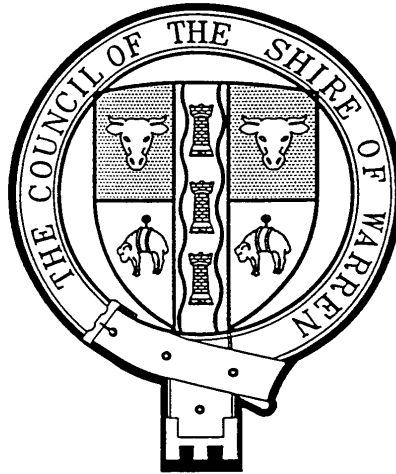


WARREN LOCAL FLOOD PLAN



A SUB-PLAN OF THE WARREN LOCAL DISASTER PLAN (DISPLAN)



Chairperson, Local Emergency
Management Committee

SES Local Controller

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CONTENTS

DISTRIBUTION LIST	IV
AMENDMENT CERTIFICATE	V
LIST OF ABBREVIATIONS	VI
GLOSSARY	VII
PART 1 - INTRODUCTION	1
1.1 PURPOSE.....	1
1.2 AUTHORITY	1
1.3 AREA COVERED BY THE PLAN	1
1.4 DESCRIPTION OF FLOODING AND ITS EFFECTS	1
1.5 RESPONSIBILITIES.....	1
PART 2 - PREPAREDNESS	10
2.1 MAINTENANCE OF THIS PLAN.....	10
2.2 FLOODPLAIN RISK MANAGEMENT.....	10
2.3 DEVELOPMENT OF FLOOD INTELLIGENCE	11
2.4 DEVELOPMENT OF WARNING SYSTEMS	12
2.5 PUBLIC EDUCATION	12
2.6 TRAINING	13
2.7 RESOURCES	13
PART 3 - RESPONSE.....	14
3.1 CONTROL	14
3.2 OPERATIONS CENTRES	14
3.3 LIAISON.....	14
3.4 COMMUNICATIONS	14
3.5 ACTIVATION.....	15
3.6 FLOOD INTELLIGENCE	15
3.7 PRELIMINARY DEPLOYMENTS	16
3.8 WARNINGS	16
3.9 INFORMATION.....	18
3.10 ROAD CONTROL	19
3.11 FLOOD RESCUE	19
3.12 EVACUATIONS.....	20
3.13 REGISTRATION	20
3.14 ESSENTIAL SERVICES	20
3.15 LOGISTICS	20
3.16 RESUPPLY.....	21
3.17 MANAGEMENT OF EVACUEES' PETS	21
3.18 STRANDED TRAVELLERS	21
3.19 ALL CLEAR.....	21
PART 4 - RECOVERY	22
4.1 WELFARE	22
4.2 RECOVERY COORDINATION.....	22
4.3 DEBRIEFING ARRANGEMENTS	22
ANNEX A - THE FLOOD THREAT	A-1
THE MACQUARIE RIVER BASIN.....	A-1
FLOODING IN THE MACQUARIE RIVER BASIN.....	A-1
FLOODING IN THE WARREN SHIRE COUNCIL AREA	A-2

WEATHER SYSTEMS	A-4
FLOOD HISTORY	A-5
DESIGN FLOOD	A-5
EXTREME FLOODING	A-5
FLOOD MITIGATION SYSTEMS	A-6
ANNEX B - EFFECTS OF FLOODING ON THE COMMUNITY	B-1
WARREN	B-1
RURAL AREAS	B-1
COLLIE	B-2
NEVERTIRE	B-2
TRANSPORT DISRUPTIONS	B-2
ANNEX C - GAUGES MONITORED BY WARREN SES LOCAL HEADQUARTERS	C-1
ANNEX D - DISSEMINATION OF SES FLOOD BULLETINS.....	D-1
ANNEX E - TEMPLATE EVACUATION WARNING MESSAGE FOR WARREN.....	E-1
ANNEX F - EVACUATION ARRANGEMENTS FOR THE WARREN SHIRE.....	F-1
SITUATION.....	F-1
AIM	F-1
EXECUTION	F-1
GENERAL OUTLINE	F-1
THE DECISION TO EVACUATE.....	F-1
PHASE 1 - WARNING.....	F-2
PHASE 2 – WITHDRAWAL	F-3
PHASE 3 - SHELTER	F-5
PHASE 4 - RETURN	F-5
MAP 1 – MACQUARIE RIVER BASIN.....	I
MAP 2 – WARREN SHIRE COUNCIL AREA	II
MAP 3 – WARREN.....	III
MAP 4 – WARREN WARDEN SECTORS	IV
MAP 5 – COLLIE	V
MAP 6 – NEVERTIRE	VI

Table of Figures:

Figure 1 - Frequency of Major Floods at Warren Town Gauge	A-4
Figure 2 - Effect of Flooding on Roads	B-4

DISTRIBUTION LIST

NSW SES State Headquarters	1
Warren SES Local Controller	2
Warren Local Emergency Operations Controller (LEOCON)	1
NSW Police Service, Warren.....	2
Warren Local Emergency Management Committee Members	10
Warren Local Emergency Management Officer (LEMO).....	1
Warren Local Emergency Operations Centre	10
Mayor, Warren Shire Council.....	1
General Manager, Warren Shire Council.....	1
Manager Engineering Services, Warren Shire Council	1
NSW Fire Brigades, Warren	1
Rural Fire Service, Warren	1
VRA, Warren	1
DLWC, State Water, Warren	1
Country Energy	1
Telstra, Warren	1
Department of Community Services (DOCS)	1
Disaster Welfare Service (DWS)	1
NSW Ambulance Service, Warren	1
Roads and Traffic Authority (RTA)	1
Evacuation Centres (Warren TAFE, Warren Sporting & Cultural Centre, Collie Hotel, Nevertire Hotel).....	1
Warren Multi-Purpose Health Service (WMPHS)	1
Warren Central School.....	1
St Mary's Primary School	1
Nevertire Primary School	1
Marra Creek Primary School	1
Council Libraries	1
Spare	20

LIST OF ABBREVIATIONS

The following abbreviations have been used in this plan:

AEP	Annual Exceedance Probability
ARI	Average Recurrence Interval (Years)
ALERT	Automated Local Evaluation in Real Time
CB	Citizens' Band
CBM	Commonwealth Bureau of Meteorology
DISPLAN	Disaster Plan
DLWC	Department of Land and Water Conservation
EFE	Extreme Flood Event
DVR	Disaster Victim Registration
GRN	Government Radio Network
HF	High Frequency
MR	Main Road
NRMA	National Roads and Motorists' Association
PMF	Probable Maximum Flood
SES	State Emergency Service
SEWS	Standard Emergency Warning Signal
SH	State Highway
UHF	Ultra High Frequency
VHF	Very High Frequency

GLOSSARY

Annual Exceedance Probability (AEP)	The probability, or risk, of a flood of a given size being exceeded in any given year. It is expressed either in percentage (eg 1% AEP) or in as 1-in-N (eg 1-in-100).
Average Recurrence Interval (ARI)	The average period (expressed in years) between the occurrence or exceedance of a flood of given size.
Australian Height Datum (AHD)	A common national reference plane, relative to which survey heights are given. It is approximately at mean sea level.
Catchment	The area draining to a site. It always relates to a particular site, and may include the catchments of tributary streams as well as the main stream.
Design Flood	The flood of specified magnitude that is adopted for planning purposes. The selection should be based on an understanding of flood behaviour and the associated flood risk, and take account of social, economic and environmental considerations. Also referred to as a flood standard. There may be several of these for an individual area.
Essential Services	Those services normally provided by local government authorities that are considered essential to the life of organised communities. Such services include power, lighting, water, gas, sewerage and sanitation clearance.
Flash Flooding	Flooding which is sudden and often unexpected because it is caused either by sudden heavy rainfall or rainfall in another area. It is often defined as flooding which occurs within 6 hours of the rain that causes it.
Flood	Relatively high stream flow when water overtops the natural or artificial banks of a stream and spreads over adjoining land.
Floodplain	Area of a river valley, adjacent to the river channel, which is subject to inundation by the probable maximum flood event.
Flood Runner	A watercourse that only flows during floods.

Floodways	Those areas where a significant volume of water flows during floods. They are often aligned with obvious naturally defined channels. Floodways are areas that, even if partially blocked, would cause a significant redistribution of flood flow, which may in turn adversely affect other areas. They are often, but not necessarily, the areas of deeper flow or the areas where higher velocities occur.
Flood Classifications	The State Emergency Service and Bureau of Meteorology both classify floods as being minor, moderate or major floods in warnings to give a general indication of the types of problems expected. See minor, moderate and major flooding.
Flood Hazard	Potential for damage to property or persons due to flooding.
Flood Intelligence	The product of collecting, collating, analysing and interpreting flood related data to produce meaningful information (intelligence) to allow for the timely preparation, planning, warning and response to a flood.
Flood Liable Land	Land which would be inundated as a result of a designated flood.
Flood of Record	Maximum observed historical flood.
Imminent Failure Level (IFL)	A level lower than the constructed crest level of a levee is assessed to be its potential failure level. The assessment is based upon difficulties in achieving compaction in the top sections of a levee, the erodible nature of materials (due to flow through surface cracking or wave run up over crest level), effects of settlement and duration of flooding. This level is termed the imminent failure level and is used to determine values for economic risk analysis.
Local Flooding	This term is used in cases where intense rainfall could be expected to cause high run-off in restricted areas but would not lead to significant rises in main streams.
Mainstream Flooding	Inundation of land that is normally dry, occurring when water overflows the natural or artificial banks of the principal watercourses in a

catchment. Mainstream flooding generally excludes watercourses constructed with pipes or artificial channels considered as stormwater channels.

Minor Flooding	Causes inconvenience such as closing of minor roads and the submergence of low-level bridges. The lower limit of this class of flooding on which reference gauge is the initial flood level at which landholders and townspeople begin to be submerged.
Moderate Flooding	Low-lying areas are inundated requiring removal of stock and/ or evacuation of some houses. Main traffic bridges may be covered.
Major Flooding	Extensive rural areas are flooded with properties; villages and towns isolated and/ or appreciable urban areas are flooded.
Probable Maximum Flood (PMF)	The largest flood that could conceivably be expected to occur at a particular location. The PMF defines the extent of flood prone land, ie. The maximum extent of flood-labile land.
Probability	A statistical measure of the likelihood, or expected frequency of occurrence, of an event.
Runoff	The amount of precipitation which ends up as streamflow; also know as rainfall excess since it is the amount remaining after accounting for other processes such as evaporation and infiltration.
Stream Gauging Station	A place on a river or stream at which the stage is routinely measured, either daily, or continuously and where the discharge is measured from time to time so as to develop a relationship between stage and discharge or rating curve.

