</b></p> <p>Refer to Ballina Shire Council.</p>
<p><b>LIFELINES / INFRASTRUCTURE (Moderate)</b></p>
<p><b>Risk</b></p> <p>The risk of road networks being damaged or destroyed by a storm surge.</p> <p>Risk of Communications, Sewerage, Water and Power Infrastructure Failing during a storm surge (see separate Risk Assessments).</p>
<p><b>Scope</b></p> <p>Getting road networks repaired and re-opened within a reasonable timeframe.</p> <p>Identification of alternate vehicle routes suitable for carrying Semi-trailers and B-doubles and handling significant increase in traffic volume.</p>
<p><b>Actions</b></p> <p>Refer to Ballina Shire Council and RTA to investigate/identify suitable alternate vehicle routes.</p>
<p><b>ANIMALS/ STOCK (No Risk Identified)</b></p>
<p><b>Risk</b></p> <p>No risk to animals/stock were identified at the time.</p>
<p><b>Scope</b></p> <p>No comment required.</p>

<p><b>Actions</b> No actions.</p>
<p><b>SOCIAL / ECONOMIC (Moderate)</b></p>
<p><b>Risk</b> The risk of business in the Ballina Island and Lennox Head Localities suffering financial losses from storm surge. The risk of unemployment rising due to businesses closing permanently or for a prolonged period. The risk of a down turn in tourism causing a financial impact.</p>
<p><b>Scope</b> Ability to educate the business community on the importance of having a Business Continuity Plan. Ability to provide sufficient warning to the business community to enable protection of stock. The ability to educate business owners on being prepared, response plan and business continuity.</p>
<p><b>Actions</b> Refer to relevant Business Groups with regard to business preparedness and continuity. Refer to the State Emergency Service to check Plans and Programmes are in place and being implemented. Refer to appropriate authority for tourism.</p>

<b>EVENT</b>	<b>COMMUNITY</b>	<b>RISK LEVEL</b>	<b>PRIMARY AGENCY</b>
Tsunami	Ballina LGA	High	State Emergency Service
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
<p>LOCAL LEVEL Ballina Shire DISPLAN and recovery arrangements.</p>	<p>DISTRICT LEVEL Northern Rivers DISPLAN and Recovery arrangements.</p>	<p>STATE LEVEL NSW Tsunami Plan. The Pacific Tsunami Warning Centre (PTWC) in Hawaii is the Headquarters of the Operational Tsunami Warning System and works closely with other regional national centres in monitoring seismological and tidal instruments around the Pacific Ocean, to evaluate and issue warnings for potential tsunami-producing earthquakes. The PTWC is operated by the United States National Weather Service. A similar centre is now planned in Australia. [Source: Emergency Management Australia Website - <a href="http://www.ema.gov.au">www.ema.gov.au</a>]</p>	
<b>PEOPLE (High Risk)</b>			
<p><b>Risk</b> The risk of people of up to &gt;&gt; being injured or losing their lives in the coastal localities. The risk of people becoming displaced medium to long term due to loss of infrastructure, services, homes. The risk of people requiring emergency accommodation medium to long term. The risk of people suffering emotional and psychological impacts.</p>			
<p><b>Scope</b> The ability to obtain accurate information to enable maximum warning time. The ability to provide medium and long term emergency accommodation. Identification of suitable 'one stop shop' location for recovery.</p>			
<p><b>Actions</b> Refer to State Emergency Service to advise existing plans and arrangements. Refer to Ballina Shire Council to advise existing plans and arrangements and to advise evacuation centres outside of the impact area. Refer to State Emergency Service to check and advise on existing plans and arrangements. Refer to Department of Community Services to check and advise existing plans and arrangements. Refer to State Emergency Management Committee to advise existing plans and arrangements, in particular "Communication Plan" to District and Local Levels.</p>			
<b>PROPERTY/ ASSETS (High Risk)</b>			
<p><b>Risk</b> The risk of homes, businesses being damaged and destroyed. The risk of personal items and papers etc, being damaged, lost or destroyed.</p>			

<p><b>Scope</b> The ability to identify survivors who have lost identification papers, etc., for emergency welfare assistance.</p>
<p><b>Actions</b> Refer to Department of Community Services to check existing plans and arrangements.</p>
<p><b>ENVIRONMENT (Moderate )</b></p>
<p><b>Risk</b> The risk of the natural environment being severely damaged or destroyed, in particular, coastal areas (coastal erosion - see Separate Risk Assessment for Coastal Erosion).</p>
<p><b>Scope</b> The ability to recover coastal areas.</p>
<p><b>Actions</b> Refer to Ballina Shire Council to advise existing plans and arrangements. Refer to National Parks &amp; Wildlife Service to advise existing plans and arrangements.</p>
<p><b>LIFELINES / INFRASTRUCTURE ( )</b></p>
<p><b>Risk</b> The risk of infrastructure and essential services being damaged or destroyed.</p>
<p><b>Scope</b> The ability to restore essential services (power, water and sewer) in a reasonable timeframe. The ability to recover schools and other essential community facilities, services in a reasonable timeframe.</p>
<p><b>Actions</b> Refer to Country Energy to advise existing plans and arrangements. Refer to Ballina Shire Council to advise existing plans and arrangements. Refer to Department of Education to advise existing plans and arrangements.</p>
<p><b>ANIMALS/ STOCK (High Risk)</b></p>
<p><b>Risk</b> The risk of native and domestic animals and livestock being injured or killed. The risk of domestic animals becoming displaced or being evacuated.</p>
<p><b>Scope</b> The ability to care for injured, displaced or evacuated animals (carers, facilities, supplies).</p>
<p><b>Actions</b> Refer to Department of Primary Industries (previously NSW Agriculture) to advise existing plans and arrangements.</p>
<p><b>SOCIAL / ECONOMIC (High Risk)</b></p>
<p><b>Risk</b> The risk of social networks breaking down and being lost. The risk of economic devastation to the Ballina LGA due to business loss, unemployment, impacts to tourism.</p>
<p><b>Scope</b> Ability to sustain and rebuild social networks.</p>

Ability to recover the tourism and commercial industry within the impacted areas of the Ballina LGA.

