

**Carrathool Shire**

# Local Flood Emergency Sub Plan



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# CARRATHOOL SHIRE FLOOD EMERGENCY SUB PLAN

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**A Sub Plan of the Local Emergency Management Plan (EMPLAN)**

**Volume 1 of the Carrathool Shire Flood Emergency Sub Plan**

**Endorsed by the Carrathool Shire Local Emergency Management Committee**

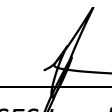
**10 October 2023  
Version 2.0**

# AUTHORISATION

The Carrathool Shire Flood Emergency Sub Plan is a sub plan of the Carrathool Shire Local Emergency Management Plan (EMPLAN). It has been prepared in accordance with the provisions of the **State Emergency Service Act 1989 (NSW)** and is endorsed by the Local Emergency Management Committee in accordance with the provisions of the **State Emergency and Rescue Management Act 1989 (NSW)**.

## Authorised

Signature:

  
\_\_\_\_\_  
*NSW SES Local/Unit Commander*

Print Name:

Shane Hargrave  
\_\_\_\_\_

Date:

10 October 2023  
\_\_\_\_\_

## Endorsed

Signature:

  
\_\_\_\_\_  
*Chair, Local Emergency Management Committee*

Print Name:

Rick Warren - General Manager  
\_\_\_\_\_

Date:

10 October 2023  
\_\_\_\_\_

## VERSION HISTORY

Version Number	Description	Date
0	Draft Carrathool Local Flood Plan	August 1994
1.0	Carrathool Shire Flood emergency Sub Plan	March 2014

## AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to:

Manager Emergency Planning  
NSW State Emergency Service  
PO Box 6126, Wollongong NSW 2500  
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Amendments in the list below have been entered in this plan.

Amendment Number	Description	Updated by	Date

## DISTRIBUTION LIST

Available for general use and distribution on the NSW State Emergency Service website  
[www.ses.nsw.gov.au](http://www.ses.nsw.gov.au)

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# 1 OUTLINE AND SCOPE

## 1.1 PURPOSE

1.1.1 The purpose of this plan is to set out the multi-agency arrangements for the emergency management of flooding in the Carrathool Shire Local Government Area (LGA).

## 1.2 AUTHORITY

1.2.1 This plan is written and issued under the authority of the [State Emergency and Rescue Management Act 1989 \(NSW\)](#) ('SERM Act'), the [State Emergency Service Act 1989 \(NSW\)](#) ('SES Act') and the NSW State Emergency Management Plan (EMPLAN).

1.2.2 This plan is a sub plan to the Carrathool Shire Local Emergency Management Plan (EMPLAN) and is endorsed by the Local Emergency Management Committee (LEMC).

## 1.3 ACTIVATION

1.3.1 This plan does not require activation. The arrangements set out in this plan are always active.

1.3.2 The Carrathool Shire Emergency Management Plan (EMPLAN) is active at all times in anticipation of the need to coordinate support and resources requested by combat agencies, including the NSW State Emergency Service (NSW SES).

## 1.4 SCOPE

1.4.1 The area covered by this plan is the Carrathool Shire LGA. The Carrathool Shire LGA and its principal towns, villages, rivers and creeks are shown in Appendix A.

1.4.2 The Council area is in the NSW SES Southern Zone and for emergency management purposes, is part of the Riverina Murray Emergency Management Region.

1.4.3 The plan sets out the Carrathool Shire level emergency management arrangements for prevention, preparation, response and initial recovery for flooding in the Carrathool Shire LGA.

1.4.4 In this plan a flood is defined as a relatively high-water level which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves (including tsunamis) overtopping coastline defences.

## 1.5 GOALS

1.5.1 The primary goals for flood emergency management in NSW are:

- a. Protection and preservation of life.
- b. Establishment and operation of flood warning systems.

- c. Issuing of community information and community warnings.
- d. Coordination of evacuation and welfare of affected communities.
- e. Protection of critical infrastructure and community assets essential to community survival during an emergency incident.
- f. Protection of residential property.
- g. Protection of assets and infrastructure that support individual and community financial sustainability and aid assisting a community to recover from an incident.
- h. Protection of the environment and conservation values considering the cultural, biodiversity and social values of the environment.

## **1.6 KEY PRINCIPLES**

- 1.6.1 The protection and preservation of human life (including the lives of responders and the community) is the highest priority.
- 1.6.2 Evacuation is the primary response strategy for people impacted by flooding.

## **1.7 ROLES AND RESPONSIBILITIES**

- 1.7.1 General responsibilities of emergency service organisations and functional areas are set out in the NSW State EMPLAN and NSW State Flood Sub Plan.
- 1.7.2 Specific roles and responsibilities for agencies, functional areas and organisations in relation to flooding within Carrathool Shire are detailed within this plan, Appendix B and Appendix C.
- 1.7.3 Any agency with agreed responsibilities in this plan that are temporarily unable, or no longer able to fulfil their responsibilities in response operations must as soon as possible notify:
  - a. The NSW SES Incident Controller (for local or zone level responsibilities during response operations).
  - b. The NSW SES Zone Duty Commander (for regional level responsibilities outside of response operations).

## **1.8 PLAN MAINTENANCE AND REVIEW**

- 1.8.1 NSW SES will maintain the currency of this plan by:
  - a. Ensuring that all supporting emergency services and functional areas, organisations and officers mentioned in it are aware of their roles and responsibilities.
  - b. Conduct a minimum of one exercise every five years or within two years of the plan being reviewed.
  - c. Reviewing the contents of the plan:
    - When there are changes which alter agreed plan arrangements.
    - When changes to land use strategic plans and policies increase the population at risk.



- After a flood including recommendations from after action reviews, reports, or inquiries.
  - As determined by the NSW SES Commissioner.
- d. The plan is to be reviewed no less frequently than every five years or after a significant flood event.

## 1.9 SUPPLEMENTARY DOCUMENTS

- 1.9.1 Supplementary and supporting material of the Local Flood Emergency Sub Plan is maintained on the NSW SES website at: <https://www.ses.nsw.gov.au/about-us/flood-storm-and-tsunami-plans/> including:
- a. Flood Plan Glossary.
  - b. NSW SES Dam Failure Notification Flowchart.
  - c. NSW SES Resupply Flowchart.

# 2 OVERVIEW OF NSW FLOOD HAZARD AND RISK

## 2.1 THE FLOOD THREAT

- 2.1.1 NSW SES maintains information on the nature of flooding and effects of flooding on the community in the Carrathool Shire LGA.

# 3 PREVENTION/ MITIGATION

## 3.1 INTRODUCTION

- 3.1.1 The Floodplain Risk Management Manual outlines the NSW Government's Flood Prone Land Policy which details the framework for managing flood prone land in New South Wales. Incorporation of floodplain risk management into land use planning is one of the key means to limit the exposure to flood risks to our communities and help build long term resilience to future flood events.

## 3.2 LAND USE PLANNING

- 3.2.1 **Strategy:** Effective land use planning is a key focus for minimising the impacts of flooding. NSW SES will work with land use planning and consent authorities to inform and influence the consideration of the risks arising from flood, storm and tsunami, to prevent the creation of intolerable impacts of these hazards on the community.

**Actions:**

- a. NSW SES will provide strategic input about land use planning matters which have or will create significant flood risk to life and/or property due to flooding.
- b. NSW SES will provide responses to land use planning proposal referrals that have or will create significant flood risk to life and/or property due to flooding.

### 3.3 FLOODPLAIN RISK MANAGEMENT

3.3.1 **Strategy:** Advocate for consideration of emergency management in decision making to reduce risks to the existing community and minimise the growth in future, continuing and residual risk due to development through input to the floodplain management program.

**Actions:**

- a. NSW SES will provide coordinated and consistent emergency management advice to councils and other agencies in relation to the management of land that is subject to flooding or coastal inundation.
- b. NSW SES will provide advice, support, technical resources and training for NSW SES representatives to contribute effectively on local Floodplain Management Committees.

## 4 PREPARATION

### 4.1 INTRODUCTION

4.1.1 Preparation includes arrangements or plans to deal with an emergency or the effects of an emergency.

### 4.2 FLOOD EMERGENCY PLANNING

4.2.1 **Strategy:** NSW SES develop, review and maintain Flood Emergency Sub Plans.

**Actions:**

- a. Develop and review this NSW SES Local Flood Emergency Sub Plan as required. Local Flood Emergency Sub Plans outline the specific arrangements for management of flood events within an LGA and may include cross boundary arrangements.
- b. Review plans as per [Section 1.8](#).

4.2.2 Local EMPLAN Consequence Management Guides (CMG's) for flood are not required for communities covered by NSW SES Local Flood Emergency Sub Plans however may be utilised in place of Local Flood Emergency Sub Plan if agreed to by NSW SES.

### 4.3 FLOOD INTELLIGENCE SYSTEMS

4.3.1 **Strategy:** NSW SES develop and maintain a flood intelligence system to identify flood behaviour, its impact on the community and required response actions.

**Actions:**

- a. Gather and assess flood information for the full range of flood types and severities.
- b. Collect, collate, and assess information on the characteristics of communities at risk and the potential effects of flooding on communities at risk.
- c. Share flood intelligence information with supporting agencies.

## 4.4 DEVELOPMENT OF WARNING SYSTEMS

4.4.1 **Strategy:** Develop, maintain and prepare systems for the provision of flood warnings and associated warning services.

**Actions:**

- a. All levels of government work in partnership to develop and maintain flood warning infrastructure.
- b. NSW SES maintains a list of the requirements for flood warnings for flood gauges in NSW (including flood classifications, warning times required and key statistics) and can be found in the supplementary document to the NSW State Flood Plan (see Section 1.9). Gauges of relevance within the Carrathool Shire LGA are also listed in Volume 3 of this plan.
- c. NSW SES will recommend new warning services and changes to warning alert levels for gauges to the NSW and ACT Flood Warning Consultative Committee.
- d. The State Government, in partnership with Local Government, is responsible for developing and maintaining flash flood warning systems for local catchments where required.
- e. NSW SES maintains a dedicated dam failure hotline and procedures to ensure priority dissemination of dam failure warnings.
- f. NSW SES develops and maintains warning and flood information products by:
  - Utilising flood intelligence data.
  - Developing warning and flood information products.
  - Continuously reviewing warning and flood information products.
  - Consulting with affected communities, key stakeholders, Dam Safety NSW and the NSW and ACT Flood Warning Consultative Committee and maintains Operational Readiness.
  - Participating in the development of public information and warning systems.
- g. Gauge owners adequately maintain flood warning gauges and systems, including those identified in the 'Service Level Specification' maintained by the Bureau of Meteorology (Bureau) and those identified in the 'Provision and Requirements for Flood Warning in New South Wales' maintained by NSW SES.

