

Junee Shire LGA

Local Flood Emergency Sub Plan



JUNEE SHIRE FLOOD EMERGENCY SUB PLAN

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

Volume 1 of the Junee Shire Flood Emergency Sub Plan

Endorsed by the Junee Shire Emergency Management Committee

14 March 2024

Version 3.0

AUTHORISATION

The Junee Shire Flood Emergency Sub Plan is a sub plan of the Junee 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: 14/03/2024

Endorsed

Signature:



Chair, Local Emergency Management Committee

Print Name: Tony Donoghue

Date: 14-3-2024

VERSION HISTORY

Version Number	Description	Date
1.0	Junee Shire Local Flood Plan	July 1995
2.0	Junee Shire Flood Emergency Sub Plan	December 2013

AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to:

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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
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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 Junee 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 Junee 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 Junee 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 Junee Shire LGA. The Junee 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 Junee Shire Council level emergency management arrangements for prevention, preparation, response and initial recovery for flooding in the Junee 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 tsunami) 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 Junee 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 Junee Shire LGA.
- 2.1.2 Declared dams in or upstream of the Junee Shire Local Government Area.

Dam Name	Owner	High Risk Dam
Blowering Dam	Water NSW	No
Burrinjuck Dam	Water NSW	No
Bethungra Dam	Department of Primary Industries- Catchments and Lands Managed by Junee Shire Council	Not a declared dam

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 Risk 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 Junee 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. Dam Owners will provide Dam Emergency Plans (where required) and consult with NSW SES on alert levels and messaging. Alert level definitions are listed in Dam Emergency Plans.
- f. NSW SES maintains a dedicated dam failure hotline and procedures to ensure priority dissemination of dam failure warnings.
- g. 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.
- h. 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. Dam Owners will utilise the Dam Emergency Plan to provide warnings and information to NSW SES and communities (where appropriate).
- c. NSW SES Incident Controllers will issue the following NSW SES Flood Warnings aligning to the Australian Warning System:
 - Advice.
 - Watch and Act
 - Emergency Warning
- d. NSW SES liaises with the Bureau to discuss the development of flood warnings as required.
- e. NSW SES provides alerts and deliver flood information to affected communities using a combination of public information.
- f. NSW SES may request supporting agencies redistribute NSW SES alerts and information, including through the provision of doorknocking teams.
- g. 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 or 'Transport Info Line': 131 500. VMS messaging on roadways may also be used to advise motorists.
- h. 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.

- i. 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. Junee 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 Junee 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 State Rescue Policy.
- d. Rescue agencies will conduct rescue of domestic small and large animals as per the State Rescue Board 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 Junee 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 Junee Shire Council(s) 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 SECON and SERCON.