PART 1 - INTRODUCTION

1.1 Purpose

- 1.1.1 This plan covers preparedness measures, the conduct of response operations and the coordination of immediate recovery measures from flooding within the Warren Shire Council area. It covers operations for all levels of flooding within the Council area.

1.2 Authority

- 1.2.1 This plan is issued under the authority of the State Emergency and Rescue Management Act 1989 and the State Emergency Service Act 1989. The Macquarie SES Division Controller and the Warren Local Emergency Management Committee have formally accepted it.

1.3 Area Covered By The Plan

- 1.3.1 The area covered by the plan is the Warren Shire Council area, which includes the town of Warren, the villages of Nevertire and Collie as well as numerous rural properties.
- 1.3.2 The Warren Shire Council area, shown in Map 2, covers:
- a. The Macquarie River and its tributaries and effluent creeks from a point approximately 40 km upstream of Warren to a point approximately 170 km downstream.
 - b. The eastern bank of the Bogan River for approximately 40 km from a point about 10 km downstream from Dandaloo.
- 1.3.3 The Council area is in the Macquarie SES Division and for emergency management purposes is part of the Western Slopes Emergency Management District.

1.4 Description Of Flooding And Its Effects

- 1.4.1 The nature of flooding within the Warren Shire Council area is described in Annex A.
- 1.4.2 The effects of flooding on the community are described in Annex B.

1.5 Responsibilities

- 1.5.1 The general responsibilities of emergency service organisations and supporting services (functional areas) are listed in the Warren Local Disaster Plan (DISPLAN). Some specific responsibilities are expanded upon in the following paragraphs. The extent of their implementation will depend on the severity of the flooding.

- 1.5.2 **Warren SES Local Controller.** The Warren SES Local Controller is responsible for dealing with floods as detailed in the State Flood Plan, and will:
- a. Control flood operations. This includes:
 - Directing the activities of the SES.
 - Coordinating the activities of supporting agencies and organisations and ensuring that liaison is established with them.
 - b. Maintain a Local Headquarters at Warren in accordance with the SES Controllers' Handbook and the SES Operations Manual.
 - c. Ensure that SES members are trained to undertake flood operations in accordance with current policy as laid down in the SES Controllers' Handbook and the SES Operations Manual.
 - d. Develop and operate a flood intelligence system.
 - e. Coordinate the development and operation of a flood warning service for the community.
 - f. Participate in floodplain risk management initiatives organised by the Warren Shire Council.
 - g. Coordinate a public education program so that residents of flood prone areas can be made aware of the flood threat.
 - h. Ensure that the currency of this plan is maintained.
 - i. Activate this flood plan and begin operations.
 - j. Identify and monitor people and/or communities at risk of flooding.
 - k. Direct the conduct of flood rescue operations.
 - l. Direct the evacuation of people and/or communities.
 - m. Provide immediate welfare support for evacuated people.
 - n. Coordinate the provision of emergency food and medical supplies to flood bound people and/or communities.
 - o. Provide an information service in relation to:
 - Flood heights and flood behaviour.
 - Road conditions and closures.
 - Advice on methods of limiting property damage.
 - Confirmation of evacuation warnings.

- p. Coordinate operations to protect property, for example by:
- Arranging resources for sandbagging operations.
 - Lifting or moving household furniture.
 - Lifting or moving commercial stock and equipment.
 - Moving farm animals.
- q. Assist the Warren Shire Council to organise temporary repairs or improvements to levees.
- r. Arrange for support (for example, accommodation and meals) for emergency service organisation members and volunteers assisting them.
- s. If SES resources are available, assist with emergency fodder supply operations conducted by the NSW Agriculture.
- t. If SES resources are available, assist the Police Service and Warren Shire Council with road closure and traffic control operations.
- u. Exercise financial delegations relating to the use of emergency orders as laid down in the SES Controllers' Handbook.
- v. Submit Situation Reports to the Macquarie SES Division Headquarters and agencies assisting within the Council area. These will contain information on:
- Road conditions and closures.
 - Current flood behaviour.
 - Current operational activities.
 - Likely future flood behaviour.
 - Likely future operational activities.
 - Probable resource needs.
- w. Keep the Local Emergency Operations Controller advised of the flood situation and the operational response.
- x. Issue the "All Clear" when flood operations have been completed.
- y. Ensure that appropriate debriefings are held after floods.
- z. Assist in the establishment and deliberations of the Recovery Coordinating Committee after floods.

1.5.3 Warren SES Unit Members.

- a. Carry out flood response tasks. These may include:
 - The management of the SES Local and Unit Headquarters Operations Centres.
 - Gathering flood intelligence.
 - Flood rescue.
 - Evacuation.
 - Providing immediate welfare for evacuated people.
 - Delivery of warnings and information.
 - Resupply.
 - Levee monitoring.
 - Sand bagging.
 - Lifting and/or moving furniture and commercial stock.
 - Moving farm animals.
 - Assisting in repairing or improving levees.
 - Assisting with road closure and traffic control operations.
 - Assisting with emergency fodder supply operations.
- b. Assist with flood preparedness activities.
- c. Undertake training in flood operations.

1.5.4 Warren Local Emergency Operations Controller.

- a. Monitor flood operations.
- b. Coordinate support to the SES Local Controller if requested to do so.
- c. As required by the SES Local Controller, evacuate people at risk.

1.5.5 NSW Police Service, Warren.

- a. Assist with the delivery of evacuation warnings.
- b. Assist with the conduct of evacuation operations.

- c. Conduct road and traffic control operations in conjunction with Warren Shire Council and/or RTA.
- d. Ensure all evacuees are registered.
- e. Secure evacuated areas.

1.5.6 Warren Local Emergency Management Officer.

- a. Provide executive support to the Local Emergency Operations Controller in accordance with the Warren Local Disaster Plan.
- b. At the request of the SES Local Controller, advise appropriate agencies and officers of the activation of this plan.

1.5.7 Warren Shire Council.

- a. Maintain a plant and equipment resource list for the Council area.
- b. Contribute to the development and implementation of a public education program on flooding within the Council area.
- c. At the request of the Local SES Controller, deploy personnel and resources for flood related activities.
- d. Close and reopen Council roads and the Oxley Highway and advise the SES Local Controller, the Police and people who telephone the Council for road information.
- e. Provide for the management of health hazards associated with flooding. This includes maintaining water supply and sewerage systems, removing dead animals and ensuring premises are fit for reoccupation.
- f. At the request of the SES Local Controller, provide additional staffing resources to the SES Operations Centre.
- g. Assist with the delivery of evacuation messages.
- h. Sandbagging properties at risk of flooding.
- i. Provide back-up radio communications.

1.5.8 Commonwealth Bureau of Meteorology.

- a. Provide Flood Alerts for the Macquarie River Basin.
- b. Provide Flood Warnings, incorporating height-time predictions, for the Warren Town gauge (AWRC No 421014).

1.5.9 NSW Fire Brigade; Warren.

- a. Assist with the delivery of evacuation warnings.

- b. Assist with the conduct of evacuations.
- c. Provide facilities for pumping flood water out of buildings and from low-lying areas.
- d. Provide facilities and assistance for cleaning buildings and flood affected properties.
- e. Assist with emergency sandbagging and other work.

1.5.10 Rural Fire Service (RFS); Warren.

- a. Provide personnel and high-clearance vehicles for flood related activities.
- b. Assist with the delivery of evacuation warnings.
- c. Assist with the conduct of evacuations.
- d. Provide facilities for pumping flood water out of buildings and from low-lying areas.
- e. Provide back-up radio communications.
- f. Assist with emergency sandbagging and other work.

1.5.11 Volunteer Rescue Association (VRA), Warren.

- a. Provide personnel to assist with levee patrols.
- b. Assist with conduct of evacuations.
- c. Assist with emergency sandbagging and other work.
- d. Provide support as requested by the Warren SES Local Controller.

1.5.12 Country Energy.

- a. Provide advice to the SES Local Controller of any need to disconnect power supplies or of any timetable for reconnection.
- b. Clear or make safe any hazard caused by power lines or electrical reticulation equipment.
- c. Assess the necessity for and implement the disconnection of customers' electrical installations where these may present a hazard.
- d. Advise the public with regard to electrical hazards during flooding and to the availability or otherwise of the electricity supply.
- e. Inspect, test and reconnect customers' electrical installations as conditions allow.

1.5.13 Telstra, Warren.

- a. Maintain telephone services and provide additional telecommunications support for the SES Local Headquarters as required.
- b. Repair and restore telephone facilities damaged by flooding.

1.5.14 NSW Agriculture.

- a. Coordinate the supply and delivery of emergency fodder.
- b. Provide advice on dealing with dead and injured farm animals.
- c. In the event of large-scale evacuations, set up and operate animal shelter compound facilities for the domestic animals and companion pets of evacuees.
- d. Provide financial, welfare and damage assessment assistance to flood affected farm people.

1.5.15 Disaster Welfare Services, Warren.

- a. Establish, control and manage evacuation centres.
- b. Provide clothing, accommodation, food and welfare services for flood affected people, including stranded travellers.

1.5.16 NSW Ambulance Service, Warren Station. Assist with the evacuation of elderly and/or infirm people.**1.5.17 Roads and Traffic Authority (RTA).** Close and reopen the Mitchell Highway (SH7) when affected by flood waters and advise the Warren SES Local Controller.**1.5.18 Transport Coordinator, Warren Shire Council.** Arrange transport facilities for evacuations and/or commuting purposes.**1.5.19 School Principal, Warren Central School.**

- a. Represent the schools in the Warren Shire Council area for flood planning and response issues.
- b. Liaise with the SES Local Controller and pass information to school bus drivers/companies and the school principals of Saint Mary's, Nevertire and the Marra Creek Primary Schools on expected or actual impacts of flooding.
- c. Arrange for the early release of students whose travel arrangements are likely to be disrupted by flooding and/or road closures.