## 4.5 BRIEFING, TRAINING AND EXERCISING

4.5.1 **Strategy:** Ensure NSW SES, supporting agencies, functional areas and the community are prepared and familiar with the strategies and arrangements within the Flood Emergency Sub Plan and supporting documents.

**Actions:**

- a. NSW SES will consult stakeholders throughout the development of plans.
- b. NSW SES will inform stakeholders of content changes after revisions.
- c. NSW SES will ensure their facilities and resources are maintained and operationally ready.

- d. NSW SES will train personnel for their expected flood operation roles.
- e. NSW SES will regularly brief stakeholders on the exercise arrangements contained in the NSW Flood Emergency Sub Plan.

## **4.6 COMMUNITY RESILIENCE TO FLOODING**

4.6.1 **Strategy:** NSW SES provides and maintains a flexible volunteer workforce to support community resilience.

**Actions:**

- a. Ensure ongoing recruitment and training of a diverse range of volunteers.
- b. Ensure pre-planning to facilitate the management of spontaneous volunteers and community members during a flood.

4.6.2 **Strategy:** NSW SES works with individuals, communities, businesses and government agencies to build flood resilience.

**Actions:**

- a. Partners with and engage communities to understand and manage the risks associated with floods, including providing business continuity guidance (NSW SES Business FloodSafe), family preparedness (NSW SES Home FloodSafe) and other engagement strategies.
- b. NSW SES will collate, assess and disseminate flood information to the community.
- c. Collaborate with individuals, businesses, government agencies and communities when developing flood intelligence, preparedness and response information.
- d. Plan for floods collaboratively with communities through community and stakeholder participation and engagement.
- e. Collaborate with community sector and recognise the needs of individuals within communities who have an increased susceptibility during floods.

# **5 RESPONSE**

## **5.1 INTRODUCTION**

5.1.1 Flood response operations will begin:

- a. On receipt of a Bureau Severe Weather Warning or Thunderstorm Warning that includes heavy rain or storm surge; or
- b. On the receipt of a Bureau Flood Watch or Flood Warning; or
- c. On receipt warnings for flash flood; or
- d. On receipt of a dam failure alert; or
- e. When other evidence leads to an expectation of flooding.

## 5.2 INCIDENT MANAGEMENT ARRANGEMENTS

5.2.1 **Strategy:** Maintain effective control of flood operations across NSW.

**Actions:**

- a. NSW SES uses the Australasian Inter-service Incident Management System (AIIMS) to manage the flood response.
- b. Control of flood response will be at the lowest effective level and may be scaled to suit the incident.
- c. The NSW SES State Controller (or delegate) will appoint Incident Controllers and establish Incident Control Centres (see NSW SES facilities on map in Appendix A).
- d. The NSW SES Incident Controller, in consultation with participating supporting emergency services and functional areas will determine the appropriate breakdown of an Area of Operations into Divisions and/or Sectors in accordance with the principles of AIIMS.

5.2.2 **Strategy:** Maintain Incident Control Centre(s).

**Actions:**

- a. NSW SES will operate Incident Control Centre(s) as required.
- b. The NSW SES Incident Control Centre(s) will:
  - Control resources from NSW SES and coordinate resources of supporting emergency services and functional areas.
  - Manage Request for Assistance (RFA) tasking and ensure they are actioned in a timely manner.
  - Undertake response planning and determine future resourcing requirements.
  - Coordinate information flow, including warnings, public information and social media.

5.2.3 **Strategy:** Provide effective liaison between NSW SES and supporting agencies or functional areas in accordance with Local EMPLAN.

**Actions:**

- a. Supporting emergency services and functional areas should provide Liaison Officers to NSW SES Incident Control Centre(s) and/or Emergency Operation Centres as required.
- b. NSW SES will provide Liaison Officer(s) to Emergency Operations Centres as required.
- c. Where possible Emergency Operation Centres to be co-located with NSW SES Incident Control Centres for Flood Emergency Response.

5.2.4 **Strategy:** Coordinate resources and logistics support to ensure operational effectiveness.

**Actions:**

- a. The NSW SES Incident Controller will notify agencies of potential access issues between locations, for the consideration of pre-deploying of resources.
- b. NSW SES may request resources and logistics support directly from a supporting emergency service or functional area.
- c. Wherever possible, supporting organisations are to provide their own logistic support in consultation with NSW SES where appropriate.
- d. The NSW SES Incident Controller will control air support operations and may utilise supporting agencies in the management of aircraft.

### **5.3 USE OF INFORMATION AND COLLECTION OF INTELLIGENCE**

5.3.1 **Strategy:** Ensure flood information is effectively utilised, communicated and collected during and post a flood.

**Actions:**

- a. Information relating to the consequences of flooding, response strategies, situational awareness and operational updates will be distributed by NSW SES to supporting emergency services and functional areas listed under this Plan.
- b. All supporting emergency services and functional areas and Council will accurately record and report information relevant to their activities and any real time flood information (including road closure information) to the NSW SES Incident Controller. This may be in the form of a combined Emergency Operations Centre (EOC) report, or direct from agencies where an EOC has not been established.
- c. NSW SES may establish and operate a Joint Intelligence Unit to coordinate the collection, collation, interpretation, mapping, actioning and dissemination of information.
- d. Reconnaissance, mapping, damage assessments, intelligence validation and post flood evaluation will be coordinated by NSW SES. This may occur post impact and continue into the recovery phase.
- e. NSW SES may request Engineering to assist with the gathering of flood intelligence including (not limited to) maximum flood extents, peak flood heights, recording major flood damage at key high velocity locations and preparation of After-Flood Report.

5.3.2 **Strategy:** Ensure flood intelligence is incorporated into operational decision-making.

**Action:** NSW SES will use flood intelligence, official forecasts, warnings, and flood scenario products to undertake an assessment of the predicted impact of a flood and to inform operational decision-making.

### **5.4 PROVISION OF INFORMATION AND WARNINGS TO THE COMMUNITY**

5.4.1 **Strategy:** Timely and effective warnings are distributed to the community.

**Actions:**

- a. The Bureau issues public weather and flood warning products before and during a flood. These may include:
  - Severe Thunderstorm Warnings – Detailed - issued for all capital cities and surrounding areas when individual severe thunderstorms are within range of the capital city radars.
  - Severe Thunderstorm Warnings - Broad-based - issued for the entire Australian State or territories affected highlighting broad areas where severe storms may occur within the next 3 hours.
  - Severe Weather Warnings with reference to heavy rainfall and/or storm surge.
  - Flood Watches.
  - Flood Warnings.
- b. NSW SES Incident Controllers will issue the following NSW SES Flood Warnings aligning to the Australian Warning System:
  - Advice
  - Watch and Act
  - Emergency Warning
- c. NSW SES liaises with the Bureau to discuss the development of flood warnings as required.
- d. NSW SES provides alerts and deliver flood information to affected communities using a combination of public information.
- e. NSW SES may request supporting agencies redistribute NSW SES alerts and information, including through the provision of doorknocking teams.
- f. Road closure information will be provided to the community through the following agencies/methods:
  - Local Government Council websites.
  - Transport for NSW 'Live Traffic' website: [www.livetraffic.com](http://www.livetraffic.com) or 'Transport Info Line': 131 500. VMS messaging on roadways may also be used to advise motorists.
- g. The Public Information and Inquiry Centre will be established by NSW Police Force where required to provide information regarding evacuees and emergency information. Contact details will be broadcast once the centre is established.
- h. The Disaster Welfare Assistance Line will be established by Disaster Welfare Services where required to provide information on welfare services and assistance. Assistance line contact details will be broadcast once Disaster Welfare Services commence.

## 5.5 PROTECTION OF PROPERTY

5.5.1 **Strategy:** Coordinate the protection of property from destruction or damage arising from floods.

**Action:** NSW SES, supporting agencies, and community volunteers will assist the community (where resources are available, feasible and safe to do so) in:

- a. The protection of properties including critical infrastructure through flood protection systems (e.g. sandbagging) to minimise entry of water into buildings.
- b. The raising or moving of household furniture and commercial stock/equipment.

## 5.6 ROAD AND TRAFFIC CONTROL

5.6.1 **Strategy:** Coordinate the closing and re-opening of flood affected roads.

**Actions:**

- a. Carrathool Shire Council will coordinate the closure and reopening of council managed roads once inspections have been carried out by the relevant authority.
- b. Transport for NSW will coordinate the closure and reopening of the state road network.
- c. NSW Police Force may close and re-open roads but will normally only do so (if the Carrathool Shire Council or Transport for NSW have not already acted and if public safety requires such action).
- d. NSW SES will assist with erecting road closure signs and barriers when time and resources permit.

5.6.2 **Strategy:** Coordinate traffic control measures in flood affected areas.

- a. The NSW SES Incident Controller may direct the imposition of traffic control measures into flood affected areas in accordance with the provisions of the *State Emergency Service Act, 1989* and the *State Emergency Rescue Management Act, 1989*.
- b. The NSW SES Incident Controller may request the Local Emergency Operations Controller provide suitable personnel to assist with traffic coordination.

## 5.7 PROTECTION OF ESSENTIAL SERVICES

5.7.1 Local and Region EMPLAN's contain infrastructure inventories.

5.7.2 **Strategy:** Minimise disruption to the community by ensuring protection of infrastructure and supply of essential energy, utility services and lifelines.

**Actions:**

- a. The Transport Services Functional Area is to coordinate the provision of information about the assessment and restoration of transport network infrastructure.



- b. The Energy and Utility Services Functional Area is to coordinate the assessment and restoration of essential energy and utility services (not including telecommunications).
- c. The Telecommunications Services Functional Area is to coordinate the assessment and restoration of telecommunications and the Public Safety Network.
- d. The Engineering Services Functional Area is to:
  - Coordinate the assessment and restoration of critical public buildings for example hospitals.
  - Assessment and operation of flood protection levees.
  - Protection of property.
  - Construction and repair of levees.
  - Dam safety assessment and dam stability.
  - Water supply and sewerage operations.
  - Other critical infrastructure.
- e. The Functional Areas and Council will keep NSW SES informed of the status of utilities and infrastructure.

## 5.8 EVACUATION

5.8.1 Evacuation is NSW SES's primary response strategy for managing the population at risk of flooding.

5.8.2 **Strategy:** Conduct planning to ensure all evacuation constraints are considered.

### **Actions:**

- a. Evacuations will take place when there is a risk to public safety. Circumstances may include:
  - Evacuation of people when their homes or businesses are likely to flood.
  - Evacuation of people who are unsuited to living in isolated circumstances, due to flood water closing access.
  - Evacuation of people where essential energy and/or utility services are likely to fail or where buildings have been or may be made uninhabitable.
- b. NSW SES will consider the following in evacuation decisions:
  - Duration of evacuation.
  - Characteristics of the community.
  - Numbers requiring evacuation.
  - Availability of evacuation routes and transport.
  - The ability for existing levees or other flood protection works to fulfil their intended function.
  - Time available for evacuation.