7 ABBREVIATIONS

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

8 GLOSSARY

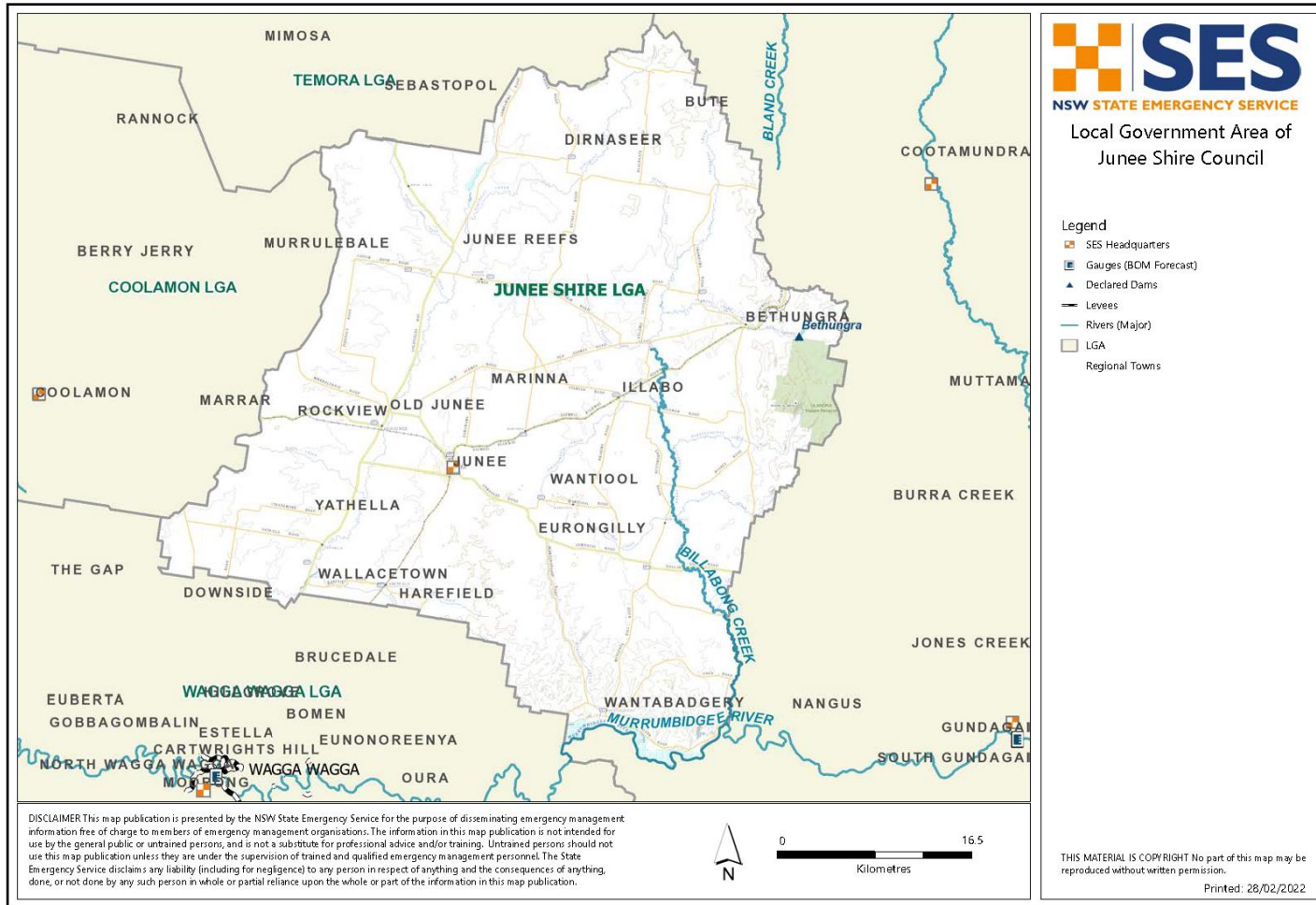
Common emergency service terminology can be found within the Australian Disaster Resilience Glossary.

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 Junee 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 NSW State Flood Plan .

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"> • Prepare a flood emergency plan for the Caravan Park. • 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. • 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"> – Provide the manager of the caravan park with a contact address and telephone number in case of an emergency. – 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). • Ensure that occupiers are informed of Flood Information. At this time, occupiers should be advised to: <ul style="list-style-type: none"> – Ensure that they have spare batteries for their radios. – Listen to a local radio station for updated flood information. – Prepare for evacuation and movable dwelling (cabins) relocation. • Ensure that owners and occupiers of caravans are aware of what they must do to facilitate evacuation and movable dwelling relocation when flooding occurs. • 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.

AGENCY	RESPONSIBILITIES
	<ul style="list-style-type: none"> • Secure any movable dwellings that are not able to be relocated to prevent floatation. • 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.
Childcare Centres and Preschools	<ul style="list-style-type: none"> • When notified of possible flooding or isolation, childcare centres and preschools should. <ul style="list-style-type: none"> – 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. – Assist with coordinating the evacuation of preschools and childcare centres.
Dams Safety NSW	The roles and responsibilities for Dams Safety NSW (formerly NSW Dam Safety Committee) are outlined in the NSW State Flood Plan.
Department of Defence	Arrangements for Defence Assistance to the Civil Community are detailed within the State EMPLAN (section 448).
Energy and Utilities Services Functional Area	<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"> • Assist NSW SES with identification of infrastructure at risk of flood damage where resources are available. • Facilitate local utility service distribution providers (electricity, gas, water, wastewater) to: <ul style="list-style-type: none"> – Provide advice to NSW SES of any need to disconnect power/gas/water/wastewater supplies or of any timetable for reconnection. – Advise NSW SES of any hazards from utility services during flooding and coastal erosion/inundation. – Advise the public regarding electrical hazards during flooding and coastal erosion/inundation, and to the availability or otherwise of the electricity supply. – Clear or make safe any hazard caused by power lines or electricity distribution equipment. – Reconnect customers’ electrical/ gas/ water/wastewater installations, when certified safe to do so and as conditions allow. – Assist NSW SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence.
Engineering Services Functional Area	The roles and responsibilities for Engineering Services are outlined in the Engineering Services Supporting Plan and NSW State Flood Plan.