**Actions**

Refer to tourism to advise existing plans and arrangements.

Consult with commercial sector on business continuity.

EVENT	COMMUNITY	RISK LEVEL	PRIMARY AGENCY
Coastal Erosion	Ballina LGA	Extreme	State Emergency Service
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
LOCAL LEVEL Ballina Shire DISPLAN Ballina Coastal Erosion Plan`			
<b>PEOPLE (High Risk)</b>			
<b>Risk</b> The risk of people requiring evacuation from threatened homes in the Lennox Head locality. The risk of people requiring medium to long term emergency accommodation in the Lennox Head area. The risk of people being injured or losing their life in the Lennox Head area.			
<b>Scope</b> Ability to provide suitable warning to people in areas to be most likely impacted. Ability to provide medium, long term emergency accommodation.			
<b>Actions</b> Refer to Ballina LEMC to comment and advise existing plans and arrangements. Refer to Ballina Shire Council to advise existing plans and arrangements. Refer to Department of Community Services to advise existing plans and arrangements. Refer to District Emergency Management Officer for comment.			
<b>PROPERTY/ ASSETS (High Risk)</b>			
<b>Risk</b> The risk of homes and businesses on the eastern side of >> Street partially or fully collapsing due to coastal erosion. The risk of homes and business on the eastern side of >> Street requiring demolition following coastal erosion.			
<b>Scope</b> The ability to protect homes and businesses on the eastern side of >> Street from partially or fully collapsing due to coastal erosion. The ability to provide medium to long term emergency accommodation. The ability to recover the area. The ability to warn people.			
<b>Actions</b> Refer to Ballina Shire Council to advise existing plans and arrangements. Consult with residents in the Lennox Head area, in particular residents and business owners along >> Street.			
<b>ENVIROMMENT ()</b>			
<b>Risk</b> REFERENCE COASTAL EROSION PLAN for information.			
<b>Scope</b>			

<b>Actions</b>
<b>LIFELINES / INFRASTRUCTURE ( )</b>
<b>Risk</b> The risk of infrastructure and essential services being damaged or destroyed.
<b>Scope</b> The ability to restore essential services (power, water and sewer) in a reasonable timeframe.
<b>Actions</b> Refer to Country Energy to advise existing plans and arrangements. Refer to Ballina Shire Council to advise existing plans and arrangements.
<b>ANIMALS/ STOCK (Moderate Risk)</b>
<b>Risk</b> The risk of domestic animals becoming displaced or being evacuated.
<b>Scope</b> The ability to care for injured, displaced or evacuated animals (carers, facilities, supplies).
<b>Actions</b> Refer to Department of Primary Industries (previously NSW Agriculture) to advise existing plans and arrangements.
<b>SOCIAL / ECONOMIC (High Risk)</b>
<b>Risk</b> The risk of businesses along the main Street in Lennox Head being lost. The risk of a significant downturn in trade for businesses along the main Street in Lennox Head. The risk of unemployment increasing due to business closure (temporary or permanently)
<b>Scope</b> Recovering the business sector of Lennox Head along the main Street.
<b>Actions</b> Consult with commercial sector on Business Continuity and risks associated with coastal erosion.

EVENT	COMMUNITY	RISK LEVEL	PRIMARY AGENCY
Transport Accid - Air	Ballina LGA	High	NSW Police
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
Ballina Shire Local DISPLAN Ballina Airport Emergency Plan`	Northern Rivers DISPLAN	NSW Hazmat Plan NSW Health Plan	
<b>PEOPLE (High)</b>			
<b>Risk</b> The risk of people being injured and/or losing their lives. The risk of people being psychologically impacted/traumatised. The risk of people requiring evacuation from the airport locality - travellers displaced.			
<b>Scope</b> Managing the media. Ensuring an effective response. Overloading Health and Medical services and facilities.			
<b>Actions</b> Refer to North Coast Area Health Service to comment on existing plans and arrangements. Refer to Ballina Hospital to comment on existing plans and arrangements. Refer to NSW Ambulance Service to comment on existing plans and arrangements. Refer to Ballina Airport to advise existing plans and arrangements.			
<b>PROPERTY/ ASSETS (No Risk Identified)</b>			
<b>Risk</b> No risk was identified to property or assets on the assumption that the most likely site for a transport air accident would be the Ballina Airport. This will be revised at each review period.			
<b>Scope</b> Nil comment.			
<b>Actions</b> In the unlikely event of property and assets being impacted, normal DISPLAN and Recovery arrangements will apply.			
<b>ENVIROMMENT (Low Risk)</b>			
<b>Risk</b> The risk of fuel and other contaminants entering natural drains and stormwater.			
<b>Scope</b> Ability to contain spill quickly and effectively.			
<b>Actions</b> Refer to NSW Fire Brigades to advise existing Plans and arrangements.			