- Evacuee management requirements.
  - Resources and delivery of evacuation information.
  - Length of isolation.
- c. NSW SES Incident Controllers, planning and intelligence officers will carefully consider the risks involved in conducting evacuations.
  - d. All evacuation decisions will be made as per the current NSW SES policies and procedures, and consistent with the NSW Evacuation Management Guidelines.
  - e. Potential Evacuation Centres are located in the Local EMPLAN.
  - f. NSW Police Force will coordinate the provision of overall security for evacuated areas.

5.8.3 **Strategy:** Evacuate people pre-emptively from dangerous or potentially dangerous places and or locations created by the flood hazard to safe locations away from the hazard.

- a. NSW SES will control and coordinate the evacuation of affected communities.
- b. The NSW SES Commissioner (or delegate) will warn communities to prepare for a possible evacuation, where circumstances allow such lead time.
- c. The NSW SES Commissioner (or delegate) will order any necessary evacuations and provide information to the community about when and how to evacuate.
- d. Support to evacuation operations may be requested from other emergency services and supporting agencies using arrangements in the local EMPLAN and supporting plans.
- e. The Health Services Functional Area will coordinate the evacuation of hospitals, health centres and aged care facilities (including nursing homes) in consultation with NSW SES and Welfare Services.
- f. School administration offices (Government and Private) will coordinate the evacuation of schools in consultation with NSW SES and Welfare Services, if not already closed.
- g. Caravan Park proprietors will inform the NSW SES Incident Controller when caravan park evacuations have been completed.
- h. People who are reluctant or refuse to comply with any Emergency Warning will be referred to NSW Police Force.

## 5.9 EVACUEE MANAGEMENT AND WELFARE

5.9.1 Research and experience in flood operations shows that most evacuees go to family, friends and commercial accommodation outside the impact area.

5.9.2 **Strategy:** Maintain the welfare of communities and individuals affected by the impact of a flood.

### **Actions:**

- a. NSW SES will provide initial welfare for evacuees where required but will hand the responsibility over to the Welfare Services Functional Area as soon as

possible. NSW SES will brief the Welfare Services Functional Area at the earliest opportunity regarding the level of assistance required.

- b. The Welfare Services Functional Area will manage evacuation centres for affected residents and travellers in accordance with the Welfare Services Functional Area Supporting Plan.
- c. Schools Administration (Government and Private) will manage the safety of students directly affected by flooding and will work with NSW SES in the temporary closure of schools and will coordinate with NSW SES, Transport and Welfare Services in the management of school evacuees.
- d. Disaster Victim Registration will be controlled and coordinated by NSW Police Force with the assistance of NSW SES and the Welfare Services Functional Area.
- e. NSW SES will provide details of all residents assisted in evacuations to the Welfare Services Functional Area as early as possible.
- f. Where the expected remaining number of evacuees and the duration of evacuation is assessed to be beyond the capability and capacity of the established evacuation centre arrangements the SEOCON may establish Major Evacuation Centres or Mass Care facilities.
- g. The decision to establish Major Evacuation Centres or Mass Care Facilities will be made by NSW SES and SEOCON in consultation with members of the State Emergency Management Committee.

5.9.3 **Strategy:** Coordinate available and accessible health services for flood affected communities.

**Action:** The provision of environmental health advice, assessment of public health risks and coordination of immediate mental health support will be provided by the Health Services Functional Area.

5.9.4 **Strategy:** Maintain the welfare of animals impacted by a flood.

**Actions:**

- a. The Agriculture and Animal Services Functional Area will coordinate the welfare of livestock, pets, companion animals and wildlife including support to primary producers, animal holding establishments and community members.
- b. The Agriculture and Animal Services Functional Area role will coordinate the evacuation, emergency care of animals and assessment, humane destruction and disposal of affected animals, and supply of emergency fodder, water and aerial support where necessary.

## 5.10 FLOOD RESCUE

5.10.1 **Strategy:** Control and coordinate flood rescue of people and domestic animals.

**Actions:**

- a. NSW SES will perform flood rescue, where training and equipment is suitable and where a risk assessment has indicated that the risk to rescuers is acceptable.

- b. Flood rescue operations will be conducted in accordance with the State Rescue Board NSW State Rescue Policy which sets out the framework, governance, responsibilities and requirements for the management and conduct of flood rescue in NSW.
- c. NSW SES may request other supporting emergency services to undertake flood rescues on behalf of NSW SES. Agencies must be authorised/accredited to undertake flood rescue operations in accordance with State Rescue Board requirements, as prescribed by NSW SES. Supporting emergency services must supply information regarding rescues performed to NSW SES. Notification arrangements with NSW Police Force are outlined in the State Rescue Board NSW State Rescue Policy.
- d. Rescue agencies will conduct rescue of domestic small and large animals as per the State Rescue Board NSW State Rescue Policy (and may include Large Animal Rescue of family horses and cows at a residence or property). The rescue of livestock (which includes commercial animals found on farming and breeding enterprises) will be coordinated through the Animal and Agriculture Services Functional Area.

## 5.11 RESUPPLY

5.11.1 **Strategy:** Coordinate resupply to towns and villages isolated by flooding to minimise disruption to the community.

**Actions:**

- a. NSW SES will advise communities and businesses if flood predictions indicate that areas are likely to become isolated, and indicative timeframes where possible.
- b. Retailers should be advised to ensure sufficient stock is available for the duration of the flood.
- c. When isolation occurs, NSW SES will establish loading points where retailers can instruct suppliers to deliver goods.
- d. NSW SES will endeavour to support the delivery of mail to isolated communities but may not be able to do so according to normal Australia Post timetables.
- e. NSW SES will assist hospitals with resupply of linen and other consumables where able.
- f. NSW SES may request resupply assistance from supporting agencies.
- g. NSW SES may conduct resupply operations as per the designated resupply plan for the event.
- h. Where additional supplies are required, Engineering Services Functional Area will be requested to coordinate the supply of goods and services in response to and recovery from the emergency.

5.11.2 **Strategy:** Coordinate resupply to rural properties isolated by flooding.

**Actions:**

- a. When requested, NSW SES will establish a resupply schedule and coordinate the resupply for isolated rural properties.

- b. NSW SES will provide local suppliers with designated loading points. Resupply items are to be packaged by the supplier.
- c. Isolated households unable to afford resupply items will be referred to the Welfare Services Functional Area for assistance.

## **5.12 RETURN**

5.12.1 **Strategy:** Coordinate the safe return of communities to flood affected areas when the immediate danger to life and property has passed.

**Actions:**

- a. The NSW SES Incident Controller will determine when it is safe to progressively return in consultation with the relevant Emergency Operations Controller and supporting agencies considering the ongoing risk to public safety.
- b. The NSW SES Incident Controller will specify the level of access to affected communities as the following:
  - Not suitable for access; or
  - Limited access by emergency services and response agencies; or
  - Limited access by residents and/or business operators; or
  - Full access.
- c. The NSW SES Incident Controller will issue an Advice Warning advising “Reduced Threat: Return with Caution” when the immediate danger to life and property has passed for areas.
- d. NSW SES will facilitate the return of evacuees to their homes.

## **5.13 END OF RESPONSE OPERATIONS**

5.13.1 **Strategy:** Conclude response operations.

**Actions:**

- a. Response operations will conclude when:
  - There is a reduced likelihood of additional flooding within the Area of Operation and flood waters have receded.
  - All requests for assistance related to the flood have been completed.
  - The need for warning and evacuation no longer exists.
  - There is no further likelihood of rescuing people.
  - Resupply is no longer required (resupply operations may occur concurrently with the recovery phase).
  - Response to fire and hazardous material incidents have concluded (not including subsequent clean-up of contaminated sites).
  - All affected areas have had an ‘Reduced Threat: Return with Caution’ issued.

## 5.14 POST IMPACT ACTIONS

5.14.1 **Strategy:** Learnings from the event are used to inform recovery and future events.

**Actions:**

- a. NSW SES will continue to engage with communities after significant floods through convening one or more community forums, workshops or other opportunities to provide communities a chance to provide feedback, address any concerns and provide input into the recovery process. These will typically include other agencies such as the Bureau, Welfare Services and Carrathool Shire Council representatives.
- b. NSW SES will conduct After Action Reviews, at the conclusion of response operations, which will involve all stakeholders. Findings will be shared and incorporated into improved disaster resilience planning.
- c. NSW SES will provide information and data throughout the emergency response to inform community recovery. A report will be developed at the request of the SERCON at the conclusion of the response within an area. Should a response summary report be required it will include the following:
  - The emergency action plan in place at conclusion of the response emphasising any continuing activities including community meetings/engagement activities.
  - Resources allocated to the emergency response and associated exit strategies.
  - Details of any areas or situations with potential to re-escalate the emergency.
  - A recommendation for the conclusion of NSW SES as lead agency to transition to NSW Reconstruction Authority as the lead agency for Recovery.
  - Any actions that are incomplete or outstanding.
  - Damage Assessment Data and Information obtained throughout the response phase which will further support the long-term recovery of communities.
- d. NSW SES will undertake/coordinate a comprehensive review of intelligence and plans following significant flood events.

5.14.2 **Strategy:** Participate in post flood data collection analysis.

**Actions:** NSW SES works with relevant stakeholders and Carrathool Shire Council on post flood data collection analysis including review of flood intelligence where necessary.

## 6 RECOVERY OPERATIONS

### 6.1 INTRODUCTION

6.1.1 Recovery is the process of returning an affected community to its proper level of functioning after an emergency. It will generally commence simultaneously with the Response phase.

6.1.2 Recovery operations will be initiated and conducted as outlined in the NSW State EMPLAN and as further detailed in the NSW Recovery Supporting Plan.

## 6.2 NSW SES RECOVERY ROLE

6.2.1 **Strategy:** NSW SES will support recovery operations and established Recovery Committees.

6.2.2 **Actions:**

- a. NSW SES will provide representation to Recovery Committees as required and may have an ongoing role in the Recovery phase.
- b. NSW SES roles on Recovery Committees may include providing information about any continuing response, guidance on mitigation strategies and general advice and assistance to the committee as a subject matter specialist and or expert.
- c. NSW SES will provide information to NSW Reconstruction Authority to support applications to Treasury for Natural Disaster Relief and Recovery Arrangements.
- d. NSW SES, in conjunction with a Recovery Committee, will provide a service to support the information needs of a community immediately following a flood.
- e. NSW SES and where required supporting agencies will assist with clean-up operations after floods, where possible when resources and personnel permit.
- f. NSW SES may coordinate immediate relief in collaboration with SEOCON and SERCON.