AGENCY	RESPONSIBILITIES
Environmental Services Functional Area	The roles and responsibilities for Environmental Services are outlined in the Environmental Services (ENVIROPLAN) Supporting Plan.
Floodplain Management Australia	The roles and responsibilities for Floodplain Management Australia are outlined in the NSW State Flood Plan.
Fire and Rescue NSW	The roles and responsibilities for Fire and Rescue NSW are outlined in the NSW State Flood Plan.
Forestry Corporation of NSW	The roles and responsibilities for Forestry Corporation of NSW are outlined in the NSW State Flood Plan.
Health Services Functional Area	The roles and responsibilities for Health Services are outlined in the Health Services (HEALTHPLAN) Supporting Plan and NSW State Flood Plan.
Junee Shire Council	<p>Preparedness</p> <ul style="list-style-type: none"> • Establish and maintain floodplain risk management committees and ensure that key agencies are represented. • Develop and implement floodplain risk management plans in accordance with the NSW Government’s Flood Prone Land Policy and the Floodplain Risk Management Manual. • Provide levee studies, flood studies and floodplain management studies to NSW SES. • Maintain council-owned flood warning networks and flood mitigation works. • Participate in NSW SES-led flood emergency planning meetings, to assist in the preparation of Flood Sub Plans. • Maintain a plant and equipment resource list for the council area. • Contribute to community engagement activities. <p>Response</p> <ul style="list-style-type: none"> • Subject to the availability of council resources, assist NSW SES with flood operations including: <ul style="list-style-type: none"> – Traffic management on council managed roads. – Provision of assistance to NSW SES (plant, equipment and personnel where able and requested). – Property protection tasks including sandbagging. – Assist with the removal of caravans from caravan parks. – Warning and/or evacuation of residents and other people in flood liable areas. – Provision of back-up radio communications. – Resupply of isolated properties. – Technical advice on the impacts of flooding.

AGENCY	RESPONSIBILITIES
	<ul style="list-style-type: none"> – 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. – Assist NSW SES to provide filled sandbags and filling facilities to residents and business in areas which flooding is expected. • Assist with making facilities available for domestic pets and companion animals of evacuees during evacuations. • Operate flood mitigation works including critical structures such as detention basins and levees and advise NSW SES regarding their operation. • Manage and protect council-owned infrastructure facilities during floods. • 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. • Advise the Environmental Protection Authority of any sewerage overflow caused by flooding. • Work with NSW SES and NSW Department of Planning and Environment to collect flood related data during and after flood events. <p>Recovery</p> <ul style="list-style-type: none"> • Provide for the management of health hazards associated with flooding including removing debris and waste. • Ensure premises are fit and safe for reoccupation and assess any need for demolition. • Provide services, assistance and advice to State Government in accordance with the State Recovery Plan.
Local Emergency Operations Controller (LEOCON)	<ul style="list-style-type: none"> • Monitor flood operations. • If requested, coordinate support for the NSW SES Incident Controller.
Local Emergency Management Officer (LEMO)	<ul style="list-style-type: none"> • If requested by the NSW SES Incident Controller, advise appropriate agencies and officers of the start of response operations.
Manly Hydraulics Laboratory (MHL)	The roles and responsibilities for Manly Hydraulic Laboratory are outlined in the NSW State Flood Plan.
Marine Rescue NSW	The roles and responsibilities for Marine Rescue NSW are outlined in the NSW State Flood Plan.
NSW Ambulance	The roles and responsibilities for NSW Ambulance are outlined in the Health Services (HEALTHPLAN) Supporting Plan and NSW State Flood Plan.