<b>LIFELINES / INFRASTRUCTURE (Low Risk)</b>
<b>Risk</b> The risk of infrastructure and essential services being damaged or destroyed.
<b>Scope</b> The ability to restore essential services (power, water and sewer) in a reasonable timeframe.
<b>Actions</b> Refer to Country Energy to advise existing plans and arrangements. Refer to Ballina Shire Council to advise existing plans and arrangements.
<b>ANIMALS/ STOCK ( )</b>
<b>Risk</b> No risk to animals or stock was identified.
<b>Scope</b> Nil comment.
<b>Actions</b> In the unlikely event that animals or stock are impacted from a Transport Air Accident, normal DISPLAN and Recovery arrangements will apply.
<b>SOCIAL / ECONOMIC ( )</b>
<b>Risk</b> FURTHER COMMENT TO BE SOUGHT FROM LEMC MEMBERS
<b>Scope</b>
<b>Actions</b>

EVENT	COMMUNITY	RISK LEVEL	PRIMARY AGENCY
Transport Accid - Road	Ballina LGA	Extreme	NSW Police
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
Ballina Shire Local DISPLAN`	Northern Rivers DISPLAN	NSW Hazmat Plan	
<b>PEOPLE (High)</b>			
<b>Risk</b> The risk of significant number of people suffering injuries ranging from minor to severe. The risk of significant number of people losing their lives. The risk of people, including responders suffering mental or emotional trauma. The risk of people being trapped in wreckage.			
<b>Scope</b> Managing convergence to the crash site. Ability to keep sightseers out of the area - road closures/barricades Ability to manage the media. Ability to manage the public enquiries. Drain on medical services and facilities. Ability to identify victims (DVI) Ability to establish an onsite mortuary facility.			
<b>Actions</b> Development of a Media Management Plan in consultation with local media representatives. Refer to North Coast Area Health Service to check plans. Refer to Dept. Community Services to advise current Welfare plans and arrangements.			
<b>PROPERTY/ ASSETS (No Risk Identified)</b>			
<b>Risk</b> No risk to property and/or assets identified at the time this study was conducted.			
<b>Scope</b> No manageability issues due to no risk being identified.			
<b>Actions</b> In the event that property/assets are significantly impacted, normal DISPLAN and recovery arrangements will apply.			
<b>ENVIROMMENT (Low Risk)</b>			
<b>Risk</b> The risk of contaminants or pollutants (eg. fuel) entering the stormwater drainage system or waterways.			
<b>Scope</b> Ability to prevent contaminants/pollutants entering the stormwater drainage system.			

Ability to prevent contaminants/pollutants entering the water ways.
<b>Actions</b> Refer to NSW Fire Brigades to check plans and review where necessary. Refer to Ballina Shire Council to advise existing plans and arrangements.
<b>LIFELINES / INFRASTRUCTURE (Low Risk)</b>
<b>Risk</b> The risk of the local road network being impacted due to road closures. The risk of power being lost to parts of the Ballina Shire Council area.
<b>Scope</b> Ability to quickly identify suitable detour routes around accident site. Ability to advise traffic changes to the general public. Ability to restore power within a reasonable timeframe.
<b>Actions</b> Refer to RTA to advise existing plans and arrangements for detouring of highway traffic. Refer to Ballina Shire Council to advise existing plans and arrangements. Refer to Country Energy to advise existing plans and arrangements.
<b>ANIMALS/ STOCK (Low Risk)</b>
<b>Risk</b> No risk has been identified to animals/stock with the exception of the incident involving a stock transporter.
<b>Scope</b> Ability to euthanase animals at site - drain on veterenarian services. Ability to remove carcasses and suitable disposal site. Ability to control frightened and distressed animals and yard them.
<b>Actions</b> Refer to Dept. of Primary Industries to check plans and amend if necessary. Refer to Ballina Shire Council to advise existing plans and arrangements for carcass disposal.
<b>SOCIAL / ECONOMIC (Moderate Risk)</b>
<b>Risk</b> The risk of social impacts due to significant fatalities from a single community.
<b>Scope</b> Ability to provide support to the affected community.
<b>Actions</b> Refer to DoCS to advise existing plans and arrangements.

<b>EVENT</b>	<b>COMMUNITY</b>	<b>RISK LEVEL</b>	<b>PRIMARY AGENCY</b>
Hazardous Materials	Ballina LGA	High	NSW Fire Brigade
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
Ballina Shire Local DISPLAN`	Northern Rivers DISPLAN	NSW Hazmat Plan NSW Health Plan	
<b>PEOPLE (High Risk)</b>			
<b>Risk</b> The risk of people requiring temporary relocation or evacuation, dependent on nature/scope of event. The risk of people being displaced due to lock down of site / area. The risk of people requiring first aid or medical treatment due to inhalation or contact with hazmat substance.			
<b>Scope</b> Ability to isolate the area and prevent entry by general public or the media. Ability to provide suitable emergency accommodation for evacuees. Coordination of evacuation of personnel onsite and adjoining premises. Ability to provide information to the community on appropriate action.			
<b>Actions</b> Refer to NSW Fire Brigades to advise existing plans and arrangements. Refer to NSW Police to check plans re: evacuation. Refer to North Coast Area Health Service to check plans. Refer to Dept. Community Services to advise current Welfare plans and arrangements. Review DISPLAN to ensure adequate measures are in place.			
<b>PROPERTY/ ASSETS (Moderate Risk)</b>			
<b>Risk</b> The risk of the BallinaHospital being closed due to contaminated persons presenting to emergency department.			
<b>Scope</b> The ability to prevent contaminated persons entering. The ability to lock down parts of the hospital to prevent further contamination to hospital.			
<b>Actions</b> In the unlikely event that a major HAZMAT incident should occur which physically impact property and/or assets, normal DISPLAN and recovery arrangements will apply. Refer to Ballina Hospital to advise existing plans and arrangements. Refer to WorkCover to ensure protocols exist for monitoring industry compliance for hazardous materials. Refer to NSW Fire Brigades to advise existing plans and arrangements.			
<b>ENVIROMMENT (Moderate Risk)</b>			
<b>Risk</b>			