- 1.5.20 **SES Head Flood Warden; Warren.** Within Warren there are SES Flood Wardens for each of the 15 sectors depicted in Map 4. The Head Warden's responsibilities are listed below:
- a. Maintain and control the Flood Warden System in Warren.
 - b. Inform the Warren SES Local Controller about flood conditions and response needs in the Warren area.
 - c. Arrange for the dissemination of flood information via the appropriate Flood Wardens.
 - d. Arrange for the delivery of evacuation warnings via the appropriate Flood Wardens.
 - e. Assist with the gathering of flood data to enhance the flood intelligence for Warren.
- 1.5.21 **SES Flood Wardens.** SES Flood Wardens act as the SES representatives for their assigned sector in Warren. Their responsibilities are listed below:
- a. Inform the Head Warden of the flood conditions and response needs within their sectors.
 - b. Assist with the conduct of flood operations within their sectors as directed by the Head Warden.
 - c. Disseminate flood warnings, information and evacuation warnings to the residents in their sectors.
 - d. Assist with flood intelligence gathering.
- 1.5.22 **Department of Land and Water Conservation, State Water - Warren.**
- a. Provide information on river and creek flows and gauge heights.
 - b. Provide information on releases from the Burrendong Dam.
- 1.5.23 **Macquarie Cotton Growers Association.**
- a. Distribute flood warnings and flood information provided by the Warren SES Local Controller (via faxstream).
 - b. Inform the Warren SES Local Controller about flood conditions and response needs amongst members of the Association.
- 1.5.24 **Citizens' Radio Emergency Service Teams (CREST).** Provide communications assistance.

1.5.25 Lions and Rotary Clubs, Warren.

- a. Assist with the lifting and/or moving furniture and commercial stock.
- b. Assist with catering support for emergency service and response group personnel.

1.5.26 Country Women's Association, Warren. Provide catering support for emergency service and response group personnel.

1.5.27 State Rail Authority. Close and reopen railway lines as necessary and advise the Warren SES Local Controller.

PART 2 - PREPAREDNESS

2.1 Maintenance Of This Plan

- 2.1.1 The Warren SES Local Controller will maintain the currency of this plan by:
- a. Ensuring that all agencies, organisations and officers mentioned in it are aware of their roles and responsibilities.
 - b. Conducting exercises to test arrangements.
 - c. Reviewing the contents of the plan:
 - After each flood operation.
 - When significant changes in land-use or community characteristics occur.
 - When there are changes that alter agreed plan arrangements.
 - d. In any event, the plan is to be reviewed no less frequently than every five (5) years.

2.2 Floodplain Risk Management

- 2.2.1 Participation in floodplain risk management activities organised by the Warren Shire Council produces the following emergency management benefits:
- a. Sources of information for flood intelligence.
 - b. Development of warning services.
 - c. Development of strategies for flood mitigation.
 - d. Development of strategies to reduce damage through better design and location of present and future residential, commercial and community land uses.
- 2.2.2 The Warren SES Local Controller will ensure that the SES:
- a. Participates in floodplain risk management committee activities when those committees are formed.
 - b. Consults with the flood prone community about the nature of the flood problem and its management.
 - c. Informs the Macquarie SES Division Headquarters of involvement in floodplain risk management activities.

2.3 Development Of Flood Intelligence

2.3.1 Flood intelligence describes flood behaviour and its effects on the community. The effects include:

- a. Inundation (leading to a need for evacuation and/or property protection).
- b. Isolation (creating a need for resupply and/or rescue).
- c. Disruption to community activities (for example, disruptions brought about by the loss of transport routes).

2.3.2 Flood intelligence is obtained by the process of gathering and assessing information for the purpose of estimating the likely impacts of pending and future floods. It is used to facilitate operational decision making and the provision of warnings and information to agencies and the public.

2.3.3 The SES will develop and maintain a flood intelligence system incorporating the following elements:

- a. Records of gauges monitored. These gauges are listed in Annex C along with flood classifications, ownership details, reading arrangements and other information.
- b. Flood intelligence records. These include records of the effects of flooding at different heights, the peak heights reached by past floods and the peak height relationship between these gauges (Note: These may not be available in all cases). This intelligence is collected from agencies and the public. The Warren SES maintains a flood intelligence card for the Warren Town gauge.
- c. A network of community members on the Macquarie River, Bogan River and Marthaguy Creek provide regular reports on flood levels and effects.

2.4 Development Of Warning Systems

- 2.4.1 The SES will establish/maintain a flood warning system for areas affected by flooding. This requires:
- a. An identification of the potential clients of flood warning information at different levels of flooding (ie; who would be affected in floods of differing severities).
 - b. Available information about the estimated impacts of flooding at different heights.
 - c. Identification of required actions and the amounts of time needed to carry them out.
 - d. Appropriate means of disseminating warnings to different clients and at different flood levels.

2.5 Public Education

- 2.5.1 The Warren SES Local Controller, with the assistance of the Warren Shire Council, the Macquarie SES Division Headquarters and SES State Headquarters, is responsible for ensuring that the residents of the Council area are aware of the flood threat in their vicinity and how to protect themselves from it. This includes people knowing:
- a. At what stage their property might be inundated (if applicable).
 - b. The evacuation routes that would apply to them.
 - c. The location of evacuation centres.
 - d. The importance of registering their evacuation at an evacuation centre.
 - e. The general contents of this plan.
- 2.5.2 Specific strategies to be employed include:
- a. Dissemination of flood-related brochures and booklets in flood liable areas.
 - b. Talks and displays orientated to community organisations and schools.
 - c. Publicity given to this plan and to flood-orientated SES activities through local media outlets, including articles in local newspapers about the flood threat and appropriate responses.
 - d. Provision of flood awareness material with council rate notices.

2.6 Training

- 2.6.1 Throughout this document there are references to functions that must be carried out by the members of the Warren SES. The Warren SES Local Controller is responsible for ensuring that the members are:
- a. Familiar with the contents of this plan.
 - b. Trained in the skills necessary to carry out the tasks allocated to the SES.

2.7 Resources

- 2.7.1 The Warren SES Local Controller is responsible for maintaining the condition and state of readiness of:
- a. SES equipment
 - b. The Warren SES Local Headquarters.

PART 3 - RESPONSE

3.1 Control

- 3.1.1 The SES is the legislated combat agency for floods and is responsible for the control of flood operations. This includes the coordination of other agencies and organisations for flood management tasks.

3.2 Operations Centres

- 3.2.1 The Warren SES maintains an Operations Centre at 9 Readford Street, Warren.
- 3.2.2 The Warren Emergency Operations Centre is located at the Warren SES Local Headquarters, 9 Readford Street, Warren.
- 3.2.3 The SES will operate an after hours duty officer system whenever flood operations are not being conducted.

3.3 Liaison

- 3.3.1 At the request of the SES Local Controller, each agency with responsibilities identified in this plan will provide a liaison officer to the Warren SES Operations Centre.
- 3.3.2 Liaison officers are to:
- a. have the authority to deploy the resources of their parent organisations at the request of the SES Local Controller, and
 - b. be able to provide communications to their own organisations.

3.4 Communications

- 3.4.1 The primary means of office-to-office communications is by telephone and facsimile.
- 3.4.2 The primary means of communication to and between deployed SES resources is by UHF CB radio (Channel 13).
- 3.4.3 The Secondary means of communication to and between deployed SES resources is by GRN.
- 3.4.4 Strategic communications between the Warren SES and Macquarie SES Division Headquarters is via GRN.
- 3.4.5 All other organisations will provide communications as necessary to their deployed field teams.

3.4.6 UHF CB Channels 5 and 35 can be used for communication to CREST.

3.5 Activation

3.5.1 This plan will be activated by the Warren SES Local Controller:

- a. On receipt of a Bureau of Meteorology Preliminary Flood Warning or a Flood Warning.
- b. When other evidence leads to an expectation of flooding within the Council area.

3.5.2 On activation, contact with the Bureau of Meteorology to discuss the development of flood warnings will normally be through the Macquarie SES Division Headquarters.

3.5.3 The following persons and organisations will be advised of the activation of the plan regardless of the location and severity of the flooding anticipated:

- a. Warren LEOCON (for transmission to the NSW Police Local Area Command Headquarters).
- b. Warren SES Unit.
- c. Macquarie SES Division Headquarters.
- d. Warren LEMO (for transmission to appropriate Council Officers and Departments).
- e. Mayor, Warren Shire Council.

3.5.4 Other agencies listed in this plan will be advised by the LEMO on the request of the SES Local Controller and as appropriate to the location and nature of the threat.

3.6 Flood Intelligence

3.6.1 Sources of flood intelligence during times of flooding are:

- a. **Bureau of Meteorology.** The Bureau provides:
 - Flood Alerts, which give an early appreciation of developing meteorological situations that could lead to flooding. These are normally provided on a whole-catchment basis for the Macquarie River Basin.
 - Flood Warnings, which include river height readings and height-time predictions for the Warren Town gauge.
- b. **Macquarie SES Division Headquarters.** The Division Headquarters provides information on flooding and its consequences, including those in nearby Council areas.

- c. **Warren Shire Council.** The Warren Shire Council provides information on the status of the Warren town levee, Warren town levee stormwater gates, pumps, sewerage systems and water reticulation. It also provides regular reports on road conditions within the Council area.
- d. **Department of Land and Water Conservation, State Water, Warren Office.** The Warren Office monitors the DLWC gauges and provides information on flow rates, gauge heights and information on dam releases from the Burrendong Dam.
- e. **Active Reconnaissance.** The Warren SES monitors the following problem areas:
 - Reddenville Break on the Wambianna Road.
 - Marthaguy Creek at Collie.
 - Beleringar Creek Offtake.
 - Gunningba Creek Offtake.
 - Five Mile Cowal on the Oxley Highway.
 - Ewenmar Creek.
 - Sandy Creek Crossing on the Oxley Highway.
 - Tiger Bay on the Oxley Highway.

3.7 Preliminary Deployments

- 3.7.1 When flooding is expected to be severe enough to cut road access to towns, within towns and/or rural communities, the Warren SES Local Controller will ensure that resources are in place for the distribution of foodstuffs and medical supplies to the areas that could become isolated.
- 3.7.2 When access is expected to be cut between Warren and Collie, the SES Local Controller will ensure that appropriate resources (including sandbags, sand stockpile, floodboats and fire fighting appliances) are deployed to ensure that operational capability is maintained.