## 7 ABBREVIATIONS

For a full list of abbreviations refer to the NSW State Flood Plan - Abbreviations

## 8 GLOSSARY

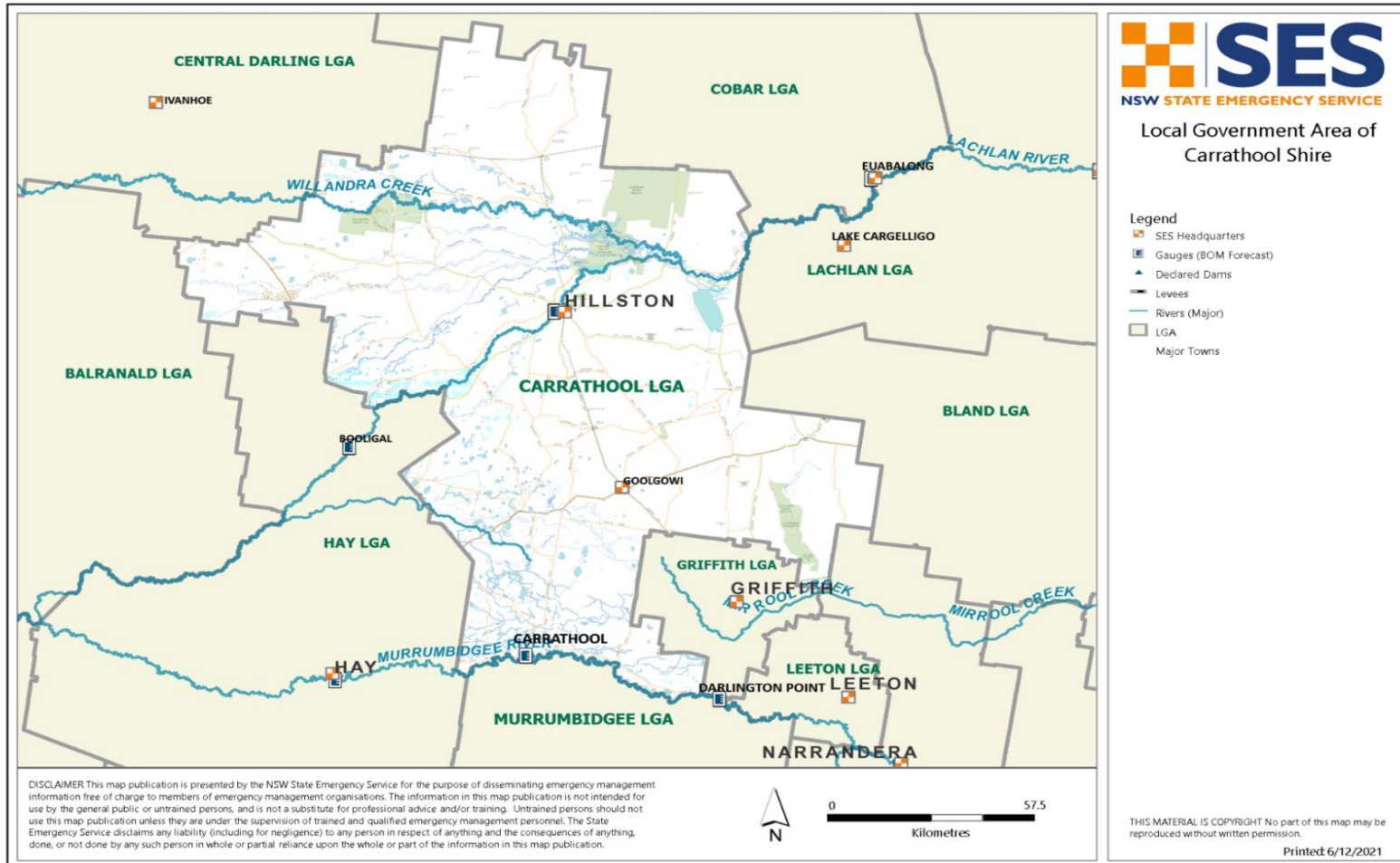
Common emergency service terminology can be found within the Australian Disaster Resilience Glossary.

Readers should refer to EMPLAN Annex 9 – Definitions.

Refer to the NSW State Flood Plan for a complete glossary of terminology used throughout this plan and within NSW SES Flood Plans.

**For a full list of definitions refer to the Supporting Document - State Flood Plan Glossary**  
<https://www.ses.nsw.gov.au/media/2650/glossary.pdf>

# 9 Appendix A – Map of Carrathool Shire Council Area





## 10 Appendix B – Roles and Responsibilities

AGENCY	RESPONSIBILITIES
NSW State Emergency Service	NSW SES is the designated Combat Agency for floods, storms and tsunami and controls response operations. NSW SES roles and responsibilities in relation to floods are outlined in the <a href="#">NSW State Flood Plan</a> .

AGENCY	RESPONSIBILITIES
Agriculture and Animal Services Functional Area	The roles and responsibilities for Agriculture and Animal Services are outlined in the Agriculture and Animal Services Supporting Plan and NSW State Flood Plan.
Australian Government Bureau of Meteorology	The roles and responsibilities for the Australian Government Bureau of Meteorology are outlined in the NSW State Flood Plan.
Caravan Park Proprietor(s)	<ul style="list-style-type: none"> <li>• Prepare a flood emergency plan for the Caravan Park.</li> <li>• Ensure that owners and occupiers of movable dwellings are aware that the caravan park is flood liable by providing a written notice to occupiers taking up residence and displaying this notice and emergency management arrangement within the park.</li> <li>• Ensure that owners and occupiers of movable dwellings are aware that if they are expecting to be absent for extended periods, they should:             <ul style="list-style-type: none"> <li>– Provide the manager of the caravan park with a contact address and telephone number in case of an emergency.</li> <li>– Leave any movable dwelling in a condition allowing it to be relocated in an emergency (i.e.: should ensure that the wheels, axles and draw bar of the caravans are not removed and are maintained in proper working order).</li> </ul> </li> <li>• Ensure that occupiers are informed of Flood Information. At this time, occupiers should be advised to:             <ul style="list-style-type: none"> <li>– Ensure that they have spare batteries for their radios.</li> <li>– Listen to a local radio station for updated flood information.</li> <li>– Prepare for evacuation and movable dwelling (cabins) relocation.</li> </ul> </li> <li>• Ensure that owners and occupiers of caravans are aware of what they must do to facilitate evacuation and movable dwelling relocation when flooding occurs.</li> <li>• Coordinate the evacuation of people and the relocation of movable dwellings when floods are rising and their return when flood waters have subsided. Movable dwellings will be relocated back to the caravan park(s) by owners or by vehicles and drivers arranged by the park managers.</li> </ul>

AGENCY	RESPONSIBILITIES
	<ul style="list-style-type: none"> <li>• Secure any movable dwellings that are not able to be relocated to prevent floatation.</li> <li>• Inform NSW SES of the progress of evacuation and/or movable dwellings relocation operations and of any need for assistance in the conduct of these tasks.</li> </ul>
Carrathool Shire Council	<p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>• Establish and maintain floodplain and coastal risk management committees and ensure that key agencies are represented.</li> <li>• Develop and implement floodplain risk management plans in accordance with the NSW Government’s Flood Prone Land Policy and the Floodplain Risk Management Manual.</li> <li>• Provide levee studies, flood studies and floodplain management studies to NSW SES.</li> <li>• Maintain council-owned flood warning networks and flood mitigation works.</li> <li>• Participate in NSW SES-led flood emergency planning meetings, to assist in the preparation of Flood Sub Plans.</li> <li>• Maintain a plant and equipment resource list for the council area.</li> <li>• Contribute to community engagement activities.</li> </ul> <p><b>Response</b></p> <ul style="list-style-type: none"> <li>• Subject to the availability of council resources, assist NSW SES with flood operations including: <ul style="list-style-type: none"> <li>– Traffic management on council managed roads.</li> <li>– Provision of assistance to NSW SES (plant, equipment and personnel where able and requested).</li> <li>– Property protection tasks including sandbagging.</li> <li>– Assist with the removal of caravans from caravan parks.</li> <li>– Warning and/or evacuation of residents and other people in flood liable areas.</li> <li>– Resupply of isolated properties.</li> <li>– Technical advice on the impacts of flooding.</li> <li>– Close and reopen council roads (and other roads nominated by agreement with Transport for NSW) and advise NSW SES, NSW Police Force and people who contact the council for road information.</li> <li>– Assist NSW SES to provide filled sandbags and filling facilities to residents and business in areas which flooding is expected.</li> </ul> </li> <li>• Assist with making facilities available for domestic pets and companion animals of evacuees during evacuations.</li> </ul>

AGENCY	RESPONSIBILITIES
	<ul style="list-style-type: none"> <li>• Operate flood mitigation works including critical structures such as detention basins and levees and advise NSW SES regarding their operation.</li> <li>• Manage and protect council-owned infrastructure facilities during floods.</li> <li>• Provide advice to NSW SES and the Health Services Functional Area during floods about key council managed infrastructure such as sewerage treatment and water supply.</li> <li>• Advise the Environmental Protection Authority of any sewerage overflow caused by flooding.</li> <li>• Work with NSW SES and NSW Department of Planning and Environment to collect flood related data during and after flood events.</li> </ul> <p><b>Recovery</b></p> <ul style="list-style-type: none"> <li>• Provide for the management of health hazards associated with flooding including removing debris and waste.</li> <li>• Ensure premises are fit and safe for reoccupation and assess any need for demolition.</li> <li>• Provide services, assistance and advice to State Government in accordance with the State Recovery Plan.</li> </ul>
<b>Childcare Centres and Preschools</b>	<ul style="list-style-type: none"> <li>• When notified of possible flooding or isolation, childcare centres and preschools should. <ul style="list-style-type: none"> <li>– Liaise with NSW SES and arrange for the early release of children whose travel arrangements are likely to be disrupted by flooding and/or road closures.</li> <li>– Assist with coordinating the evacuation of preschools and childcare centres.</li> </ul> </li> </ul>
<b>Dams Safety NSW</b>	The roles and responsibilities for Dams Safety NSW (formerly NSW Dam Safety Committee) are outlined in the NSW State Flood Plan.
<b>Department of Defence</b>	Arrangements for Defence Assistance to the Civil Community are detailed within the State EMPLAN (section 448).
<b>Energy and Utilities Services Functional Area</b>	<p>The roles and responsibilities for Energy and Utilities Services are outlined in the Energy and Utility Services Supporting Plan (EUSPLAN).</p> <p>Roles and responsibilities in addition to the Supporting Plan are:</p> <ul style="list-style-type: none"> <li>• Assist NSW SES with identification of infrastructure at risk of flood damage where resources are available.</li> <li>• Facilitate local utility service distribution providers (electricity, gas, water, wastewater) to:</li> </ul>