<p>The risk of contaminants/pollutants entering the stormwater drainage system.  The risk of contaminants/pollutants entering water ways in the Ballina Shire area.  The risk of pollutants entering the atmosphere.</p>
<p><b>Scope</b>  Ability to prevent contaminants/pollutants entering the stormwater drainage system.  Ability to prevent contaminants/pollutants entering the water ways.</p>
<p><b>Actions</b>  Refer to NSW Fire Brigades to check plans and review where necessary.</p>
<p><b>LIFELINES / INFRASTRUCTURE (Moderate Risk)</b></p>
<p><b>Risk</b>  The risk of the local roadnetwork being impacted as a result of an exclusion area - road closures.  The risk of the Ballina Hospital emergency department being closed.</p>
<p><b>Scope</b>  Identification of appropriate detours.  Traffic management issues and coordination.  Drain on other medical services and facilities.</p>
<p><b>Actions</b>  Refer to NSW Police to check plans re: traffic management issues with evacuations.  Refer to Dept. of Environment and Conservation (formerly EPA)</p>
<p><b>ANIMALS/ STOCK (No Risk Identified)</b></p>
<p><b>Risk</b>  No risk was identified within the context of this study - ie. Requiring a significant and coordinated response for animal welfare issues.</p>
<p><b>Scope</b>  No manageability issues as no risk identified.</p>
<p><b>Actions</b>  In the unlikely event that a major HAZMAT incident should occur which involves animals/stock, normal DISPLAN and recovery arrangements will apply</p>
<p><b>SOCIAL / ECONOMIC (Moderate Risk)</b></p>
<p><b>Risk</b>  The risk of trading ceasing if incident occurs within CBD areas of localities of Alstonville, Wollongbar, Lennox Head, Ballina etc.</p>
<p><b>Scope</b>  Communicating information to the business district of what is occurring and keeping them updated.</p>
<p><b>Actions</b>  Refer to Ballina LEMC to provide further comment on actions to be undertaken and possible treatments</p>

<b>EVENT</b>	<b>COMMUNITY</b>	<b>RISK LEVEL</b>	<b>PRIMARY AGENCY</b>
Explosion	Ballina LGA	Moderate	NSW Fire Brigade
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
Ballina Shire Local DISPLAN`	Northern Rivers DISPLAN	NSW Hazmat Plan NSW Health Plan	
<b>PEOPLE (High)</b>			
<b>Risk</b> The risk of people caught in the blast zone suffering injury or losing their lives. The risk of people requiring evacuation/relocation within a minimum 500 metre radius if an explosion threatens - dependent on situation. The risk of people requiring emergency accommodation if homes extensively damaged.			
<b>Scope</b> Availability of sufficient numbers of emergency services personnel to assist with an evacuation. Strain on medical services and facilities dealing with casualties. Availability of sufficient numbers of personnel to man barricades preventing access to exclusion zone.			
<b>Actions</b> Refer to NSW Fire Brigades to advise existing plans and arrangements. Refer to DoCS to advising existing plans and arrangements. Refer to Ballina Shire Council for comment.			
<b>PROPERTY/ ASSETS (High Risk)</b>			
<b>Risk</b> The risk of homes and business premises in the blast zone being extensively damaged or destroyed. The risk of vehicles within the blast zone being extensively damaged or destroyed. The risk of industrial/commercial premises being damaged or destroyed should explosion occur in this area. The risk of structural collapse as a result of explosion [Refer to Building Collapse]			
<b>Scope</b> Recovery of the area within a reasonable timeframe. Ensuring people know where to seek assistance/advice on insurance matters or emergency finance.			
<b>Actions</b> Refer to Council for further comment and to check existing plans. Refer to DoCS to check existing plans and that personnel are suitably trained to assist. Refer to WorkCover to implement an awareness program for industrial premises storing material to could cause and explosion or combine to cause an explosion.			
<b>ENVIROMMENT (Moderate Risk)</b>			
<b>Risk</b> The risk of pollutants as a result of an explosion, entering the stormwater system or waterway.			

<b>The risk of pollutants entering the atmosphere.</b>
<b>Scope</b> Preventing pollutants from entering the stormwater or other waterway.
<b>Actions</b> Refer to NSW Fire Brigades to check plans and that personnel are suitably trained to deal with this. Refer to Dept. of Environment and Conservation (formerly EPA) to check plans.
<b>LIFELINES / INFRASTRUCTURE (Moderate Risk)</b>
<b>Risk</b> The risk of prolonged power outage in localities of Ballina Shire up to 12 hours or more. The risk of educational/medical facilities being damaged if within the blast zone. The risk of loss of emergency services facilities. The risk of the local road network being impacted.
<b>Scope</b> Restoration of power within a reasonably manageable timeframe. Off site evacuation of educational/medical facilities. Identification of suitable detour routes.
<b>Actions</b> Refer to NSW Fire Brigades to advise existing plans and arrangements. Refer to all Schools to advise existing plans and arrangements for off-site evacuation and/or the development of such plans and arrangements.
<b>ANIMALS/ STOCK (Low Risk)</b>
<b>Risk</b> The risk of animals/pets (primarily domestic and companion) being evacuated or temporarily relocated with their owners.
<b>Scope</b> Ability to care for the animals/pets. Identification of a suitable location for the keeping and care of animals/pet
<b>Actions</b> Refer to Dept. Primary Industries to check plans for currency and pre-identified sites for animal welfare matters.
<b>SOCIAL / ECONOMIC (Moderate Risk)</b>
<b>Risk</b> The risk of loss of critical infrastructure (ie. Hospital, learning institution). The risk of medium to long term recovery costs. The risk of financial hardship being endured by families of employees of the facilities damaged/destroyed. The risk of some social breakdown - primarily associated with looting.
<b>Scope</b> Recovery of the affected area/s as quickly as possible - within a reasonable timeframe. Ability to provide people with information on what to do and where to go for welfare assistance.
<b>Actions</b> Refer to Ballina Shire Council for the Development of a Recovery Management Plan in consultation with the LEMC.