3.8 Warnings

- 3.8.1 Warning services operate according to the following arrangements:
 - a. The Warren SES Local Headquarters:
 - Provides advice to the Macquarie SES Division Headquarters on current and expected impacts of flooding within the Warren Shire Council area.

- Coordinates the delivery of warnings to the community by door-knocking, telephone, mobile public address systems, local radio stations and two-way radio.
 - Disseminates flood information, flood bulletins and flood warnings to rural residents via faxstream.
- b. The Macquarie SES Division Headquarters issues warning information in the form of SES Division Flood Bulletins to the media organisations and agencies listed in Annex D.

3.8.2 Warnings are provided as follows:

- a. **SES Livestock and Equipment Warnings.** Following heavy rain or when there are indications of significant creek or river rises (even to levels below Minor Flood heights), the Warren SES Local Controller will advise the Macquarie SES Division Headquarters which will issue SES Livestock and Equipment Warnings to radio stations as indicated in Annex D.
- b. **Bureau of Meteorology Flood Alerts.** If there are signs of impending floods, Flood Alerts may be incorporated in SES Flood Bulletins released to radio stations by the Macquarie SES Division Headquarters.
- c. **Bureau of Meteorology Flood Warnings.** Flood Warnings are issued for the Warren Town gauge. On receipt of such warnings, the SES Local Controller will:
- Advise the Warren Shire Council and the Warren LEOCON.
 - Provide the Macquarie SES Division Headquarters with information for inclusion in SES Flood Bulletins on the estimated impacts of flooding at the predicted heights.
- d. **SES Local Flood Advices.** The SES may issue Local Flood Advices for the gauges listed in Annex C. These are issued in SES Division Flood Bulletins and/or direct from the SES Local Controller via radio broadcast and faxstream.
- e. **Evacuation Warnings.**
- A template for an Evacuation Warning Message is at Annex E. Evacuation Warning Messages are disseminated as follows:
 - ◆ Using public address systems from Police and other emergency service vehicles.
 - ◆ By door-knocks by Police and other emergency service personnel.
 - ◆ By SES Flood Wardens.

- ◆ By telephone.
- ◆ By two-way radio.
- ◆ In Macquarie SES Division Flood Bulletins.
- The first evacuation warnings issued in the Warren Shire Council area can be expected under the following conditions:
 - ◆ 9-9.5 metres on the Warren Town gauge. Evacuations of rural homesteads and areas outside of the Warren levee.
 - ◆ If the Macquarie River is predicted to exceed 10.5 metres. This is the IFL of the Warren levee and from this height on there is the potential for levee failure or overtopping. 100% of the Warren levee has a crest height of 11 metres (in relation to the Warren Town gauge).
 - ◆ Significant rainfall over the Marthaguy Creek catchment above Gilgandra can lead to high flows in that creek and result in flooding of homes at Collie.
- f. **Standard Emergency Warning Signal (SEWS).** This signal may be played over radio and television stations to alert communities to Evacuation Warnings or Special Warnings such as levee failure. Approval to use the signal will be obtained by the Warren SES Local Headquarters from the Macquarie SES Division Headquarters.

3.9 Information

- 3.9.1 The Macquarie SES Division Headquarters issues SES Flood Bulletins to media outlets and agencies on behalf of all SES units in the Division. SES Flood Bulletins contain the following information relating to all Council areas in which flooding is occurring:
- a. Current warnings, together with indications of the likely impact of flooding at any predicted heights.
 - b. Current flood heights and flood behaviour.
 - c. Details of conditions and closures of main roads and secondary sealed roads.
 - d. Advice on safety matters and means of protecting property.
- 3.9.2 SES Flood Bulletins are normally issued every day during periods of flooding.
- 3.9.3 The SES Local Headquarters provides a “phone-in” information service for the community in relation to current warnings, river heights, flood behaviour, road conditions and closures of main and local roads and advice on safety matters and means of protecting property.

3.9.4 Collation and dissemination of road information is actioned as follows:

- a. The Warren Shire Council provides the Warren SES Local Controller, Leocon (Police), neighbouring Councils, RTA, NRMA, NSW Ambulance Service, Tourist Information Centre, Fuel Distributors, Warren Post Office, Local Newspapers, TV and radio stations and Willie Retreat with regular reports on road conditions and closures in the Warren Shire Council area and operates a local road information service to the public.
- b. The Warren SES Local Controller provides road status reports for main and secondary sealed roads in the Council area to the Macquarie SES Division Road Information Cell and the Warren Police Local Area Command Headquarters. The Macquarie SES Division Road Information Cell obtains information from the Police, Council, RTA and NRMA.
- c. The Macquarie SES Division Headquarters distributes information on main roads to SES Units, media outlets and agencies as part of SES Flood Bulletins.
- d. The Macquarie SES Division Road Information Cell also provides a “phone-in” service to the public.

3.9.5 The Warren SES Local Controller is to ensure that the Macquarie SES Division Controller is regularly briefed on the progress of operations and on future resource needs.

3.10 Road Control

3.10.1 Most roads within the Warren Shire Council area can be affected by flooding. Details of the impact of flooding on the road system are provided in Annex B.

3.10.2 Warren Shire Council closes and re-opens its own roads and, acting as an agent for the RTA, does the same for the Oxley Highway. The RTA closes and reopens the Mitchell Highway.

3.10.3 The SES and the NSW Police Service has the authority to close and re-open roads but will normally only do so (if the Council or the RTA have not already acted) if public safety requires such action.

3.10.4 Warren Shire Council and the RTA are responsible for the erection of road closed signs and barriers, flood warning/cautionary signs and liaising with neighbouring Councils for the erection of same.

3.11 Flood Rescue

3.11.1 The Warren SES Local Controller controls flood rescues, which are carried out using high clearance vehicles, floodboats and (under some circumstances) helicopters.

- 3.11.2 Additional floodboats and crews can be requested through the Macquarie SES Division Headquarters.

3.12 Evacuations

- 3.12.1 A number of residences and properties may need to be evacuated during significant flood events. In most floods, the evacuation task would only involve a small number of people living in rural areas or villages.
- 3.12.2 The biggest threat within the Warren Shire is the failure of the protective levee at Warren. 100% of the levee has a crest height of 11.00 metres and the IFL has been assessed to be 10.50 metres (in relation to the Warren Town gauge). An extreme flood could cause the levee to be breached or overtopped resulting in the complete evacuation of the town.
- 3.12.3 Transport and storage of furniture from flood-threatened properties will be arranged as time and resources permit.
- 3.12.4 The Evacuation Arrangements for the Warren Shire Council area is attached as Annex F.

3.13 Registration

- 3.13.1 NSW Police will ensure that all evacuees are registered on arrival at evacuation centres and details of registrations are sent to the Police District Headquarters by the quickest means available.
- 3.13.2 Assistance with registration will be provided by DWS (Red Cross, St Vincent De Paul Society, Personnel Services Group, Salvation Army and the Seventh Day Adventist Church).

3.14 Essential Services

- 3.14.1 The SES Local Controller will ensure that the providers of essential services (electricity, water, sewerage, medical and public health) are kept advised of the flood situation.
- 3.14.2 Essential service providers must keep the SES Local Controller abreast of their status and ongoing ability to provide those services.

3.15 Logistics

- 3.15.1 The SES Local Headquarters maintains a small stock of sandbags, and back-up supplies are available through the Macquarie SES Division Headquarters. A motorised sandbag-filling machine is held at Macquarie SES Division Headquarters and may be available for deployment to Warren dependant upon demand.
- 3.15.2 The SES Local Controller may task aircraft for flood operations within the Council area if other transport means are not available or not suitable. During floods affecting more than one council area, aircraft will normally be tasked

centrally by the Macquarie SES Division Controller. The SES Local Controller will establish a vetting committee to ensure that only essential items are moved whenever aircraft are used for supply operations.

3.16 Resupply

- 3.16.1 Where practicable the Warren SES Local Controller will arrange for the delivery from normal suppliers of essential foodstuffs, fuels or urgent medical supplies required by an isolated property or community. This may be done using high clearance vehicles, floodboats or, on occasions, aircraft.
- 3.16.2 Where supplies are not available within the Council area, the SES Local Controller may request them through the Macquarie SES Division Headquarters. The Division Headquarters will usually arrange for them to be delivered to the SES Local Controller for further distribution within the Council area.
- 3.16.3 Requests for emergency supply and/or delivery of fodder to stranded stock, or for stock rescue, are to be passed to NSW Agriculture.

3.17 Management Of Evacuees' Pets

- 3.17.1 In the event of a large-scale evacuation of Warren, animal shelter compound facilities will be set up for domestic animals and companion animals at Red Hill. NSW Agriculture will arrange for the establishment and operation of these facilities.

3.18 Stranded Travellers

- 3.18.1 Flood waters can strand travellers in Warren, Collie or Nevertire. Travellers seeking assistance will be referred to DOCS for the arrangement of temporary accommodation.

3.19 All Clear

- 3.19.1 When the danger to life and property has passed, the SES Local Controller will issue an all clear message signifying that response operations have been completed. This message will also advise details of arrangements for evacuation residents to return to their homes or indicate what longer-term accommodation arrangements have been made for those unable to do so.

PART 4 - RECOVERY

4.1 Welfare

- 4.1.1 The Disaster Welfare Service will provide for the long-term welfare of people who have been evacuated.

4.2 Recovery Coordination

- 4.2.1 The SES Local Controller will ensure that planning for long-term recovery operations begins at the earliest opportunity. This is to be done by briefing the Chairman of the Warren Local Emergency Management Committee on the details of the flooding and assisting in the establishment of a Recovery Coordinating Committee.
- 4.2.2 The Recovery Coordinating Committee is to prepare an outline plan for recovery operations and be prepared to recommend how such operations would best be controlled and coordinated.

4.3 Debriefing Arrangements

- 4.3.1 As soon as possible after flooding has abated, the SES Local Controller will advise participating organisations of details of response operation debriefing arrangements.
- 4.3.2 The SES Local Controller will ensure that adequate arrangements are in place to record details of the debrief and each item requiring further action is delegated to an organisation or individual to implement.
- 4.3.3 Follow-up to ensure the satisfactory completion of these actions will be undertaken by the Warren Local Emergency Management Committee.