AGENCY	RESPONSIBILITIES
	<ul style="list-style-type: none"> <li>– Provide advice to NSW SES of any need to disconnect power/gas/water/wastewater supplies or of any timetable for reconnection.</li> <li>– Advise NSW SES of any hazards from utility services during flooding and coastal erosion/inundation.</li> <li>– Advise the public regarding electrical hazards during flooding and coastal erosion/inundation, and to the availability or otherwise of the electricity supply.</li> <li>– Clear or make safe any hazard caused by power lines or electricity distribution equipment.</li> <li>– Reconnect customers’ electrical/ gas/ water/wastewater installations, when certified safe to do so and as conditions allow.</li> <li>– Assist NSW SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence.</li> </ul>
<b>Engineering Services Functional Area</b>	The roles and responsibilities for Engineering Services are outlined in the Engineering Services Supporting Plan and NSW State Flood Plan.
<b>Environmental Services Functional Area</b>	The roles and responsibilities for Environmental Services are outlined in the Environmental Services (ENVIROPLAN) Supporting Plan.
<b>Floodplain Management Australia</b>	The roles and responsibilities for Floodplain Management Australia are outlined in the NSW State Flood Plan.
<b>Fire and Rescue NSW</b>	The roles and responsibilities for Fire and Rescue NSW are outlined in the NSW State Flood Plan.
<b>Forestry Corporation of NSW</b>	The roles and responsibilities for Forestry Corporation of NSW are outlined in the NSW State Flood Plan.
<b>Health Services Functional Area</b>	The roles and responsibilities for Health Services are outlined in the Health Services (HEALTHPLAN) Supporting Plan and NSW State Flood Plan.
<b>Local Emergency Operations Controller (LEOCON)</b>	<ul style="list-style-type: none"> <li>• Monitor flood operations.</li> <li>• If requested, coordinate support for the NSW SES Incident Controller.</li> </ul>
<b>Local Emergency Management Officer (LEMO)</b>	<ul style="list-style-type: none"> <li>• If requested by the NSW SES Incident Controller, advise appropriate agencies and officers of the start of response operations.</li> </ul>
<b>Manly Hydraulics Laboratory (MHL)</b>	The roles and responsibilities for Manly Hydraulic Laboratory are outlined in the NSW State Flood Plan.
<b>Marine Rescue NSW</b>	The roles and responsibilities for Marine Rescue NSW are outlined in the NSW State Flood Plan.
<b>NSW Ambulance</b>	The roles and responsibilities for NSW Ambulance are outlined in the Health Services (HEALTHPLAN) Supporting Plan and NSW State Flood Plan.

<b>AGENCY</b>	<b>RESPONSIBILITIES</b>
<b>NSW Department of Education, Association of Independent Schools of NSW, and National Catholic Education Commission</b>	The roles and responsibilities for NSW Department of Education, Association of Independent Schools of NSW, and National Catholic Education Commission are outlined in the NSW State Flood Plan.
<b>NSW Department of Planning and Environment (Environment and Heritage Group)</b>	The roles and responsibilities for NSW Department of Planning and Environment (Environment and Heritage Group) are outlined in the NSW State Flood Plan (referred to as DPIE EES).
<b>NSW Department of Planning and Environment (Water)</b>	The roles and responsibilities for NSW Department of Planning and Environment (Water) are outlined in the NSW State Flood Plan.
<b>NSW Food Authority</b>	The roles and responsibilities for NSW Food Authority are outlined in the Food Safety Emergency Sub Plan.
<b>NSW National Parks and Wildlife Services</b>	The roles and responsibilities for NSW National Parks and Wildlife Services are outlined in the NSW State Flood Plan.
<b>NSW Police Force</b>	The roles and responsibilities for NSW Police Force are outlined in the NSW State Flood Plan.
<b>NSW Reconstruction Authority</b>	The roles and responsibilities for NSW Reconstruction Authority are outlined in the NSW State Flood Plan.
<b>NSW Rural Fire Service</b>	The roles and responsibilities for NSW Rural Fire Service are outlined in the NSW State Flood Plan.
<b>Owners of Declared Dams within or upstream of the LGA</b>	The roles and responsibilities for Owners of Declared Dams are outlined in the NSW State Flood Plan.
<b>Public Information Services Functional Area</b>	The roles and responsibilities for Public Information Services are outlined in the Public Information Services Supporting Plan and NSW State Flood Plan.
<b>SEOCON/SEOC</b>	The roles and responsibilities for the SEOCON/SEOC are outlined in the NSW State Flood Plan.
<b>Surf Life Saving NSW</b>	The roles and responsibilities for Surf Life Saving NSW are outlined in the NSW State Flood Plan.
<b>Telecommunications Services Functional Area</b>	The roles and responsibilities for Telecommunications Services are outlined in the Telecommunications Services (TELCOPLAN) Supporting Plan.
<b>Transport for NSW</b>	<ul style="list-style-type: none"> <li>• Transport for NSW coordinates information on road conditions for emergency services access.</li> <li>• Transport for NSW coordinates the management of the road network across all modes of transport.</li> </ul>

<b>AGENCY</b>	<b>RESPONSIBILITIES</b>
	<ul style="list-style-type: none"> <li>• Transport for NSW in conjunction will assist NSW SES with the evacuation of at-risk communities by maintaining access and egress routes.</li> <li>• Assist NSW SES with the communication of flood warnings and information provision to the public through Live Traffic and Social Media according to the VMS protocols and procedures.</li> <li>• Assist NSW SES with identification of road infrastructure at risk of flooding.</li> </ul>
<b>Transport Services Functional Area</b>	The roles and responsibilities for Transport Services are outlined in the Transport Services Functional Area Supporting Plan and NSW State Flood Plan.
<b>VRA Rescue NSW</b>	The roles and responsibilities for VRA Rescue NSW are outlined in the NSW State Flood Plan.
<b>Water NSW</b>	The roles and responsibilities for Water NSW are outlined in the NSW State Flood Plan.
<b>Welfare Services Functional Area</b>	The roles and responsibilities for Welfare Services are outlined in the Welfare Services Functional Area Supporting Plan and NSW State Flood Plan.

## 11 Appendix C – Community Specific Roles and Responsibilities

<b>Community Members</b>	<p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>• Understand the potential risk and impact of flooding.</li> <li>• Prepare homes and property to reduce the impact of flooding.</li> <li>• Understand warnings and other triggers for action and the safest actions to take in a flood.</li> <li>• Households, institutions and businesses develop plans to manage flood risks, sharing and practicing this with family, friends, employees and neighbours.</li> <li>• Have an emergency kit.</li> <li>• Be involved in local emergency planning processes.</li> </ul> <p><b>Recovery</b></p> <ul style="list-style-type: none"> <li>• Assist with community clean-up if required and able to do so.</li> <li>• Participate in After Action Reviews if required.</li> </ul>
<b>Flood Warning Networks</b>	<ul style="list-style-type: none"> <li>• Provide flood information to the NSW SES Incident Controller.</li> <li>• Distribute flood warnings and flood information provided by the NSW SES Incident Controller to the NSW Rural Fire Service Brigade at Carrathool, Glover Street, Carrathool 2711 NSW. Ph: (02) 6993 5133.</li> </ul>
<b>Communication</b>	<ul style="list-style-type: none"> <li>• Hillston NSW SES Facebook Page.</li> <li>• Goolgowi NSW SES Facebook Page.</li> </ul>

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# HAZARD AND RISK IN CARRATHOOL SHIRE

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**Volume 2 of the Carrathool Shire Local Flood Plan**

Last Update: February 2000



**ANNEX A TO  
THE CARRATHOOL LOCAL  
FLOOD PLAN**

**THE FLOOD THREAT**

Flooding in the Carrathool Council area can occur from the Murrumbidgee River, the Lachlan River or Mirrool Creek. The most serious threat is from flooding on the Lachlan River.

**THE LACHLAN RIVER VALLEY (Basin No. 412)**

The Lachlan River is 560 kilometres long and drains an area of 84,700 square kilometres. It rises in the Great Dividing Range between Bathurst and Goulburn and flows in a westerly direction, being joined by the Abercrombie, Boorowa and Belubula rivers, Mandagery Creek and several minor tributaries including Hovells, Koorawatha, Ooma, Yeo Yeo (Bland), Goobang, Euglo (Humbug), Tinda, Crowie and Booberoi creeks before flowing into the Carrathool Council area about 40 kilometres downstream of Euabalong in the vicinity of Lake Brewster. Its path within the council area is a meandering one, several cut-off lakes having been formed.

Only one significant tributary joins the river downstream of Lake Brewster. This is Mirrool Creek, which rises near Temora and crosses the council area between Tabbita and a point south of Gunbar. The path of this creek is poorly defined, parts of it appearing more as intermittent lakes than as an incised creek bed. Below Barren Box Swamp, the creek's floodplain is occupied by a maze of artificial irrigation channels.

Just below the point at which the Lachlan River enters the Carrathool Council area, a series of effluent creeks and anabranches leaves the main channel. These are the Willandra, Middle, Marrowie and Cabbage Garden (Bouyareel) creeks, which themselves form a complex pattern with their own interlinked effluent channels. The area drained by these watercourses is flat and featureless.

**THE MURRUMBIDGEE RIVER VALLEY (Basin No. 410)**

The Murrumbidgee River is 1,600 kilometres long and is the third-longest river in the State. It rises in the Snowy Mountains at an altitude of approximately 1,600 metres in steep high-rainfall country, initially flowing south-eastwards before turning north near Cooma. It then flows through the Australian Capital Territory and west into the Burrinjuck Dam storage lake. Numerous tributaries drain the high country and join the river above the dam.

From Burrinjuck Dam the river flows through undulating foothills country to the urban centre of Wagga Wagga, being joined by several tributaries along the way. The most important of these is the Tumut River which contains the Blowering, Talbingo and some minor dams and which enters the Murrumbidgee above Gundagai. Other tributaries entering the river above Wagga Wagga are Jugiong, Muttama, Adelong, Billabung, Hillas, Tarcutta and Kyeamba creeks. From Wagga Wagga the river traverses open plains country characterised by considerable anabranch and effluent creek development. The main tributaries and anabranches below the urban centre of Wagga Wagga are Houlaghans, Sandy, Bullenbung, Beaver/Old Man and Bundidgerry creeks. Of these, the Old Man and Bundidgerry leave and rejoin the main channel.