<b>EVENT</b>	<b>COMMUNITY</b>	<b>RISK LEVEL</b>	<b>PRIMARY AGENCY</b>
Fire - Industrial	Ballina LGA	High	NSW Fire Brigade
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
Ballina Shire Local DISPLAN`	Northern Rivers DISPLAN	NSW Hazmat Plan NSW Health Plan	
<b>PEOPLE (Moderate Risk)</b>			
<b>Risk</b> The risk of people suffering injury and/or death in the rare event of a major industrial fire. The risk of people requiring relocation/evacuation due to toxins being emitted.			
<b>Scope</b> Drain on medical services and facilities - ability to take casualties. Location and retrieval of trapped and/or deceased persons. Coordination of evacuation of personnel onsite and adjoining premises. Traffic management issues and coordination. Disaster Victims Identification (DVI)			
<b>Actions</b> Refer to NSWFB for comment and to check plans. Refer to NSW Police to check plans in relation to traffic management issues and evacuation. Refer to NSW Police to check plans/procedures for DVI			
<b>PROPERTY/ ASSETS (High Risk)</b>			
<b>Risk</b> The risk of multiple structures being damaged or destroyed by fire. The risk of looting occurring.			
<b>Scope</b> Ability to contain the fire and prevent subsequent ignitions of adjoining structures. Ability to secure the site.			
<b>Actions</b> Refer to NSWFB to check plans and to ensure that fire fighting personnel are suitably trained to respond to and manage this type of event. Refer to WorkCover to check plans, regulations and procedures to ensure industrial premises. Refer to NSW Police to check plans re: security issues.			
<b>ENVIROMMENT (Low Risk)</b>			
<b>Risk</b> The risk of contaminants/pollutants entering the stormwater drainage system. The risk of contaminants/pollutants escaping into the water ways. The risk of toxins entering the atmosphere.			

<p><b>Scope</b>  Ability to contain contaminants/pollutants and prevent entry to the stormwater drainage system.  Ability to contain contaminants/pollutants and prevent entry to the water ways.</p>
<p><b>Actions</b>  Refer to NSW Fire Brigades to check plans and that personnel are suitably trained to deal with this.  Refer to Dept. of Environment and Conservation (formerly EPA) to check plans.</p>
<p><b>LIFELINES / INFRASTRUCTURE (Low Risk)</b></p>
<p><b>Risk</b>  The risk of power being lost as a result of a major industrial fire.  The risk of a sewerage treatment plan failure due to a prolonged power outage &gt; 24 hours.  The risk of a water shortage due to prolonged power outage &gt; 18 hours.</p>
<p><b>Scope</b>  Ability to restore the power within a reasonable timeframe.  Ability to maintain/sustain Sewerage infrastructure during a prolonged power outage.</p>
<p><b>Actions</b>  Refer to Country Energy to advise existing plans and arrangements.  Refer to Ballina Shire Council to advise existing plans arrangements for sewerage infrastructure.  Refer to Ballina Shire Council and Rous Water to advise existing plans and arrangements.</p>
<p><b>ANIMALS/ STOCK (No Risk Identified)</b></p>
<p><b>Risk</b>  No risk was identified to animals or stock as a result of this type of event.</p>
<p><b>Scope</b>  No manageability issues exist as no risk has been identified at the time of this study.</p>
<p><b>Actions</b>  In the unlikely event of this type of event, normal DISPLAN and recovery arrangements will apply.</p>
<p><b>SOCIAL / ECONOMIC (Moderate Risk)</b></p>
<p><b>Risk</b>  The risk of extensive recovery costs.  The risk of financial hardship for employees of businesses destroyed.  The risk of economic losses to the Ballina LGA as a result of major industrial fire.</p>
<p><b>Scope</b>  Employers and Employees knowing where to go to seek assistance.  Ability to raise awareness of the importance of Business Continuity.</p>
<p><b>Actions</b>  Refer to DoCS to advise existing plans and arrangements.</p>

EVENT	COMMUNITY	RISK LEVEL	PRIMARY AGENCY
Infrastructure - Power Failure	Ballina LGA	Moderate	CountryEnergy
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
Ballina Shire Local DISPLAN`	Northern Rivers DISPLAN		
<b>PEOPLE (Low Risk)</b>			
<b>Risk</b> The risk of up to approximately 46,000 people being impacted in the Ballina Shire Local Government and surrounding areas if fail exceeds 12 hours. The risk of people suffering dehydration if failure occurs on days of extreme temperatures.			
<b>Scope</b> Ability to provide emergency domestic water supply. Ability to have residents conserve water. Ability to be able to restrict water usage across the Ballina Shire LGA.			
<b>Actions</b> Refer to Rous Water to advise resevoir capacities and to advise existing plans and arrangements. Refer to Ballina Shire Council to advise existing plans and arrangements. Refer to Country Energy for comment and to advise existing plans and arrangements.			
<b>PROPERTY/ ASSETS (No Risk Identified)</b>			
<b>Risk</b> No risk was identified to property at the time this study was undertaken.			
<b>Scope</b> No problems, manageability issues.			
<b>Actions</b> No Actions.			
<b>ENVIROMMENT (Low Risk)</b>			
<b>Risk</b> The risk of an STP failure due to prolonged power outage and subsequent overflow of sewage.			
<b>Scope</b> Preventing an STP failure occurring. Ability to protect the environment where reasonably achievable.			
<b>Actions</b> Refer to Council's Works Directorate seeking comment and to check plans. Refer to Dept. of Environment and Conservation to check plans.			
<b>LIFELINES / INFRASTRUCTURE (Low Risk)</b>			