ANNEX A - THE FLOOD THREAT

The Macquarie River Basin

1. Warren Shire is located within the Macquarie River Drainage Basin (Basin Number 421). The Macquarie River Basin extends in a north-westerly direction from the Great Dividing Range near Oberon, to the Barwon River between Brewarrina and Walgett. Waters entering the Macquarie River at its confluence with the Fish and Campbells Rivers are carried over 500 kilometres to the Barwon¹. A map of the Macquarie River Basin is at Map 1.

Flooding in the Macquarie River Basin

2. The following paragraphs (taken from the NSW Inland Rivers Floodplain Management Studies, Summary Report, Macquarie Valley by Sinclair Knight & Partners Pty. Ltd. Consulting Engineers, 1984) describe the Macquarie River Valley and the flood behaviour in the valley.

3. The Macquarie River is formed near Bathurst by the joining of the Fish and Campbells Rivers. These two (2) streams drain a high plateau area consisting largely of undulating to hilly terrain. The watercourses are confined within narrow steep valleys. The Macquarie River then passes through the undulating lowlands that form the Bathurst Plains area and it is here that the first substantial flood plain area is found.

4. From Bathurst to Burrendong Dam the river is once again confined to a very narrow and steep-sided valley. At the dam the Macquarie River is joined from the east by the Cudgegong River, which rises in uplands around Rylstone. Substantial areas of flat and undulating land exist surrounded by a hilly perimeter, and a relatively broad plain exists both upstream and downstream of Mudgee.

5. Below Wellington, the valley widens representing the flood plain that barely exists in the upper catchment. Upon entering the broader, flatter valley, the Macquarie River also changes; its cross section is now broader and shallower.

6. From Wellington to Dubbo flooding is more widespread but is still confined within a broad band extending along the Macquarie River, while downstream of Dubbo the flood plain broadens further. Upstream of Warren the first of the effluent streams provides an exit for floodwaters in the main river channel. The amount of flow reaching the town of Warren is only a fraction of the Dubbo flood peak, and the channel capacity at Warren is very much reduced.

¹ New South Wales Inland Rivers Flood Plain Management Studies, Summary Report Macquarie Valley. Sinclair Knight & Partners Pty Ltd. 1984.

7. From then on, a maze of these effluent channels receives the floodwaters, and consequently hundreds of square kilometres of country can be inundated during major flooding.
8. Extensive flooding can be caused in this area not only by the sudden influx of high flows from the upper catchments, but also by large volumes of water being discharged into the Lower Macquarie over longer periods at lower flow rates.
9. Downstream of the Macquarie Marshes, a single channel is once again defined as the Macquarie River. However, the network of effluent streams results in the Upper Macquarie floodwaters finding their way to the Darling/ Barwon River system via the Bogan River, Marra and Marthaguy Creeks as well as the Macquarie River itself.
10. Whereas the flood peak of a coastal river increases downstream, the Macquarie is representative of tributaries in the Barwon/ Darling system in having a smaller downstream peak. This is not only a function of the attenuation and lag that occurs on a broad flood plain but is also due to the volume of floodwaters carried by the effluent streams that drain to the Bogan River.
11. The floods of February 1955 and March 1956 were extreme valley-wide events. According to the station with the oldest flood records, (Macquarie River at Dubbo) the 1955 flood level was the highest ever recorded and has a recurrence interval of over 100 years on the pre-Burrendong Dam frequency plot.
12. While the 1870 flood level was the second highest recorded flood at Dubbo, the March 1956 flood was ranked third. Thus, the 1955 and 1956 floods are the worst in living memory experienced in the Macquarie Basin. As well as enormous areas of valuable rural holdings being inundated, serious flooding was experienced in 1955 in the towns of Bathurst, Wellington, Dubbo, Narromine and Warren. In the last two towns the 1955 floodwaters overtopped levees that had never been breached previously and both towns were completely flooded. The town of Nyngan on the Bogan River was only saved by the construction of a temporary levee.
13. Where levees have been erected or floor level controls already adopted the local authorities have adopted the level of the worst recorded flood as their yardstick and invariably this has been the flood of 1955.
14. Following the completion of the Burrendong Dam in the mid 1960's the flow regime of the Macquarie River downstream of the dam has been changed. It is estimated that a post-Burrendong Dam flood of 1955 proportions would have a recurrence interval of more than 100 years.

Flooding in the Warren Shire Council Area

15. The territory of the Warren Shire Council area is very flat and almost all of it must be regarded as liable to flooding. Most of the flooding that is of concern is caused by overbank flow from the Macquarie River and its effluents. However, floods also occur on the Bogan River in the far south-west of the Council area and along Marthaguy Creek. In severe events, thousands of square kilometres can be subjected to inundation and serious problems of access, supply and evacuation are the result along with problems associated with the management of livestock. This is especially

so in the northern parts of the Council area where floods can remain for weeks at a time. The following paragraphs (taken from the Guidelines for Floodplain Development, Macquarie River, Warren to Oxley Station by Water Resources Commission, NSW, August 1981) describe the flood problem in the Warren Shire Council area.

16. Flooding downstream of Warren occurs at a relatively early stage due to flows which originate primarily from Ewenmar Creek, but also from Mumblebone, Drungalear, Marra and Marebone breaks. All commence to flow at quite low levels.

17. Flood waters from the various breaks find their way into natural depressions, swamps and cowals which in total carry flows far greater than the main river channel. Under major flood conditions many of these depressions, swamps and cowals link up to form an almost continuous sheet of floodwater across the floodplain.

18. Flooding of the right bank floodplain commences about 6 kilometres downstream of Warren where floodwaters from Ewenmar Creek-Umangla Cowal begin to spread out on the property "Gillendoon". During quite small floods some of this water reaches Cowal Creek, a wide meandering channel extending downstream as far as the Drungalear Break. The bulk of the Ewenmar Creek floodwater originates from Reddenville Break which is located on the right bank of the Macquarie River approximately 12 kilometres upstream of Warren. Under major flood conditions floodwaters from Tiger Bay and Five Mile Cowals add to the flooding of the right bank flood plain.

19. Under lesser flood conditions the right bank floodwaters are confined to a relatively narrow strip between the river and Cowal Creek as far downstream as the Drungalear break, where a large volume of floodwater breaks to the northeast.

20. The other major break feeding the right bank floodplain, Marebone Break, is located near Marebone Weir, approximately 5 kilometres downstream of the Drungalear Break.

21. Downstream of the Marebone Break, at the Mt Harris – Gradgery Road, floodwaters start to spread on their way to the Macquarie Marshes which start at the downstream limit of the study area. The main carriers in this area are Bulgeraga Creek and Gum Cowal.

22. The bulk of the volume of right bank floodwaters enter the Marshes although some water is lost to Marthaguy Creek via Gum Cowal.

23. Downstream of Warren flooding of the left bank is due primarily to flows from the Mumblebone and Marra Breaks although significant flooding does occur due to flows from Birra Burra Creek, an effluent that leaves the Macquarie River about 12 kilometres downstream of Warren.

24. As with the flooding on the right bank, during small to moderate floods, floodwaters on the left bank are largely confined to a relatively narrow strip along the river as far downstream as Marebone Weir. Downstream of the Weir the bulk of the floodwater enters Middle and Marra Creeks which finally leave the Macquarie River system.

25. Other effluent streams leaving the Macquarie River on the left bank include Gunningbar Creek and Crooked Creek.

26. Prior to the development of irrigation in the area, flood damage was caused not so much by the physical effect of high velocities (flood velocities in general quite low), but by long periods of inundation which accompanied the often slow rates of rise and fall of floods. Under these conditions damage can be reduced as property owners have amply forewarning of the arrival of a flood and are able to move stock and machinery from flood prone areas.

Weather Systems

27. Flooding within the Warren Shire Council area can occur at any time of year. In summer, low-pressure troughs extending southwards from northern Australia can cause intense short-period rainfall leading to flooding. Winter floods are more often the result of a **number** of troughs associated with southern depressions and crossing the region from west to east. These systems rarely produce high **daily** rainfalls but can bring substantial falls over longer periods. In general, it is these winter systems which are the more significant in terms of flood production, and there is a tendency towards a concentration of flooding in June, July and August. However, some of the most severe floods that have occurred within the Council area have been in the late summer months. The following chart depicts the frequency of major floods (ie 9 metres or greater) during the period 1 August 1916 to 30th November, 2000.

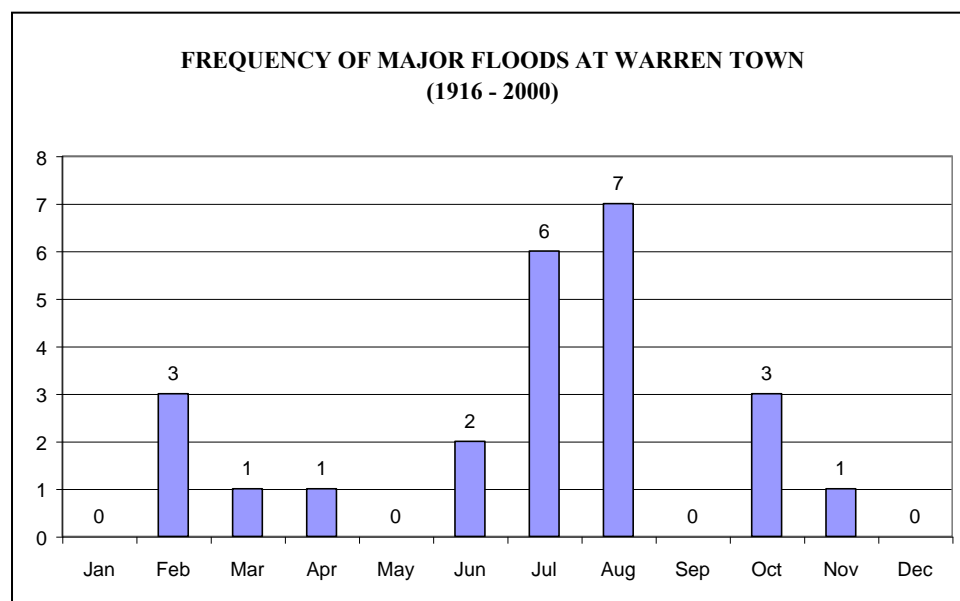


Figure 1 - Frequency of Major Floods at Warren Town Gauge

28. Most of the severe floods have resulted from **sequences** of rain events rather than from individual ones. The early events wet the catchment, and the later ones often generate the significant flooding. For example, the flood of 10 August 1990 (9.64 metres) was preceded by a flood of a similar magnitude (9.44 metres) less than a month before on 29 July 1990. Given the slow response time of the Macquarie River catchment downstream of Dubbo, floods can be superimposed upon one another when rainfall events occur in quick succession. Flooding can occur either as a result of

sudden high influxes of water from the upper catchment or as slowly-developing events with large discharge volumes coming in to the Council area at lower rates.