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

AGENCY	RESPONSIBILITIES
	<ul style="list-style-type: none"> • Transport for NSW in conjunction will assist NSW SES with the evacuation of at-risk communities by maintaining access and egress routes. • 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. • Assist NSW SES with identification of road infrastructure at risk of flooding.
Transport Services Functional Area	The roles and responsibilities for Transport Services are outlined in the Transport Services Functional Area Supporting Plan and NSW State Flood Plan.
VRA Rescue NSW	The roles and responsibilities for VRA Rescue NSW are outlined in the NSW State Flood Plan.
Water NSW	The roles and responsibilities for Water NSW are outlined in the NSW State Flood Plan.
Welfare Services Functional Area	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

Community Members	<p>Preparedness</p> <ul style="list-style-type: none"> • Understand the potential risk and impact of flooding. • Prepare homes and property to reduce the impact of flooding. • Understand warnings and other triggers for action and the safest actions to take in a flood. • Households, institutions and businesses develop plans to manage flood risks, sharing and practicing this with family, friends, employees and neighbours. • Have an emergency kit. • Be involved in local emergency planning processes. <p>Recovery</p> <ul style="list-style-type: none"> • Assist with community clean-up if required and able to do so. • Participate in After Action Reviews if required.
Private Companies or other Organisations	<ul style="list-style-type: none"> • Assist with the provision of food supplies. <ul style="list-style-type: none"> - Brew at 101 102A Broadway, Junee NSW, Ph: (02) 6924 4002. - IGA Junee, 102 Broadway St, Junee 2663 NSW. Ph: (02) 6924 1754.
Aboriginal Organisations or Groups	<ul style="list-style-type: none"> • Act as the point of contact between NSW SES and local indigenous communities in Junee Shire. • Inform the NSW SES Incident Controller about flood conditions and response needs. • Disseminate flood information, including flood and evacuation warnings, to local indigenous communities in Junee Shire.
Communication	<ul style="list-style-type: none"> • Junee NSW SES Facebook Page.

HAZARD AND RISK IN JUNEE SHIRE

Volume 2 of the Junee Shire Local Flood Plan

Last Update: April 1995

THE FLOOD THREAT

THE MURRUMBIDGEE RIVER VALLEY

Floods in the Junee Council area can occur on the stretch of the Murrumbidgee River which forms part of the council area's southern boundary, and on Houlaghans and Billabong creeks or their tributaries.

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 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 important tributaries are Jugiong, Muttama, Adelong, Hillas, Tarcutta and Kyeamba creeks. A large area of floodplain fringes the Murrumbidgee area to the east and west of Wantabadgery, including the Nangus and the Oura areas.

Two tributaries of the river traverse the Junee Council area. These are Billabong Creek, the headwaters of which are in the Dirnaseer and Bethungra areas, and Houlaghans Creek which rises between Sebastopol and Dirnaseer. The main tributaries of Billabong Creek are Ironbung, Ulandra and Wantiool creeks, while those of Houlaghans Creek are Pinchgut and Reedy creeks.

Floods which affect the council area rise and fall relatively quickly, land is under water for only short periods and the areas inundated are not large. Flood waters on the Murrumbidgee generally take between 12 and 30 hours to travel from Burrinjuck Dam to Gundagai and begin to affect the Junee Council area very soon after reaching Gundagai. Floods on the tributary creeks within the council area are usually 'flash' floods.

As a rule, small freshes on the river travel only slowly. Larger flows held within the rivers banks travel more quickly, but once flood waters have escaped the channel their flows are slowed by the roughness of floodplain terrain, vegetation and structures. Very severe floods tend to overcome this roughness and travel very quickly.

The severity of flooding is affected by dams located in the Upper Murrumbidgee valley.

Burrinjuck Dam became a factor in mitigating floods in about 1925 and Blowering Dam in 1968. Both dams can store floodwaters and reduce the severity of flooding downstream but neither was designed to eliminate flooding entirely. Nevertheless, floods were more frequent and generally more severe before the dams were built than has since been the case.