<p><b>Risk</b>  The risk of telecommunications failing (see Risk Assessment for Communications)  The risk of water supply failing - (see Risk Assessment for Water)  The risk of a sewerage infrastructure failing (see Risk Assessment for Sewerage)  The risk of the Byron Bay Lighthouse failing due to power loss.</p>
<p><b>Scope</b>  The ability to maintain telecommunications throughout the power outage.  The ability to maintain sewerage infrastructure.  The ability to source and supply emergency domestic water.  The ability to warn marine craft.</p>
<p><b>Actions</b>  Refer to Country Energy to advise existing plans and arrangements.  Refer to Ballina Shire Council to advise existing plans arrangements for sewerage infrastructure.  Refer to Ballina Shire Council and Rous Water to advise existing plans and arrangements.  Refer to Byron Shire Council Waste, Recycling Management Services (WRMS) to advise existing plans and arrangements.  Refer to Telecommunication providers to advise existing plans and arrangements.  Refer to Country Energy to advise existing plans and arrangements.  Refer to Ballina Coast Guard to provide comment and advise existing plans and arrangements.</p>
<p><b>ANIMALS/ STOCK (No Risk Identified)</b></p>
<p><b>Risk</b>  No risk to animals or stock were identified at the time this study was undertaken as a result of a power failure.</p>
<p><b>Scope</b>  No manageability issues as no risk has been identified.</p>
<p><b>Actions</b>  In the unlikely event that animals/stock are impacted as a result of a power failure, normal DISPLAN and other response/recovery arrangements will apply.</p>
<p><b>SOCIAL / ECONOMIC (Low Risk)</b></p>
<p><b>Risk</b>  The risk of isolated incidents of looting.</p>
<p><b>Scope</b>  Ability to provide suitable numbers of personnel to undertake security for vulnerable areas of the Ballina Shire LGA.</p>
<p><b>Actions</b>  Refer to NSW Police to check plans and provide comment on how to treat this issue.</p>

<b>EVENT</b>	<b>COMMUNITY</b>	<b>RISK LEVEL</b>	<b>PRIMARY AGENCY</b>
Infrastructure - Sewerage Failure	Ballina LGA	High	Ballina Shire Council
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
Ballina Shire Local DISPLAN`	Northern Rivers DISPLAN		
<b>PEOPLE (Low Risk)</b>			
<b>Risk</b> The risk of people being impacted by potential health risk due to surcharging/overflow through contaminants entering the estuary system. The risk of people coming into contact with raw sewage due to surcharging/overflow of sewer junctions in residential and commercial sectors.			
<b>Scope</b> Ability to prevent human contact with overflow. Ability to be able to clean up and treat in a reasonable timeframe.			
<b>Actions</b> Refer to Ballina Shire Council to advise existing plans and arrangements.			
<b>PROPERTY/ ASSETS (No Risk Identified)</b>			
<b>Risk</b> No risk to property and assets were identified at the time this study was undertaken.			
<b>Scope</b> No problems/manageability issues.			
<b>Actions</b> No Actions			
<b>ENVIROMMENT (Low Risk)</b>			
<b>Risk</b> The risk of sewerage overflowing into waterways and beaches. The risk of marine and birdlife being impacted due to overflow into estuary system.			
<b>Scope</b> Ability to recover/treat the estuary systems, waterways and beaches.			
<b>Actions</b> Refer to Ballina Shire Council to advise existing plans and arrangements.			
<b>LIFELINES / INFRASTRUCTURE (Low Risk)</b>			
<b>Risk</b> The risk of a pump station failure resulting in an overflow. The ris of sewerage treatment plant failure.			
<b>Scope</b>			

<p>Ability to supply emergency power to maintain pumps.  Ability to restore operations within a reasonable timeframe.</p>
<p><b>Actions</b>  Refer to Ballina Shire Council to advise existing plans and arrangements.</p>
<p><b>ANIMALS/ STOCK (No Risk Identified)</b></p>
<p><b>Risk</b>  No risk to animals/stock were identified at the time this study was undertaken.</p>
<p><b>Scope</b>  No problems/manageability issues</p>
<p><b>Actions</b>  No Actions</p>
<p><b>SOCIAL / ECONOMIC (Low Risk)</b></p>
<p><b>Risk</b>  The risk of local economies throughout the Ballina Shire LGA being impacted (dependent on duration/extent of event).</p>
<p><b>Scope</b>  Ability to have operations restored within a reasonable timeframe.</p>
<p><b>Actions</b>  Refer to Ballina Shire Council to advise existing plans and arrangements.</p>

EVENT	COMMUNITY	RISK LEVEL	PRIMARY AGENCY
Infrastructure - Water Failure	Ballina LGA	Moderate	Ballina Shire Council
<b>EXISTING PLANS AND ARRANGEMENTS</b>			
<b>LOCAL LEVEL PLANS</b>	<b>DISTRICT LEVEL PLANS</b>	<b>STATE LEVEL PLANS</b>	
Ballina Shire Local DISPLAN`	Northern Rivers DISPLAN		
<b>PEOPLE (Low Risk)</b>			
<b>Risk</b> The risk of up to approximately 46,000 people being impacted in the Ballina Shire Local Government and surrounding areas if fail exceeds 12 hours. The risk of people suffering dehydration if failure occurs on days of extreme temperatures.			
<b>Scope</b> Ability to provide emergency domestic water supply. Ability to have residents conserve water. Ability to be able to restrict water usage across the Ballina Shire LGA.			
<b>Actions</b> Refer to Rous Water to advise resevoir capacities and to advise existing plans and arrangements. Refer to Ballina Shire Council to advise existing plans and arrangements.			
<b>PROPERTY/ ASSETS (No Risk Identified)</b>			
<b>Risk</b> No risk was identified to property at the time this study was undertaken.			
<b>Scope</b> No problems, manageability issues.			
<b>Actions</b> No Actions.			
<b>ENVIROMMENT (No Risk Identified.)</b>			
<b>Risk</b> No risk was identified to environment at the time this study was undertaken.			
<b>Scope</b> No problems, manageability issues.			
<b>Actions</b> No Action			
<b>LIFELINES / INFRASTRUCTURE (No Risk Identified.)</b>			
<b>Risk</b> The risk to the Sewerage Treatment Plant being impacted. The risk of Emergency Services being impacted (eg. Fire fighting provisions)			