29. In addition to large-scale weather events from which flooding normally occurs on the Macquarie River and after considerable warning, more localised floods can result from sudden severe thunderstorms. Such thunderstorms occur mainly in summer and may produce significant flooding over small parts of the Council's territory and with very little warning.

Flood History

30. There have been 47 floods recorded at the Warren Town gauge above the major flood classification of 9 metres since August 1886. The most serious floods experienced in the Warren Shire Council area occurred in 1870, 1950, 1955, 1956, 1990 and 2000.

31. The 1955 flood was the most severe, reaching a height of 10 metres on the Warren town gauge. The flood-producing rains on this occasion fell largely over the catchments of the Cudgegong and Talbragar rivers, with only minor falls over the upper Macquarie. The 1990 event was quite different, most of the rain falling over the Macquarie upstream of Bathurst and over the Bell River and Little River catchments. The Talbragar contributed virtually nothing to the flood on this occasion.

32. Inflow to Burrendong Dam (which did not exist in 1955) reached record levels in 1990. Peak releases were also at record levels, and the dam reached its highest storage level. This flood reached a gauge height of 9.64 metres at Warren, which represents the fifth highest flood event ever recorded there.

33. Floods differ not only in terms of heights reached and the contributions of particular tributaries, but also in terms of volume of discharge and duration. The 1950 and 1956 floods were larger in terms of total discharge and lasted for longer than the 1955 event but did not reach the same height. In accordance with seasonal differences in the nature of the major weather systems, it is the winter floods which have tended to be longer-lasting and of greater discharge.

Design Flood

34. Warren Shire Council has adopted a design flood for the design of the levee system around Warren based on the flood of record plus one metre. This equates to approximately 11 metres on the Warren Town gauge.

Extreme Flooding

35. An extreme flood could occur naturally. It is noteworthy that the flood of April 1990 at Nyngan was much more severe; in terms of peak, total flood discharge and gauge height; than any flood previously recorded in the 110 year history of that town. It exceeded the previous record height by nearly a metre and the previous highest flood volume by a factor of nearly five. Flooding which surpasses existing records by a substantial margin could occur within the Warren Shire as a result of extreme weather occurring upstream.

36. Another means by which an extreme flood could occur would be as the result of a failure of Burrendong Dam. This dam, one of the state's largest water storages, has been assessed as being at a very slight risk of failure in a flood event much larger than has ever been recorded in European times over its catchment area. Should failure occur, a flood of extreme proportions would be experienced on the Macquarie River. Considerable attenuation of the height of the flood wave would occur by the time the water from the dam reached the Warren Shire Council area. However, the flood would nevertheless be of great severity in rural areas and at Warren itself and much more serious than any flood event previously recorded. It must be stressed, however, that the risk of dam failure is extremely slight.

Flood Mitigation Systems

37. Many rural dwellings in the Warren Shire are protected by low levees designed to keep out all but the more severe floods.

38. The town of Warren has been protected by levees for many years. However, those that were in place in 1955 were overtopped and the entire town was inundated. 500 people were evacuated.

39. Today, Warren is protected from flooding by a system of levees. Surrounding the southern section of the town is a 12 km long levee and surrounding the northern side a 4 km levee. The original levee construction was completed in 1963 at a general crest level of 197.2 metres AHD, which corresponded to the level of the 1955 flood (flood of record) plus 0.6 metres. The levee was raised by 0.5 metres during the 1990 floods. The current levee system is designed to protect the town from a flood of 11 metres. Problems of river scour remain and the possibility of levee failure in a severe flood cannot be discounted. Equally, it is not expected that the levees would be able to keep out a flood of extreme proportions.

40. A map of Warren showing the current levee is at Map 3.

ANNEX B - EFFECTS OF FLOODING ON THE COMMUNITY

Warren

1. Warren is a small rural town located on the Oxley Highway 545 kilometres north west of Sydney, 80 kilometres west of Gilgandra and 197 metres above sea level. Warren supports a vibrant rural community engaged in farming and grazing. The population of the town and district is seasonally adjusted due to the influx of contract and casual agricultural workers. The population of Warren is officially 1,909 according to the 1996 census but this is seasonally adjusted to around 2,400 during peak agricultural casual employment periods (November to May).

2. Warren is located on the Macquarie River and has been subjected to 47 floods above the major flood level since 1886. The town is protected by a system of levees. A twelve-kilometre levee surrounds the southern section of the town and a four kilometre levee protects the northern side. The levees have been designed to protect the town from a 1% AEP flood plus one-metre (11.00 metres on the Warren Town gauge).

3. The majority of the homes in the old municipal area, approximately 3 km radius outside of the levee, may start to become surrounded by water and isolated when the Macquarie River reaches 9.0 metres on the Warren Town gauge. Properties will be progressively inundated from this height and approximately 140 houses/ properties are flood affected.

4. All road access to and from Warren is usually lost when the river reaches 9.75 metres on the Warren Town gauge.

5. Road access to the Warren airport may be lost completely when the river reaches 10 metres on the Warren Town gauge.

Rural Areas

6. The Warren area supports farming and grazing. Extensive irrigation development allows for the growing of winter and summer crops including cereals, legumes, oil seeds, cotton and pastures for grazing and fodder. Cotton growing is on the increase. The Warren Shire officially has a population of 3,290 (1996 census) but this is seasonally adjusted to 3,800 during the peak agricultural periods mentioned earlier.

7. The Macquarie Marshes wetland area is considered to start about 40 km downstream of Warren at Marebone Weir. This area extends to beyond the northern boundary of the Warren Shire area and covers approximately 150,000 hectares of the shire. All properties in this area will become affected and may be isolated during

moderate to major flooding. This is a fairly regular occurrence and landowners in this area are accordingly equipped to cope.

8. The majority of problems faced by the rural residents of the Warren Shire are related to road closures and isolation. A major proportion of rural roads in the shire are gravel, loam sheeted or black soil roads and these are subject to closure after heavy rainfall. Therefore, rural residents can be isolated even before flooding begins.

Collie

9. Collie is a small village (Population 39) located on the Marthaguy Creek about 49 km east of Warren. A significant rain event over the Marthaguy Creek catchment above Gilgandra can result in over the bank flooding from Marthaguy Creek in Collie. This may cause a large part of the village to be inundated.

Nevertire

10. The village of Nevertire (Population 103) is located near the intersection of the Mitchell and Oxley Highways about 19 kilometres south west of Warren. The village is not at risk of riverine flooding but it has been cut off by road from Warren in the past.

Transport Disruptions

11. **Railway.** There is a rail line servicing Warren. This is a branch line off the main line from Dubbo. The rail service is restricted to general cargo and bulk grain. The rail line is closed by flood water when the Macquarie River reaches 9.7 metres at the Warren Town gauge. However, it may be closed prior to this height because of scouring and wash-outs.

12. **Air.** The Warren airport is located about three (3) kilometres south west of Warren on the Oxley Highway. The airport has sealed and unsealed runways capable of handling medium range transport aircraft up to and including the RAAF CC08 Caribou aircraft on the sealed strip and the C130 Hercules on the unsealed strip (during dry floods). The airport is not affected by flood water but road access from Warren is lost when the river reaches 10 metres on the Warren Town gauge.

13. **Road.** Vehicular access throughout much of the Warren Shire is restricted after heavy rains. Road access to and from Warren is lost when the Macquarie River reaches 9.75 metres on the Warren Town gauge. The main effects on roads and road closures are described in the following table:

Gauge Height	Effect on Roads
6.90	Reddenville Break running at 0.10 metres. If it runs for seven days, the Mt Harris - Gradgery road (SR23) will have water crossing it within six days of reaching this height.
7.10	Wambianna Road is closed by the Reddenville Break due to fast flowing water. This road is a major traffic route for locals travelling east towards Gin Gin and Dubbo. Alternative routes are via the Oxley Hwy (SH11) and Mitchell Hwy (SH7).
7.80	Water backing up from the Macquarie River through the Reddenville Break combined with local water in the Ewenmar Creek may close the Wambianna Road (SR66) 1 km east of Warren. This isolates about 20-30 rural properties in this area.
8.00	Water over various causeways of the Warren - Carinda road (RR333) between 45-70 km downstream of Warren. The road is usually still safe to negotiate at this height.
8.40	<p>Ellengerah Road; Warren - Gin Gin (SR64) on the southern side of the river is closed at various locations on the unsealed sections.</p> <p>Bundemar Road (SR68) closed at the Paringa floodway about 6.5 km from Warren. This is a local access road for rural property owners.</p>
9.00	<p>Significant flows in the Ewenmar Creek, combined with water coming out of the Macquarie River through the Reddenville Break can cause water to cross and close the Warren - Gilgandra road (Oxley Hwy, SH11) at the 5 Mile Cowal, 8 km from Warren. This closure is due to high velocity of the flow and not the depth.</p> <p>The industrial access road between Oxley Hwy (SH11) and Udora Road (SR73) is closed at the unsealed section. This stops industrial traffic to the Twynam Cotton Gin, saleyards and grain silos.</p> <p>Udora Road (SR73) is closed about 3 km from Warren isolating about 20 rural residential properties.</p> <p>Water over the Warren - Gilgandra Road (Oxley Hwy, SH11) between Tiger Bay; adjacent to town; and Ewenmar Creek. The road is not closed.</p> <p>If all of the above occurs, the only secure road access to and from Warren is via the Warren - Nevertire road (Oxley Hwy, SH11).</p> <p>No vehicle access to the Warren sewerage treatment works. This has no impact on the normal operation of the plant.</p>

Gauge Height	Effect on Roads
9.30	The Warren - Quambone Road (RR202) may close 8 km from Warren at the 5 Mile Cowal for safety reasons because the road is completely inundated and ill defined.
9.75	All roads to Warren closed except to high clearance emergency vehicles using the Warren - Nevertire Road (Oxley Hwy, SH11).
9.75 – 9.80	All road evacuation routes out of Warren are lost by this height.
10.00	Access to the airport is lost by this height.