There is a recorded history of flooding on the Murrumbidgee River between Gundagai and Wagga Wagga going back to the mid-nineteenth century, but reliable records are available only since 1891. Severe flooding occurred at Gundagai in 1852, 1853 and 1870, with other significant floods in 1900, 1925 and 1974. Details of the gauge heights achieved in these and other flood events are in the accompanying table.

RAINFALL, WEATHER SYSTEMS AND FLOODING

Average annual rainfall over the Snowy Mountains headwaters of the Murrumbidgee River ranges from 1,000-1,500 mm but rainfall totals decline markedly to the west and most of the council area averages only 500-600 mm annually. Heavy rain may occur at any time of year, but the months from April to October tend to be the wettest. Falls of more than 125 mm in 24 hours have been recorded at several stations, especially in the upper catchment. Notably high 24-hour totals have been recorded as follows:

May 1925:Queanbeyan (185 mm) and Cotter River Junction (180 mm). Near Captains Flat, more than 500 mm fell in a three-day period at this time.

April 1927:Kiandra (210 mm).

July 1993:Harden area (150 mm).

The August 1974 flood resulted from widespread rainfall, with three-day totals exceeding 300 mm over much of the upper catchment. The Cotter, Molonglo, Numeralla and Queanbeyan rivers made the major contributions.

Floods in the council area are generally caused by one of four types of weather system:

- 1.Southern airmasses emanating from the Antarctic during the winter and early spring months and moving in a north-easterly direction over the catchment. Most of the floods on the Murrumbidgee River have occurred between the months of May and October as a result of sequences of these southerly storms.
- 2.Large depressions forming over tropical Australia during the summer months and moving southwards. Flooding on the Murrumbidgee River as a result of rain from such depressions is rare.
- 3.Depressions over the east coast of NSW producing easterly winds which, when orographically triggered, result in heavy rainfall over the mountainous headwaters of the Murrumbidgee River.
- 4.Short-duration, high-intensity convective thunderstorms during the summer months can cause localised flooding and rises on small creeks and the surcharging of

town drains. Main river levels are unaffected, however.

EXTREME FLOODING

Floods more severe than those which have been recorded within the council area must be considered possible. No estimate has been made of the levels which would be reached by a `Probable Maximum Flood (PMF) at any location within the council area, but it is believed that flooding up to seven metres higher than was measured at Gundagai in 1974 is possible there. Such flooding would cause catastrophic effects along the length of the Murrumbidgee River including the Nangus, Wantabadgery and Oura areas.

Extreme floods generally rise more rapidly than previously-recorded ones and occur with less warning time. They are also characterised by faster-flowing and more dangerous waters.

**TABLE 1: DATA ON HISTORIC FLOODS ON THE MURRUMBIDGEE RIVER AND ITS TRIBUTARIES
(GAUGE HEIGHTS, TIME OF PEAKS AND FLOWS IN MEGALITRES/DAY)**

DATE (GUNDAGAI)	Burrinjuck Dam		Murrumbidgee River at Jugiong	Jugiong Creek	Muttama Creek	Tumut River at Oddy's Bridge (D/S Blowering Dam)	Tumut River at Brungle Bridge	Adjungbilly Creek at Darbarla	Murrumbidgee River at GUNDAGAI	Murrumbidgee River at WAGGA WAGGA
	River Wall	Inflow Out Time	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow
October 1844									9.15 - 149500	10.97 - 590800
June 1852									12.32 - 690000	10.67 - 465700
July 1853									12.57 - 718000	10.90 - 560000
July 1867									9.86 - 188600	9.32 - 154800
July 1869									8.78 - 126800	9.09 - 128000
April 1870									12.34 - 694000	10.67 - 465800
May 1870									9.76 -	10.06 -