Most of the land within the valley of the Murrumbidgee River in the Carrathool Council area is between 100 and 120 metres elevation and the river's gradient is very low. The river flows through extensive grassy plains fringed by stands of Red Gum along the banks. On this reach the river is characterised by a meandering pattern and the floodplain contains several cut-off lakes which are the remnants of former channels.

## RAINFALL, WEATHER SYSTEMS AND FLOODING

The Carrathool Council area is a low rainfall area, most of it having an average annual rainfall of less than 400 mm. Almost all the flooding which occurs does so as a result of rain occurring upstream of the council area in areas of higher rainfall.

Four different kinds of weather system can produce flooding within the council area. These are:

1. Airmasses which originate in the southern ocean and move across the Riverina from the south-west. Most of the floods to have been recorded on the Murrumbidgee and Lachlan rivers have resulted from **sequences** of such airmasses and have caused flooding during the months from April to November. This is the primary flood season within the council area: all of the floods recorded at Carrathool since 1956 have occurred in these months (see table).
2. Large depressions moving south from tropical areas in northern and north-western Australia. Such systems can produce very intensive rainfall in the summer and early autumn months and flooding can result. This mechanism occurs only sporadically over the Murrumbidgee and Lachlan river valleys and severe summer flooding is not common.
3. Low pressure systems located over the coast of New South Wales can cause heavy rain over the Snowy Mountains and Great Dividing Range in which the headwaters of the Murrumbidgee and Lachlan rivers rise. Flooding from this mechanism can occur at any time of year and is wholly 'imported' to the council area from upstream areas.
4. Short-duration, high-intensity convective thunderstorms during the summer months can cause localised flooding, rises on small creeks and the surcharging

of urban drainage systems. Such flooding is 'flash' flooding, occurring with little or no warning and having no significant impact on water levels in the Murrumbidgee or Lachlan rivers.

## FLOOD CHARACTERISTICS

Areas immediately adjacent to the watercourses within the council area are subject to frequent, shallow inundation, and drainage as floods recede is usually slow. Significant flooding results in water leaving the main river channels and flowing into distributaries which take water back into the river further downstream or dissipate the flow before doing so. The pattern of flow is complex, water flowing through slight depressions which are intermittently swampy or dry when not carrying flood waters. On both rivers, the capacity of the channel decreases in a downstream direction and overbank spillages are consequently greater to the west.

On the Lachlan River, flood waters spread out over substantial areas of low lying ground on both sides of the river between Ballyrogan Weir and Willanthry Bridge. Downstream of the bridge, and particularly on the western side of the main channel, very large areas are inundated for long periods from the river and its effluent creeks. Along the Murrumbidgee River the size of the area subject to inundation is not as large, and flood waters do not lie for so long.

Flooding on Mirrool Creek can be significantly exacerbated during March and April if heavy rains occur while the rice paddies are being drained. Elsewhere, local rain when combined with irrigation waters can cause localised flooding problems.

Warning times for floods are long, with flows often taking 9-18 days to travel from Wagga Wagga to Carrathool and five to seven weeks from Wyangala Dam to Hillston. Note, however, that in more severe floods, travel times are usually shorter than in lesser events.

## EXTREME FLOODING

The most severe floods recorded at Carrathool and Hillston were in 1956, though the flood peak at Hillston in 1990 (when serious flooding occurred through much of the winter) was little lower than that reached in the earlier year. More severe events than these must be expected, though they are likely to be rare. Should they occur, such floods would reach greater heights and inundate larger areas than was the case in 1956. It is likely, also, that such floods would occur with less warning time than was true of earlier events.

No estimate has been made of the heights which could be reached by the Probable Maximum Flood (PMF) at Hillston, or any other Lachlan location within the council area.

ANNEX B TO  
THE CARRATHOOL LOCAL  
FLOOD PLAN

## SPECIFIC RISK AREAS

Large areas of the Carrathool Council area, especially in the north, are liable to flooding. Rural areas and the town of Hillston are flood prone.

### RURAL AREAS

The principal effects of flooding are the inundation of farm lands and the closure of roads. Most farm houses are built on high ground or have levee protection, however, and few would be at risk except in extreme floods. Stock must be removed in most flood events and isolation of houses can last for long periods when roads are cut. The effects of individual flood events last for several weeks.

### HILLSTON (1999 population 1,260)

Minor flooding in the area surrounding Hillston occurs when the town gauge reaches 5.8m or the weir gauge reaches 2.3m. The town itself is subject to flooding from two directions. As it is built on the river, it can be flooded by the river itself on the western side. On the eastern side, flood water leaving the river through Gum Creek and Gum Swamp can enter the town from the east. A levee bank constructed between the river and the town protects the western side, and a levee bank built from the river around the eastern perimeter of the town to the Showground protects the eastern portion.

The levees along the river were built 450mm above the highest flood level of 6.9m in 1956 as an emergency measure during the 1990 flood. Most of these levees are still intact.

The levees would withstand a flood of 7.0m at the town gauge. However, several points would have to be closely monitored at this level. Some of the levees in Lachlan St are on private property and some have been moved. They will require checking along their entire lengths if another major flood is imminent.

Water leaving the river to the east and upstream of Hillston reaches the edge of town at a higher level than the actual river height at Hillston.

### CARRATHOOL (approximate population 100)

High rainfall east of Carrathool causes a creek system to flow west, parallel to the railway line. Lachlan and Illiliwa Sts have been built up, and along with the railway embankment this work has the effect of deflecting water around the village. It is not expected that Carrathool will experience flooding except after an extreme rainfall event.

## ROAD CLOSURES

Numerous roads within the council area are affected by flooding, including the following:

- Lachlan River:**
- MR 80 north and south of Hillston.
  - MR 501 east and west of Hillston.
  - Lachlan River Rd.
  - Merungle Rd.
  - MR 410.
  - Roto Rd.
  - MR 368.
  - Peters Rd.
  - McMasters Rd.
  - Jardines Rd.
  - Dirrung Rd.
  - Weavers Rd.
  - McKinley Rd.
  - Crows Nest Rd.
  - Gunbar-Booligal Rd.
  - Whealbah-Trida Rd.
  - Lowlands Rd.
- Mirrool Creek:**
- SH 6 (Mid-Western Hwy), Goolgowi to Hay.
  - Carrathool Rd.
  - Gunbar-Booligal Rd.
  - Five Oaks Rd.
  - Berangerine Rd.
  - Carrego Ln.
  - Old Gunbar Rd.
  - McKinley Rd.
  - Belaley Rd.
  - Girdlers Ln.
  - Greenhills Rd.
  - Kings Rd.
  - Cameron Rd.
- Murrumbidgee River:**
- Carrathool Rd
  - Murrumbidgee River Rd.

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# **SES RESPONSE ARRANGEMENTS FOR CARRATHOOL SHIRE**

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**Volume 3 of the Carrathool Shire Local Flood Plan**

Last Update: February 2000

ANNEX C TO  
THE CARRATHOOL LOCAL  
FLOOD PLAN

GAUGES MONITORED BY THE  
CARRATHOOL SES LOCAL CONTROLLER

WRC NUMBER	RIVER/CREEK	STATION	TYPE	FLOOD CLASSIFICATIONS (metres)		
				MINOR	MODERATE	MAJOR
412006	Lachlan	Condobolin*	Telemeter	5.2	5.9	6.7
412903	"	Euabalong*	Telemeter	5.8	6.3	6.8
412011	"	Lake Cargelligo	Telemeter	1.5	1.9	2.0
412038	"	Willandra	Telemeter	2.7	3.05	3.3
412003	"	Hillston Town	Manual	5.9	6.3	6.6
412005	"	Hillston Weir*	Telemeter	2.4	2.8	3.0
410054	Murrumbidgee	Narrandera*	Telemeter	6.7	7.3	8.2
410021	"	Darlington Point*	Telemeter	5.5	7.0	7.3
410078	"	Carrathool*	Telemeter	7.0	7.5	8.5

NOTES:

- a. Flood warnings are issued by the Bureau of Meteorology for gauges marked with an asterisk.
- b. There are no gauges on the Mirrool Creek in the Carrathool Council area. The SES Local Controller is informed of prospective or actual flooding on the creek by the Murrumbidgee Irrigation, which provides information on flows from Barren Box Swamp.

ANNEX D TO  
THE CARRATHOOL LOCAL  
FLOOD PLAN

**GUIDE TO THE CONTENT OF EVACUATION  
WARNING MESSAGES**

1. Time of issue and title of Authorising Officer.
2. Description of the area to which the warning applies and the flood threat to that area.
3. Information to be given to evacuees on:
  - a. Location of and route to evacuation centre.
  - b. Time by which evacuation should take place.
  - c. Arrangements for those without their own transport.
4. Evacuees to be advised to:
  - a. Raise furniture and furnishings above likely flood level.
  - b. Gather medicines, personal and financial documents and mementoes and those belongings that can be fitted within own means of transport (or within a suitcase if travelling by bus).
  - c. Listen to radio for confirmation of message and for further information.
  - d. Assist neighbours if necessary.
  - e. Register their evacuation at a Police Station or evacuation centre.
5. Evacuees to be advised that Police will provide security for properties in the evacuated area.
6. Phone number for confirmation of warnings.



**ANNEX E TO  
THE CARRATHOOL LOCAL  
FLOOD PLAN**

**THE DISSEMINATION OF FLOOD WARNINGS  
AND OTHER FLOOD INFORMATION**

1. During periods of flooding, the Murrumbidgee SES Division Headquarters disseminates SES Flood Bulletins (incorporating Bureau of Meteorology Flood Bulletins, SES Pump and Stock Warnings, Evacuation Warnings and other information) to the following media and other organisations relevant to the Carrathool Council area:

2RG Griffith.  
ABC Radio Riverina.  
Hillston and Goolgowi SES Units.  
Carrathool Council, Goolgowi.  
NSW Police Service, Hillston Sector  
WIN TV, Griffith  
Prime TV, Griffith  
Roads and Traffic Authority, Wagga Wagga.  
NSW Agriculture, Yanco.  
Department of Community Services, Wagga Wagga.