Figure 2 - Effect of Flooding on Roads

ANNEX C TO THE
WARREN LOCAL FLOOD PLAN

ANNEX C - GAUGES MONITORED BY WARREN SES LOCAL HEADQUARTERS

Station	Gauge No	Stream	Flood Classification			Type
			Min	Mod	Maj	
Elong Elong		Talbragar River				Telemetric
Baroona		Macquarie River				Telemetric
Narromine		Macquarie River				Manual
Burrengeel	10064	Macquarie River				Manual
Gin Gin Weir	421031	Macquarie River				Telemetric
Collie	10097	Marthaguy Creek				Manual
Haddon Rig	10172	Marthaguy Creek				Manual
Reddenville Break		Macquarie River effluent				Manual
Warren Weir		Macquarie River				Telemetric
Warren (No1)	421063	Ewenmar Creek				Manual
Warren (No2) Gunningba Creek Offtake		Gunningba Creek				Manual
Warren (No3) Sandy Ck		Sandy Creek				Manual
Warren Town*	421014	Macquarie River	7.50	8.50	9.00	Manual
Oxley	421022	Macquarie River				Telemetric
Marebone D/S	421090	Macquarie River				Telemetric
Waitara	10404	Bogan River	4.80	4.86		Manual
Carinda Road	421097	Marra Creek				Manual
Oxley (Gum Cowal)	421152	Gum Cowal				Manual

Note:

1. The Bureau of Meteorology provides flood warnings for the gauges marked with an asterisk (*).

ANNEX D - DISSEMINATION OF SES FLOOD BULLETINS

The Macquarie SES Division Headquarters distributes SES Flood Bulletins and other flood related information (including Flood Warnings) to the following regional media outlets:

Television Stations:

Station	Location
Prime TV	Dubbo
WIN TV	Dubbo
Capital TV	Dubbo
ABC TV	Sydney

Radio Stations:

Station	Location
2DU/Zoo FM	Dubbo
Star FM	Dubbo
2WEB	Bourke
2CR (ABC)	Orange
2PK	Parkes

Newspapers:

The Dubbo Liberal, Dubbo.
The Warren Advocate, Warren.
The Warren Weekly, Warren.

Other Agencies:

- Warren SES Unit
- RTA (Dubbo)
- NRMA (Dubbo)

ANNEX E - TEMPLATE EVACUATION WARNING MESSAGE FOR WARREN

Date/Time of Issue:

Authorised By:

The Bureau of Meteorology has predicted a flood level of [] metres at [] (*place*) at [] (*time*). This means that [] (*describe areas*) may be inundated.

It is recommended that you prepare to evacuate/for evacuation within the next [] hours. If you leave it later, the roads may be congested or closed.

To prepare for evacuation, you should:

- Raise belongings by placing them on tables, beds and benches. Put electrical items on top. Some items may be able to be placed in ceilings.
- Gather medicines, personal and financial documents and mementos together to take with you.
- Listen to radio stations [] for further information and to confirm this warning.
- If possible, check to see whether your neighbours need help.
- Make arrangements for care of pets or companion animals.

If evacuation is necessary:

- Turn off the electricity, gas and water.
- Take three days' supply of clothes with you.
- If you have a car, drive to the evacuation centre at [] (*specify route if appropriate*).
- If you don't have a car, walk to your evacuation centre. Special transport can also be provided on request if necessary, telephone [].
- So that you can be accounted for, it is important that you register at the evacuation centre.
- After registering, you may go to the house of a friend or relative. Alternatively, accommodation will be arranged for you.
- The Police will provide security for your property while you are away.

ANNEX F - EVACUATION ARRANGEMENTS FOR THE WARREN SHIRE

Situation

1. A number of residences and properties may need to be evacuated during significant flood events. In most floods, the evacuation task would only involve a small number of people living in rural areas or villages.
2. The biggest threat within the Warren Shire is the failure of the protective levee at Warren. The levee has a crest height of 11.00 metres and the IFL has been assessed to be 10.50 metres (in relation to the Warren Town gauge). An extreme flood could cause the levee to be breached or overtopped resulting in the complete evacuation of the town.

Aim

3. The aim of this document is to detail the evacuation arrangements during flooding within the Warren Shire.

Execution

General Outline

4. During floods, evacuations will be controlled by the Warren SES Local Controller (or, at the Local Controller's request, the LEOCON) and conducted in four (4) phases:
 - a. Phase 1 - Warning.
 - b. Phase 2 – Withdrawal.
 - c. Phase 3 – Shelter.
 - d. Phase 4 – Return.

The Decision to Evacuate

5. **Responsibility.** Responsibility for issuing any general evacuation order during flooding rests with the Warren SES Local Controller who exercises his/her authority in accordance with Section 22(1) of The State Emergency Service Act 1989. However, the decision to evacuate would be taken after consultation with the:
 - a. Warren LEOCON;
 - b. Warren LEMO;

- c. Manager Engineering Services, Warren Shire;
 - d. Mayor, Warren Shire; and
 - e. Macquarie SES Division Controller.
6. Where possible, evacuation will be carried out before inundation occurs.
7. **Self-Evacuation.** Some residents may make their own decision to evacuate earlier and move to alternative accommodation using their own transport. It is important that such evacuees inform the NSW Police or the SES of their evacuation and their temporary address.
8. **Evacuation Triggers.**
- a. **Levee Failure – Warren.** The most likely event to trigger the decision to undertake a large-scale evacuation in Warren would be evidence of a possible failure or overtopping of the levee. As the result of a recent levee audit, the IFL of the levee was set at 10.50 metres (in relation to the Warren Town gauge). Due to the loss of road access at 9.75 metres, the decision to execute a full or partial evacuation needs to be made before the town is isolated if it is anticipated that the Macquarie River will exceed 10.5 metres at the Warren Town gauge.
 - b. **Collie.** A significant rain event over the Marthaguy Creek catchment above Gilgandra can result in over the bank flooding from Marthaguy Creek in Collie. This may cause a large part of Collie to be inundated.
 - c. **Nevertire.** The village of Nevertire is not at risk of direct flooding and has not required evacuating in any of the previous flood events. It can, however, be isolated by road.
 - d. **Rural Properties.** Evacuations could occur at anytime after heavy rains that may result in localised flooding. In the past, several properties have required evacuating after the Macquarie River reached 9.0 metres at the Warren Town gauge.

Phase 1 - Warning

9. **Evacuation Warnings.**
- a. **Collie.** Advice of heavy rainfalls over the catchment of Marthaguy Creek above Gilgandra will prompt the Warren SES Local Controller to ensure that the residents of Collie are prepared for significant creek rises and possible over the bank flooding necessitating partial or complete evacuations.
 - b. **Warren.** On the receipt of flood warnings predicting peak heights of 10.50 metres and above at the Warren Town gauge; the Warren SES Local Controller will consult with the aforementioned appointments to determine the level of the threat and the need to consider evacuations. As soon as

possible after the decision to evacuate is made, the Warren SES Local Controller will issue evacuation warnings to the 'at risk' residents.

10. Evacuation Warning Message. A template Evacuation Warning Message is at Annex F. Evacuation warnings are disseminated via:

- a. SES flood wardens,
- b. public address systems from Police and other emergency service vehicles,
- c. door-knocks by Police and other emergency service personnel,
- d. telephone,
- e. two-way radio,
- f. the radio and TV stations listed in Annex D, and/or
- g. SES Flood Bulletins.

Phase 2 – Withdrawal

11. Introduction. Withdrawal involves the actual removal of the community/individuals from dangerous or potentially dangerous areas to safer areas.

12. Control. Evacuations will be controlled by the Warren SES Local Controller (or, at the Local Controller's request, the LEOCON) and conducted by SES (including flood wardens), Police, Warren Shire Council, Rural Fire Service, NSW Fire Brigade, VRA personnel and NSW Ambulance.

13. Movement. Evacuees are to be moved using their own transport where possible. The Warren SES Local Controller will arrange transport for those people without their own vehicles through the Transport Coordinator. Bus companies are listed in the Warren DISPLAN.

14. Evacuation Routes. As a leveed town, Warren is in a situation in which the normal evacuation routes are usually lost before the threat of levee failure or overtopping is apparent. At 9.75 metres, all roads in and out of Warren are closed except to high-clearance emergency vehicles using the Warren to Nevertire road (Oxley Highway – SH11). Road access to the airport is lost completely by 10 metres. Warren can become completely isolated by road when the Macquarie River reaches 9.75-9.80 metres on the Warren Town gauge whereas the IFL of the Warren levee is currently set at 10.50 metres.

15. Large Scale Evacuations from Warren. In the unlikely event that large-scale evacuations from Warren were required, evacuees would be staged through evacuation centres and moved to Dubbo by buses and/or fixed wing aircraft. Planning considerations for such an event are listed below:

- a. Opportunity should be given for voluntary evacuation before a general evacuation order is issued.

- b. All dwellings should be door-knocked and provided with appropriate information prior to evacuation.
- c. Elderly and infirm people need to be given priority for evacuation.
- d. Warren will be divided into sectors that can be evacuated sequentially in accordance with prearranged evacuation priorities.
- e. Arrangements should be made for stay behind parties.

16. Evacuations from Collie or Nevertire. Evacuees from the villages of Collie and/or Nevertire will be transported to Gilgandra or Dubbo.

17. Evacuations from Rural Areas. Where practical, evacuees from rural areas will be transported to Warren before inundation occurs and before road access is lost.

18. Special Needs Groups. Special needs groups are listed in the Warren DISPLAN.

19. Doorknocking. Field teams conducting doorknocks will record and report back the following information back to the Operations Centre:

- a. Addresses and locations of houses doorknocked and/or evacuated.
- b. The number of occupants.
- c. Details of support required (such as transport, medical evacuation, assistance to secure house and/or property and raise or move belongings).
- d. Details of residents who refuse to comply with the evacuation order.

20. Refusal to Evacuate. Field teams should not waste time dealing with people who are reluctant or refuse to comply with the evacuation order. These cases should be referred to the LEOCON who will arrange for Police to visit them.