DATE (GUNDAGAI)	Burrinjuck Dam		Murrumbidgee River at Jugiong	Jugiong Creek	Muttama Creek	Tumut River at Oddy's Bridge (D/S Blowering Dam)	Tumut River at Brungle Bridge	Adjungbilly Creek at Darbarla	Murrumbidgee River at GUNDAGAI	Murrumbidgee River at WAGGA WAGGA
	Inflow	Out Time								
	River Wall		Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow
June 1870									210100	282000
									-	9.22
									-	-
									-	142000
September 1879									10.97	9.35
									-	-
									470000	158500
January 1891									10.36	9.25
									-	-
									308000	146000
June 1891									10.80	10.46
									-	-
									477000	392000
July 1891									9.75	9.68
									-	-
									208500	206800
April 1894									9.40	9.17
									-	-
									176000	136700
July 1900									11.73	9.98
									060900	072300
									688000	264800

DATE (GUNDAGAI)	Burrinjuck Dam		Murrumbidgee River at Jugiong	Jugiong Creek	Muttama Creek	Tumut River at Oddy's Bridge (D/S Blowering Dam)	Tumut River at Brungle Bridge	Adjungbilly Creek at Darbarla	Murrumbidgee River at GUNDAGAI	Murrumbidgee River at WAGGA WAGGA
	Inflow		Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow
	River Wall	Out Time								
July 1922			8.15 290700 250500	4.88 290900 29400					9.65 300800 196000	9.17 312000 136700
May 1925	- 1146000	272300 429530	10.24 280200 432000	4.10 280900 18800					11.32 28240 552000	10.11 300830 317000
June 1931		270900 93600	7.29 251000 194000	3.90 240900 16700		6+ - 69260			9.96 260900 238000	8.76 130000 98120
October 1934			6.81 270900 162600	2.90 260900 7950		3.73 - 32900		4.00 - 30000	9.56 280900 185600	9.14 282000 213400
March 1950		- 37300	9.17 240900 320070	6.20 220900 53300		4.44 220900 21775		3.64 231800 24100	10.45 240400 328000	10.13 250400 324000
April 1950		050900 89700	7.01 040900 176150					1.14 - 930	8.83 040200 128800	9.07 061800 126000
June 1952		170900 217280	8.61 180900 281600	5.33 170900 36600	4.98 170900 36450			4.15 180030 33000	10.13 181000 265000	8.35 - 78700
14 June 1956		120900 121480	6.25 130030	2.92 140900		2.95 140130		2.49 130400	8.89 141200	9.12 161300

DATE (GUNDAGAI)	Burrinjuck Dam		Murrumbidgee River at Jugiong	Jugiong Creek	Muttama Creek	Tumut River at Oddy's Bridge (D/S Blowering Dam)	Tumut River at Brungle Bridge	Adjungbilly Creek at Darbarla	Murrumbidgee River at GUNDAGAI	Murrumbidgee River at WAGGA WAGGA
	River Wall	Inflow Out Time	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow
			132500	8080		16900	410039	410038	410004	410001
27 June 1956		260900 167280	7.50 262000 274000	3.99 260900 17800	3.40 261300 6260	3.27 290900 22105		2.36 - 6760	9.46 300900 176000	9.58 291200 122400
22 October 1959		220900 257480	8.93 221600 301000	Over Gauge	3.94 220400 11900	2.32 210900 9540		0.91 - 1630	10.00 230900 244000	9.17 241000 136700
30 August 1974	486730 474740	291300 396200	10.14 291600 419500	5.50 280900 39700	3.23 281500 4940	1.80 262300 5490	2.98 281830 14950	2.38 281915 6890	11.01 300030 481400	10.75 302110 489000
5 September 1974	129600 131650	060900 66320	5.28 060900 83800	3.10 050900 9410	3.11 - 5970	1.76 051500 4130	3.77 052145 32160	2.59 051350 8330	8.95 060800 134800	9.19 071800 137800
17 October 1974	189060 159260	181200 37170	4.06 - 45400	3.35 - 11400	3.80 - 10700	2.97 160900 9800	3.92 - 35900	2.33 141500 6500	8.67 181130 120500	9.22 191100 142000
27 October 1975	143970 177110	251400 114110	6.48 260100 144400	3.70 - 14700	3.00 261100 3480	2.57 260030 7610	3.84 261630 34100	2.54 260330 7780	9.47 262115 177000	9.58 290100 219000
18 October 1976	170240 160470	171600 25300	8.08 180730 245000		3.25 151680 5080	2.00 151630 6600	2.90 162230 13800	2.67 161500 8910	9.70 182350 202000	9.40 200545 175000