2. The SES Local Controller forwards SES Flood Bulletins and provides other flood information to the following organisations as appropriate:

Carrathool Flood Wardens.  
Carrathool Rural Fire Service.  
Great Southern Energy, Queanbeyan.  
Telstra, Hillston.  
Carrathool Disaster Welfare Service.  
Carrathool Red Cross Society.  
Royal Society for the Prevention of Cruelty to Animals.  
The Area News, Griffith.  
Hillston Spectator

Table 1

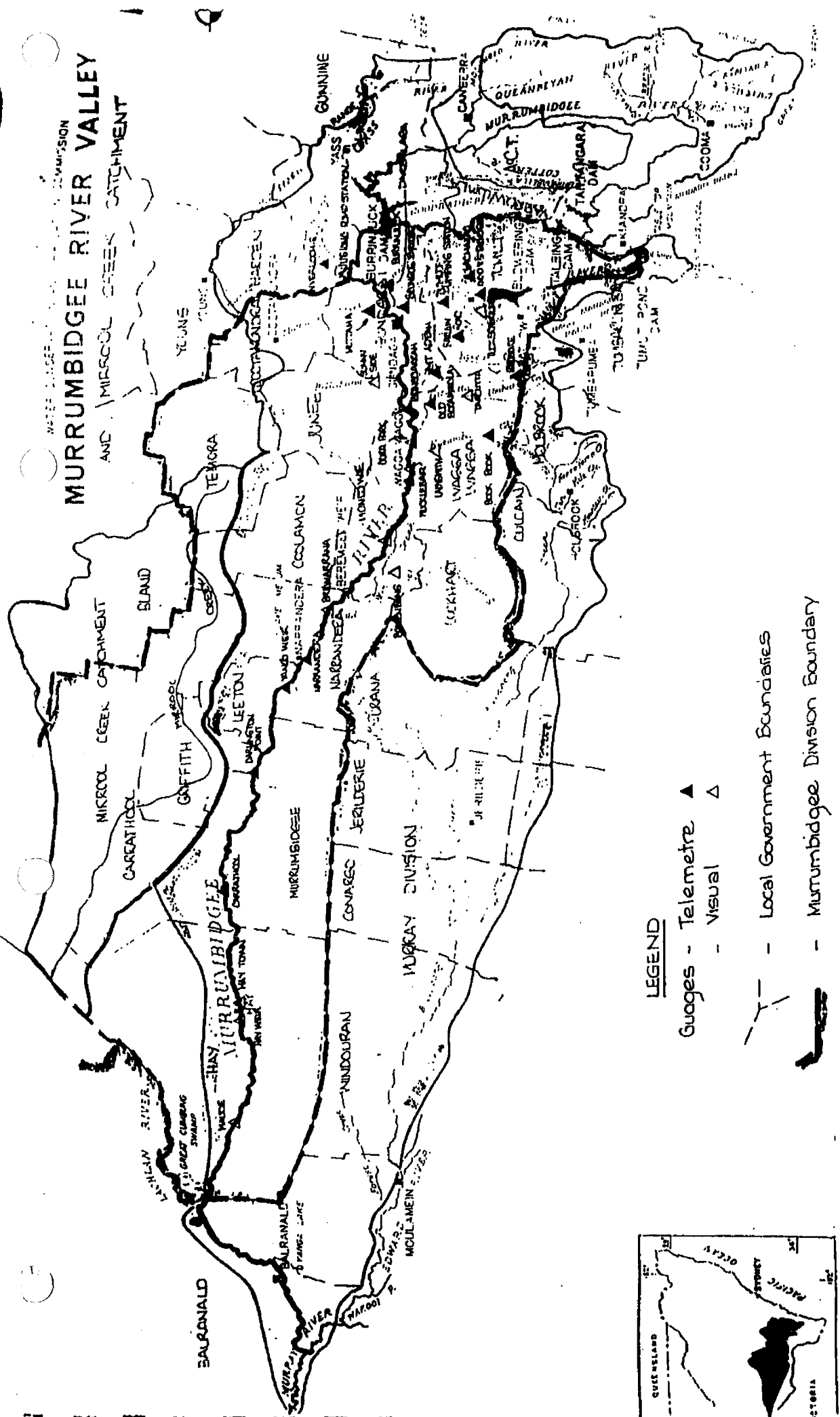
**MURRUMBIDGEE RIVER: HISTORIC FLOOD PEAK LEVELS AT  
CARRATHOOL AND SELECTED UPSTREAM LOCATIONS**

Date (at Carrathool Gauge)	Burrinjuck Dam		Gundagai	Wagga Wagga	Narrandera	Darlington Point	CARRATHOOL
	Inflow at: Rivers Wall	Discharge In megalitres Date/Time					
25 June 1956		121450 (110900)	8.89 (121800)	9.12 (16)	8.11 (192200)	7.21 (220900)	8.08 (250900)
17 July 1956		167280 (260900)	9.46 (281800)	9.58 (29)	8.70 (030900)	7.47 (050900)	8.50 (170900)
10 Nov 1959		251480 (220900)	10.00 (23)	9.17 (24)	7.38 (010900)	6.23 (060900)	6.78 (100900)
9 Sep 1974	486730 474740	395200 (291300)	11.01 (300030)	10.75 (302100)	8.99 (022230)	7.71 (051400)	8.21 (091400)
16 Sept 1974	129600 131650	66320 (060900)	8.93 (060145)	9.19 (071800)	8.12 (110430)	7.37 (131200)	8.15 (160400)
28 Oct 1974	139060 159260	37170 (181200)	8.67 (181130)	9.22 (191100)	8.32 (231600)	7.40 (241400)	8.10 (281500)
9 Nov 1975	143970 177110	114110 (251400)	9.47 (262115)	9.58 (280300)	8.32 (010930)	7.32 (060830)	7.93 (9)
3 Nov 1976	170240 160470	75300 (171600)	9.70 (182350)	9.40 (200545)	7.37 (250730)	6.57 (300830)	7.73 (3)
22 April 1989	169000 157400	137000 (031900)	9.18 (042300)	9.06 (071100)	7.82 (131400)	6.60 (180630)	7.74 (22)
1 May 1989	114000 126580	114000 (132330)	9.41 (142100)	9.41 (161100)	8.17 (201600)	7.37 (241300)	7.32 (1)
28 July 1991	335160 318100	221000 (121400)	9.92 (130700)	9.61 (150540)	8.02 (192000)	6.90 (240300)	7.15 (280900)

**NOTES**

- a. Numbers in brackets refer to the date and time of the peak being reached (e.g. 300300 means the 30th of the month, at 0300 hours) or to the date only (e.g. 30).
- b. From about 1925 Burrinjuck Dam became effective in mitigating floods. Note: In the flood of 27 May 1925 at the dam, the average peak inflow for six hours was 890,000 megalitres per day and peak instantaneous outflow was 450,000 megalitres per day.
- c. From about 1968 Blowering Dam became effective in the minor mitigation of floods.

# MURRUMBIDGEE RIVER VALLEY AND MURRUM CREEK CATCHMENT



### LEGEND

- Gauges - Telemetre ▲
- Visual   △
- Local Government Boundaries
- Murrumbidgee Division Boundary
- Murrumbidgee River Catchment



**LACHLAN RIVER: HISTORIC FLOOD PEAK LEVELS AT HILLSTON AND OTHER SELECTED LOCATIONS**

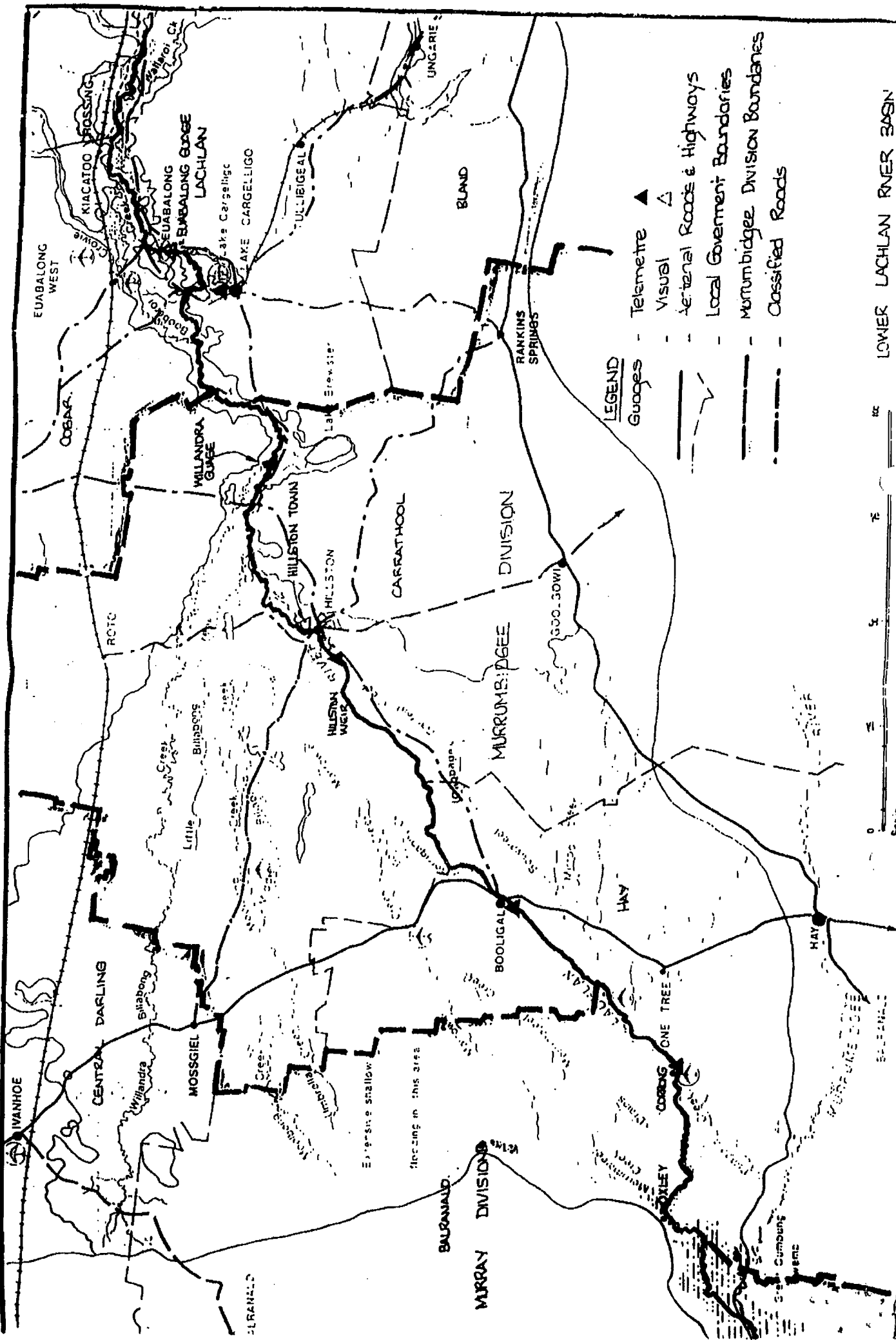
Date	Forbes	Condobolin	Euabalong	Lake Cargelligo	Willandra	Hillston Town	Hillston Weir	Booligal
1950	10.46	7.11	7.19	2.17		6.39		3.08
1951	7.16	6.50	6.73	2.00	3.08	5.96		3.07
1952	10.39	7.44	7.50	2.20	3.33	6.40		3.12
1955	6.55	5.56	6.76	2.00	2.10	5.69		2.41
1956	10.49	7.23	7.40	2.32	3.70	6.91		3.38
1960	10.50	6.78	6.70	1.96	2.82	5.85		2.67
1963	6.79			1.92	2.18			2.93
1964	6.48	6.37	6.75	2.10	2.74			2.80
1969	5.68	5.64		2.07	1.92	5.89		2.72
1974	10.62	7.08	7.01	2.27	3.45	6.45		3.08
1975	10.08	6.50	6.80	2.14	2.70	6.07		2.72
1976	10.52	6.50	6.81	2.18	2.28	6.01		2.65
1978	10.44	6.32	6.75	2.12	2.52	6.11		2.76
1984	6.04	5.82	6.71	2.09	2.35	6.15	2.64	2.76
1989	6.56	5.85	6.64	2.08	2.04	6.16	2.66	2.81
Aug 1990	10.64	7.34	7.42	2.34	3.86	6.84	3.26	3.16
Sept/Oct 1993	10.16	6.20	6.66			6.09	2.62	
Oct/Nov 1993	10.44	6.20	6.68			6.16	2.70	