21. Security. The NSW Police will provide security for evacuated premises.

22. Helicopter Landing Pads (LPs). Within Warren Victoria Park and Carter Oval are suitable for use by medium lift helicopters.

23. Airport. The Warren airport is located about three (3) kilometres south west of Warren on the Oxley Highway. The airport has sealed and unsealed runways and is capable of handling medium range transport aircraft up to and including the RAAF CC08 Caribou aircraft on the sealed strip and the C130 Hercules on the unsealed strip (during dry floods).

Phase 3 - Shelter

24. Evacuation Centres. The purpose of evacuation centres is to meet the immediate needs of victims. Evacuees will be advised to go to or be taken to the nearest accessible evacuation centre, which will be initially established at the direction of the Warren SES Local Controller but managed as soon as possible by the Department of Community Services. Any of the following sites may be used as evacuation centres and/or assembly areas:

- a. Warren College of Technical and Further Education (TAFE), Burton Street, Warren.
- b. Warren Sporting and Cultural Centre, Victoria Park, Warren.
- c. Collie Hotel, Collie.
- d. Nevertire Hotel, Nevertire.

25. Facilities Available. Details of the capacities, contacts and facilities available at each of the above centres are listed in the Warren DISPLAN.

26. Action on Arrival. On arrival, evacuees will be:

- a. registered as a disaster victim;
- b. medically checked, if necessary; and
- c. provided with their immediate welfare needs.

27. Registration. NSW Police will ensure that all evacuees are registered on arrival at the designated evacuation centres and details of the registrations are to be sent to the Orana Police District Headquarters by the quickest means available.

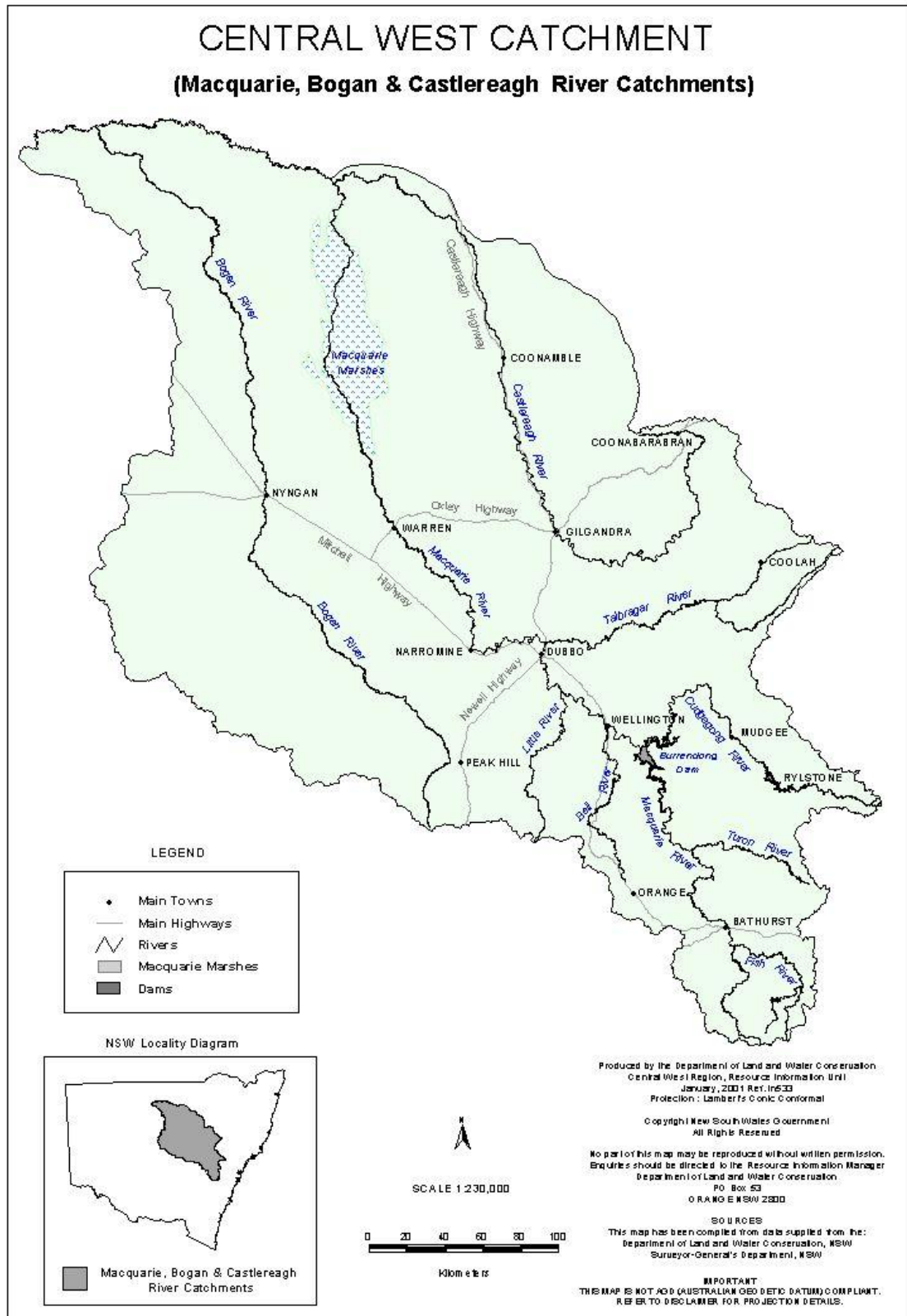
28. Support Provided At Evacuation Centres. The expected duration of the evacuation will dictate the need for and level of facilities and support at the evacuation centres. If evacuations are expected to be of a short duration, evacuees may be provided with short-term accommodation at the centres. However, if they are expected to last for longer than 24 hours, evacuees will be encouraged to go to alternative accommodation or stay with friends where possible. Alternatively, accommodation will be arranged for them in hotels, motels or by billeting.

Phase 4 - Return

29. Once it is considered safe to do so, the Warren SES Local Controller will authorise the return of evacuees to their normal or alternative place of residence. This decision will be made after consulting with the LEOCON; Manager Engineering Services, Warren Shire Council; LEMO; Mayor, Warren Shire Council; DOCS and Macquarie SES Division Controller.

30. The return will be controlled by the Warren SES Local Controller and may be conducted, at his/her request, by DOCS (DWS).

MAP 1 – MACQUARIE RIVER BASIN



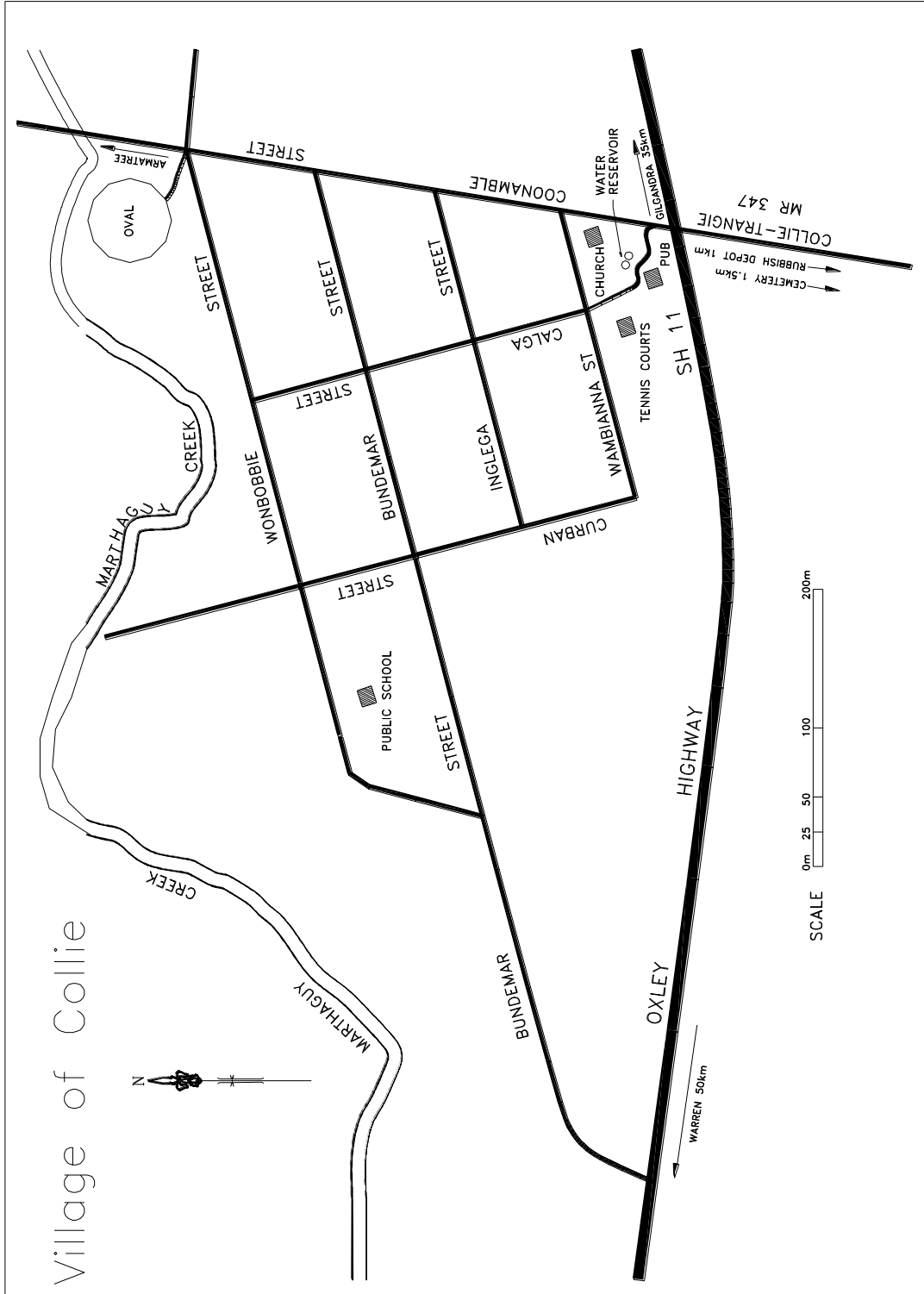
MAP 3 – WARREN



MAP 4 – WARREN WARDEN SECTORS



MAP 5 – COLLIE



MAP 6 – NEVERTIRE