DATE (GUNDAGAI)	Burrinjuck Dam		Murrumbidgee River at Jugiong	Jugiong Creek	Muttama Creek	Tumut River at Oddy's Bridge (D/S Blowering Dam)	Tumut River at Brungle Bridge	Adjungbilly Creek at Darbarla	Murrumbidgee River at GUNDAGAI	Murrumbidgee River at WAGGA WAGGA
	River Wall	Inflow Out Time	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow	Height Time Flow
28 January 1984	162926 140308	262200 68000	U/S - -	3.24 270000 11330	4.57 261700 23500	1.07 280700 1000	4.01 270145 38600	3.27 270145 18200	8.95 280100 136600	8.94 300900 85500
29 July 1984	103700 109880	291600 67300	6.43 292350 141500	7.00 290900 73000	3.68 290600 8660	1.87 280115 5739	3.74 281100 31400	2.69 291400 5070	9.20 292100 153000	8.97 311300 116000
5 April 1989	169000 157400	031900 137000	7.16 040500 185600	1.96 - 2400	2.64 030200 1940	0.82 032330 310	1.19 042300 3100	0.48 041215 350	9.18 042300 151600	9.06 171100 125000
14 April 1989	114060 126580	132330 114000	6.96 140600 172600	3.98 130900 17450	3.57 130530 7760	0.88 130900 440	2.90 140545 14700	1.49 131045 2730	9.41 142100 179000	9.41 161100 165000
13 July 1991	335160 326700	121400 220100	8.46 271200 12600	2.75 120900 6930	2.94 121145 3300	0.99 130400 760	2.75 120800 12200	1.50 120815 2760	9.92 130700 232000	9.61 150540 194100
7 October 1993	U/S 73400	121200 40000	5.10 050400 76600	U/S 050300 50000 est.	3.55 042000 7570	0.84 050400 370	3.82 041900 33500	3.00 041900 14400	8.59 051700 117000	8.85 071900 105000

TABLE 2: 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	A H D R L of Gauge Zero	MAY 1925 (A 48 hour rainfall event)			AUG/SEP 1974 (A 72 hour rainfall event)			LATE APRIL 1989			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			-18					52800
Burrinjuck Inflow - Wall		-2			-5		5500			1470	-12					
Burrinjuck Discharge		00		4970	00		4500	00		1325	00					30300
Jugiong	239.00	4	10.34	5380	3	10.14	4840	1.5	7.96	2010	2.0	8.46	2700	4	26.4	30300
Gundagai	207.13	21	11.32*	6860*	11.5	11.01	5800	21.5	9.41	1989	17	9.92	2680	7.5	20.4	30330
Erringourrah					16.8	10.38	5523	36.5	8.97	1980	34	9.24	2530	12.5	17.5	29000
Wagga Wagga	170.05	54.5	10.11	4370	31.8	10.75	5760	59.5	9.41	1990	64	9.61	2350	18.0	15.2	28400

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.

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

SPECIFIC RISK AREAS

Flooding is relatively common on the Murrumbidgee River and its tributaries, but its effects are rarely severe as far as the Junee Council area is concerned. Most floods cause inconvenience including the inundation of farm land and the cutting of roads for short periods. In rare, severe events, however, substantial numbers of evacuations are likely to be necessary. The areas which experience flooding are:

RURAL AREAS ON THE MURRUMBIDGEE RIVER FLOODPLAIN

About 10 farm houses to the east and west of Wantabadgery are potentially at risk of inundation in an extreme event. None were affected in 1974, however, although the farms would all have experienced some flooding.

WANTABADGERY

This small settlement of about 20 dwellings can be flooded from the river or from an unnamed tributary creek which flows in a westerly direction roughly parallelling the Oura road. Up to half of the dwellings could need to be evacuated in an extreme flood which could reach a level 5.5 metres above that reached in 1974. A small number of houses were affected in 1974.

OURA

This village is cut off from Wagga Wagga in floods reaching about 9.0 metres on the Wagga Wagga gauge. At greater heights the village itself is flooded, and about 10 dwellings were inundated to beyond floor level in 1974 and their residents evacuated. An extreme flood could necessitate the evacuation of nearly all the 20 residences.