The risk of Hospitals being impacted - those procedures, areas reliant on water.
<p><b>Scope</b>  Ability to treat the biological processes of the sewerage treatment plant within 24-48 hours.  The ability to provide bulk water for fire fighting operations.  The ability to provide emergency water supply to Ballina Health Services</p>
<p><b>Actions</b>  Refer to Ballina Shire Council to advise existing plans and arrangements.  Refer to Rous Water.  Refer to all emergency services to advise existing plans and arrangements for this type of event.</p>
<b>ANIMALS/ STOCK (No Risk Identified)</b>
<p><b>Risk</b>  No risk was identified to animals/stock at the time this study was undertaken.</p>
<p><b>Scope</b>  No problems/manageability issues</p>
<p><b>Actions</b>  No Actions</p>
<b>SOCIAL / ECONOMIC ( )</b>
<p><b>Risk</b>  The risk of local economies throughout the Ballina LGA being impacted (dependent on duration of event).</p>
<p><b>Scope</b>  Ability to have water supplied restored within a reasonable timeframe.</p>
<p><b>Actions</b>  Refer to Ballina Shire Council to advise existing plans and arrangements.  Refer to Rous Water</p>

## APPENDIX B - ERM TREATMENT ACTION PLAN

**PRINCIPAL ACTIVITY:** DISASTER PREVENTION AND/OR MITIGATION

**OBJECTIVE:** Provide for the co-ordinated prevention and/or mitigation of natural disasters for the Ballina Shire Council area.

Matter to be addressed	Strategy	Performance Indicators	Responsible Agency / Organisation/s	Monitor/Review	Review Comment
<b>Severe Storm/Flooding (inundation of water) Hazmat incidents</b>					
Preparing, ongoing monitoring and reviewing of a Community Services Directory. ALL HAZARDS/SOURCES OF RISK	To have a current and up to date Community Services directory (web based) that can be utilised to raise the awareness of the community of what services are available to them.	Increased access/use of services and/or enquiry about same.	Ballina Shire Council	Quarterly report to the LEMC Meeting.	
Ongoing Review of existing Plans and Arrangements, and monitor to ensure currency. ALL HAZARDS/SOURCES OF RISK.	To ensure that all existing local level Plans and Arrangements remain current and up to date.	Reviews completed and reported to the LEMC meeting by November 2009.	Ballina Shire Council All agencies and organisations.	Quarterly report to the LEMC Meeting.	
Conduct Annual Exercise (multi-agency.) as part of the review process and to test the Emergency Operations Centre operational effectiveness and personnel.	To test EOC, arrangements, plans and to ensure personnel maintain the appropriate level of training.	Ongoing Training and re-certification undertaken through agency and organisational requirements as identified during the exercise and triggered review of plans and arrangements.	All agencies and organisations	Report to LEMC and DEMC	
Community Education/Awareness campaigns where appropriate – FLOOD, STORM, CYCLONE,	To ensure that the community of Ballina Shire are aware and educated on how to prepare for these events and where to seek assistance and how they can assist and protect themselves.	Ongoing in accordance with current arrangements within the State Emergency Service;	State Emergency Service (SES)	Quarterly progress report to LEMC.	

**STATUS REPORT –  
Future projects -**

Matter to be addressed	Strategy	Performance Indicators	Responsible Agency / Organisation/s	Monitor/Review	Review Comment
<b>Fires, Bush Fires</b>					
Community education program regarding FIRE	To ensure the community has a good understanding and awareness on how to prepare and protect themselves	A more informed and aware community.	NSW Rural Fire Service NSW Fire Brigades	Quarterly progress report to LEMC	
Preparation of Hazard reduction programs	To prepare and implement hazard reduction programs for the shire	Appropriate plans prepared for all affected areas; Ongoing reduction in permit fires being lost (escaping) and a more informed community	Rural Fire Service Ballina Shire Hazard Reduction Committee	Quarterly report to LEMC	
Communications plan with schools (Community Liaison person - agency based).	To develop and maintain a communication plan for Schools	Communication Plan developed by March 2009.	NSW Rural Fire Service NSW Fire Brigades NSW Police Dept. Education (schools)	Progress report to LEMC	
Ongoing Review of existing Plans and Arrangements, and monitor to ensure currency. ALL HAZARDS/SOURCES OF RISK.	To ensure that all existing local level Plans and Arrangements remain current and up to date.	Reviews completed and reported to the LEMC meeting by November 2009	Ballina Shire Council  All agencies and organisations	Quarterly report to the LEMC Meeting	
Ongoing Training to ensure Combatant personnel are suitably trained and equipped to respond to this type of event.	To have emergency services appropriately trained and equipped.	Training implemented as per agencies' learning and development programs.	All agencies Ballina Shire Council	Quarterly Report to LEMC .	
Support personnel/agencies are trained to an appropriate level to provided effective support.	To have key personnel of support organisations with an emergency management role appropriately trained and skilled.	Support organisations to ensure personnel have attended emergency management training	Dept. Community Services. Salvation Army.	Report to LEMC	

**STATUS REPORT –  
Future projects -**

Matter to be addressed	Strategy	Performance Indicators	Responsible Agency / Organisation/s	Monitor/Review	Review Comment
<b>Tsunami and Tsunami Warnings</b>					
Develop a Local Tsunami Warning Plan and Fact Sheet – including a Communication Plan	To have a community which is educated on tsunamis and what to do when a Warning is issued, who to contact, where to access updates on the situation.	Draft Local Tsunami Plan by December 2009.  Fact Sheet developed by December 2009.  Distribution of Fact Sheet and posting to Website by March 2010.	State Emergency Service; LEMC working group and Ballina Shire Council, in consultation with all other agencies.	Present Draft Plan to February 2010 LEMC Meeting  Fact Sheet presented to LEMC and Council.	