**TABLE 3 ESTIMATED CHARACTERISTICS OF THE PROBABLE MAXIMUM FLOOD (PMF) AND COMPARISON WITH PREVIOUS FLOODS ON THE MURRUMBIDGEE RIVER (MAY 1925, AUG/SEP 1974, APRIL 1989, JULY 1991)**

LOCATION	AHD RL of Gauge Zero	MAY 1925 (A 48 hour rainfall event)			AUG/SEP 1974 (A 72 hour rainfall event)			LATE APRIL			JULY 1991			P M F (Based on 24 hour rainfall)		
		Time (relative to when peak reached at dam)	Flood height (metres)	Flow (Cubic Metres per second)	Time	Flood Height	Flow	Time	Flood Height	Flow	Time	Flood Height	Flow	Time	Flood Height	Flow
Burrinjuck River Inflow		-12		13350	-24		5660	-19				3805	-9		52800	
Burrinjuck inflow - Wall		-2			-5		5500			1470		3650	-4			
Burrinjuck		00		4970	00		4500	00		1325		2700	00		30300	
Juglong	239.00	4	10.34	5380	3	10.14	4840	1.5	7.96	2010	2.0	2700	4	26.4	30300	
Gundagal	207.13	21	11.32*	6860*	11.5	11.01	5800	21.5	9.41	1999	17	2680	7.5	20.4	30330	
Boringarrath					16.8	10.38	5523	36.5	8.97	1980	34	2530	12.5	17.5	29000	
Wegga Wegga	170.5	54.4	10.11	4370	31.8	10.75	5760	59.5	9.41	1990	64	2350	18.0	15.2	28400	
Narrandera	137.39	158.5	8.18	1450	104.8	8.99	3040	160.5	8.17	1420	182	1080	52	10.5	8800	
Darlington Pt	117.85	250	7.69	780	188.8	7.71	1550	253	7.37	995	277	590	9.0	8.41	4600	
Carrathool					284.8	8.21	1080	412	7.32	465	379	430	146	8.84	2100	
Hay	81.47	418	8.23	540	346	9.01	810	501	8.15	523	465	500	210	9.70	1500	

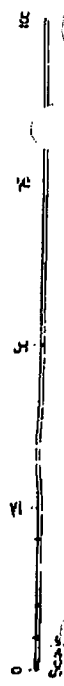
Zero time is the time of the peak discharge from Burrinjuck Dam. It is possible to forecast the peak inflow into Burrinjuck Dam from the rivers flowing into the dam, which could give 7 to 9 hours additional warning time for near -PMF events. The 1925 Flood discharge was over the full length of wall and spillways, in a partly completed dam, reducing time from wall inflow and discharge.

Rating tables and flows are suspect at this location in this event.



**LEGEND**

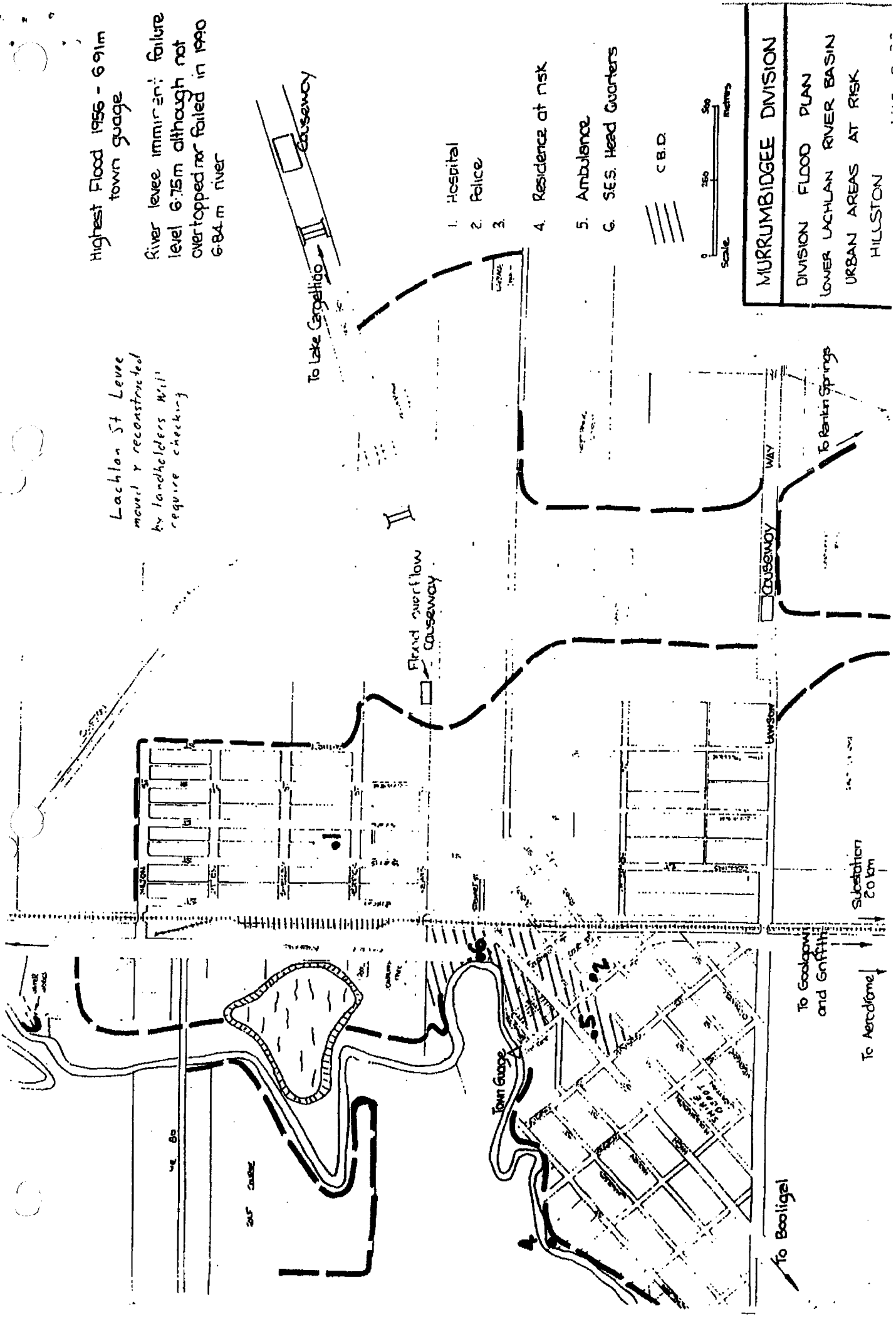
- Gauges - Telemetre ▲
- Visual △
- Arterial Roads & Highways
- Local Government Boundaries
- Murrumbidgee Division Boundaries
- Classified Roads



LOWER LACHLAN RIVER BASIN

Highest Flood 1956 - 6.91m town gauge  
 River levee imminent failure level 6.75m although not overtopped nor failed in 1990 6.84m river

Lachlan St Levee moved & reconstructed by landholders will require checking



**MURRUMBIDGEE DIVISION**  
 DIVISION FLOOD PLAN  
 LOWER LACHLAN RIVER BASIN  
 URBAN AREAS AT RISK  
 HILLSTON

1. Hospital
2. Police
- 3.
4. Residence at risk
5. Ambulance
6. S.E.S. Head Quarters

C.B.D.  
 Scale 0 250 500 meters

M R NO 244

TEMPORARY COMMON

111

88

112

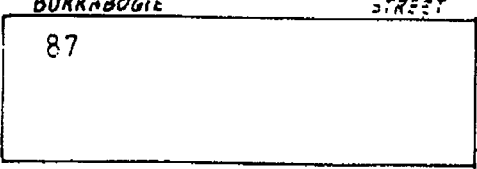
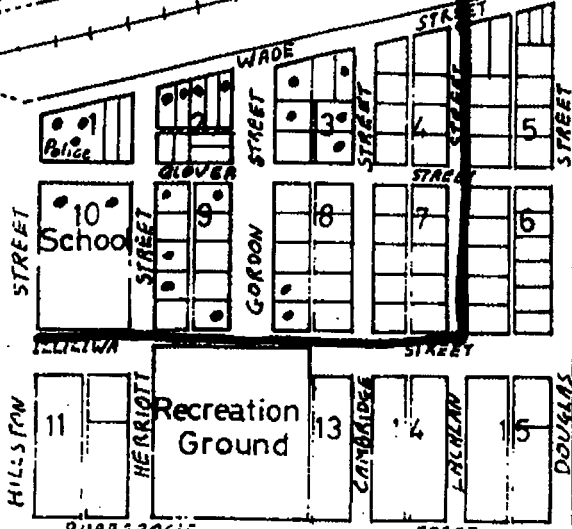
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Stormwater Flood

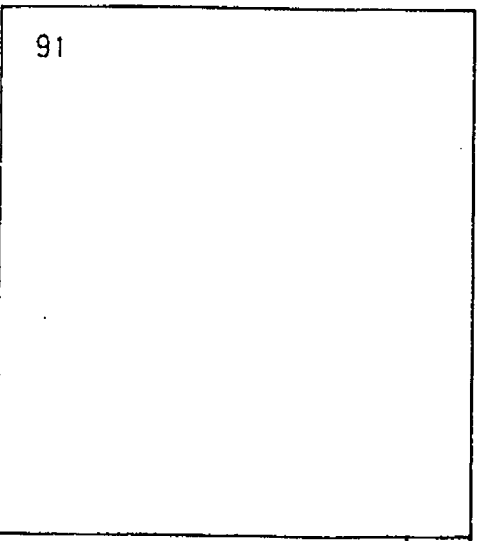


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68



66

Garage

TS & CR  
65587

# CARRATHOOL