NANGUS

This village is cut off from Gundagai in floods reaching about 9.0 metres on the Gundagai gauge, and inundation of dwellings would begin at about 11.5 metres though some dwellings on rural properties could be affected at lower levels. No houses in the village experienced inundation in 1974. Frequent flooding in the Nangus area from Nangus Creek is managed by the Gundagai SES.

JUNEE

Flooding of three or four low-lying residences is possible after thunderstorms. Sandbagging operations are necessary to contain damage.

ROAD CLOSURES

The following roads are known or believed to be cut by flooding:

- Junee-Harefield rd (Shire Rd 67): by tributaries of Reedy Creek, at floodways and usually for only a few hours.
- Olympic Way (MR Rd 78, Junee-Wagga Wagga): could close in rare, severe events at Houlaghans Creek near the Reedy Creek confluence (Wallacetown) or at Ulandra Creek (Bethungra). Closure would be for only a few hours. Access to Wagga Wagga can be cut for up to a few weeks in severe events at North Wagga Wagga, and could be cut, on average, every two or three years for 1-2 days.
- Old Junee-Junee (MR 243): local flooding.
- Junee-Gundagai rd (MR 243): Nangus is cut off from Gundagai near the Wirilya property by the Murrumbidgee River.
- Nangus-Wantabadgery-Oura-Wagga Wagga rd: closure occurs first at North Wagga Wagga and at higher flood levels at Kurrajong and Gumly Gumly. Access from Junee to Oura may need to be by four wheel drive vehicle in severe events.
- Wantabadgery-Sturt Hwy rd, via Mondarlo: at Tenandra (Mondarlo) Bridge over Murrumbidgee River.
- Junee-Wantabadgery rd (Shire rd 124): at several low causeways.
- Junee-Oura rd: cut for short periods in Junee Shire; Wagga-Oura cut for long periods.
- Roads in Junee can be cut by heavy rain from thunderstorm activity. The rail underpass on the northern side of Junee on the Olympic Way has required barricading in the past at Edgar St.
- Many minor roads with low causeways can be cut from thunderstorm rains and other local flooding, usually for 2-3 hours at most.

SES RESPONSE ARRANGEMENTS FOR JUNEE SHIRE

Volume 3 of the Junee Shire Local Flood Plan

Last Update: April 1995

GAUGES MONITORED BY THE JUNEE SES LOCAL CONTROLLER

AWRC NUMBER	STATION	OWNED BY	TYPE	FLOOD CLASSIFICATIONS (metres)		
				MINOR	MODERATE	MAJOR
N/A	Burrinjuck Outflow	DWR	Telemeter			
410004	Gundagai*	DWR	Telemeter	6.1	7.6	8.5
410143	Eringoarra	DWR	Telemeter			
	Oura Park	Wagga Council	Manual			
410001	Wagga Wagga*	DWR	Telemeter	7.3	9.0	9.6

NOTES:

- a. All these gauges are located on the Murrumbidgee River.
- b. Flood warnings are issued by the Bureau of Meteorology for gauges marked with an asterisk.
- c. Readings are provided to the Local Controller by DHQ at appropriate intervals.

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.

THE DISSEMINATION OF SES FLOOD BULLETINS

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

2WG Wagga Wagga.

ABC Radio Riverina.

2LF Young.

WIN TV, Wagga Wagga.

Prime TV, Wagga Wagga.

Junee SES.

Junee Council.

NSW Police Service, Junee Patrol Headquarters.

Roads and Traffic Authority, Narrandera.

NSW Agriculture, Yanco.

Department of Community Services, Wagga Wagga.

Department of Land and Water Conservation, Leeton.

NSW Ambulance Service, Wagga Wagga.

Telecom, Riverina.

Department of School Education, Wagga Wagga.

Department of Transport, Wollongong.

State Rail Authority, Wagga Wagga (during severe events only).

NSW Fire Brigades, Wagga Wagga (during severe events only).

2. The SES Local Controller forwards SES Flood Bulletins and provides other flood information, as necessary, to Flood Wardens and to agencies assisting with flood operations in the Junee Council area.