**STATUS REPORT –**

**Future projects -**

Matter to be addressed	Strategy	Performance Indicators	Responsible Agency / Organisation/s	Monitor/Review	Review Comment
<b>Coastal Erosion</b>					
Development of Coastline Management Plan	To have a Coastline Management Plan that identifies the risks and proposes prevention and/or mitigation measures and possible solutions.	Coastline Management Plan developed	Ballina Shire Council	Progress report to LEMC.	

**STATUS REPORT –**

**Future projects -**

Matter to be addressed	Strategy	Performance Indicators	Responsible Agency / Organisation/s	Monitor/Review	Review Comment
<b>Transport Accident - Air</b>					
Ongoing testing and review of the Ballina Airport Emergency Plan.	To ensure that Plans and arrangements, emergency procedures and processes are appropriate to respond to this type of event.	Plan is reviewed and updated as required in accordance with existing practices.	Ballina Airport Ballina Shire Council. LEMC	Annual report to LEMC or after any review.	
Conduct annual exercise at the airport in accordance with regulations.	To ensure that regulations are complied with and that agencies and organisations have appropriate training and skills to respond and manage this type of event.	Annual exercise is conducted.	Ballina Airport Ballina Shire Council. LEMC	Copy of Debrief notes along with report to LEMC following conclusion of exercise.	

**STATUS REPORT –**

**Future projects -**

Matter to be addressed	Strategy	Performance Indicators	Responsible Agency / Organisation/s	Monitor/Review	Review Comment
<b>Transport Accident - Road</b>					
Conduct a Tabletop or Discussion exercise as part of the Review process, and to test the Emergency Operations Centre operational effectiveness and personnel.	To design, develop and carry out a Tabletop and/or discussion exercise to test the Emergency Operations Centre operational effectiveness and personnel.	Exercise scenario developed.  Exercise conducted.	Local Emergency Management Officer in consultation with key Staff and personnel of agencies and organisations and DEMO.	Report to LEMC when exercise conducted on identified issues.	
Identification of suitable detour routes as part of a Road Closure Plan.	To have identified detour routes for Pacific and Bruxner Highways and mapped same. (Pacific Hwy completed)	Appropriate detours identified by November 2009.  Maps produced showing the detours available to be used by February 2010 and distributed through LEMC.	RTA In consultation with LEMC, Ballina Shire Council, NSW Police  Ballina Shire Council	Progress report to November LEMC Meeting.  Report to November LEMC Meeting.	
Ongoing Training to ensure Combatant personnel are suitably trained and equipped to respond to this type of event.	To have emergency services appropriately trained and equipped.	Training implemented as per agencies' learning and development programs.	All agencies Ballina Shire Council	Quarterly Report to LEMC.	

## STATUS REPORT –

### Future projects -

Matter to be addressed	Strategy	Performance Indicators	Responsible Agency / Organisation/s	Monitor/Review	Review Comment
<b>Hazardous Materials/Explosion</b>					
Conduct a Tabletop or Discussion exercise as part of the Review process, and to test the Emergency Operations Centre operational effectiveness and personnel	To design, develop and carry out a Tabletop and/or discussion exercise to test the Emergency Operations Centre operational effectiveness and personnel.	Exercise scenario developed.  Exercise conducted.	Local Emergency Management Officer in consultation with key Staff and personnel of agencies and organisations and DEMO.	Report to LEMC when exercise conducted on identified issues.	
Ongoing Review of existing Plans and Arrangements, and monitor to ensure currency	To ensure that all existing local level Plans and Arrangements remain current and up to date	Reviews completed and reported to the LEMC meeting by November 2009.	Ballina Shire Council  All agencies and organisations	Report to LEMC	
Ongoing Training to ensure Combatant personnel are suitably trained and equipped to respond to this type of event.	To have emergency services appropriately trained and equipped.	Training implemented as per agencies' learning and development programs.	All agencies Ballina Shire Council	Quarterly Report to LEMC .	

**STATUS REPORT –**

**Future projects -**

Matter to be addressed	Strategy	Performance Indicators	Responsible Agency / Organisation/s	Monitor/Review	Review Comment
<b>Power, Water &amp; Sewer Failure</b>					
Ongoing monitoring and review (ie communication with Rous Water).	Identification of emergency water supply sources and emergency contact arrangements in place	Alternate supplies identified; contact arrangements in place	Rous Water; Ballina Council	Report to LEMC	
Undertake Awareness programme for Business Continuity, for local Businesses through Chamber of Commerce	To advise business on the need for continuity planning	Council letter to Country Energy	Country Energy	Report to LEMC	
Full assessment of the Sewerage Treatment Plant and associated infrastructure to determine extent of any upgrades required or other measures to be implemented to mitigate the risk.	To increase the timeframe to 'act' and prevent and/or mitigate a fail.	Assessment conducted by December 2009.	Ballina Shire Council.	Quarterly progress report to LEMC.  Information report to Council as determined necessary.	

**STATUS REPORT –**

**Future projects -**