NSW STATE EMERGENCY SERVICE

Forbes Shire

Local Flood Emergency Sub Plan

FloodSafe

FORBES SHIRE COUNCIL FLOOD EMERGENCY SUB PLAN

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

Volume 1 of the Forbes Shire Local Flood Plan

Endorsed by the Forbes Shire Council Emergency Management Committee

Version 3.0 - November 2021

AUTHORISATION

The Forbes Shire Council Flood Emergency Sub Plan is a sub plan of the Forbes Shire Council 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

NSW SES Local/Unit Commander

Date: 25-11-21

Endorsed

Chair, Local Emergency Management Committee

Date: 25-11-21

VERSION HISTORY

Version Number	Description	Date
1.0	Forbes Shire Local Flood Plan	September 2002
2.0	Forbes Shire Local Flood Plan	August 2013

AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to:

Community Planning and Engagement
NSW State Emergency Service
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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 following website - www.ses.nsw.gov.au

Contents

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 Forbes Shire Council 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 Forbes Shire Council Local Emergency Management Plan (EMPLAN) and is endorsed by the Forbes Shire Council 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 Forbes Shire Council Local 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 Forbes Shire Council LGA. The Forbes Shire Council 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 Central West Emergency Management Region.

1.4.3 The plan sets out the Forbes Shire Council level emergency management arrangements for prevention, preparation, response and initial recovery for flooding in the Forbes Shire Council LGA. Hazard and Risk information can be found in Volume 2 of this document, and NSW SES Response Arrangements can be found in Volume 3.

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.

1.4.5 This plan outlines the local level arrangements for the management of downstream consequences of flooding due to dam failure, however it does not

cover the management of flooding of an underground mine by inrush or other cause, which should be covered by the Mine Sub Plan for the respective mine.

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; and

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 Plan.

1.7.2 Specific roles and responsibilities for agencies, functional areas and organisations in relation to flooding within Forbes Shire Council are detailed within this plan, Appendix B and Appendix C.

1.7.3 Any agency with agreed responsibilities in this plan that are temporarily, or no longer able to fulfil their responsibilities must as soon as possible notify the:

a. NSW SES Incident Controller (for local or zone level responsibilities during response operations).

b. NSW SES Zone Duty Commander (for regional level responsibilities outside of response operations).

1.8 PLAN MAINTENANCE AND REVIEW

1.8.1 The 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. Conducting exercises to test arrangements.

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 from after action reviews, reports, or inquiries; and
- 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 material published in previous versions of the Local Flood Plan is now 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 The NSW SES maintains information on the nature of flooding and effects of flooding on the community in the Forbes Shire Council LGA. This is outlined in Volume 2 – Hazard and Risk in Forbes Shire Council.

2.1.2 Declared dams in or upstream of the Forbes Shire Council Local Government Area.

Dam Name	Owner	High Risk Dam
Wyangala Dam	Water NSW	No

3 PREVENTION/ MITIGATION

3.1 INTRODUCTION

3.1.1 The Floodplain Development Manual outlines the NSW Government's Flood Prone Lands 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:** Work with landuse planning and consent authorities to advocate that the risks arising from floods are considered so as 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.

b. NSW SES will provide responses to land use planning proposal referrals that have or will create significant flood risk.

3.3 FLOODPLAIN RISK MANAGEMENT

3.3.1 **Strategy**: NSW SES advocates for the recognition of emergency management considerations through participation in the floodplain risk 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; and

b. NSW SES will provide advice, support and technical resources for NSW SES representatives to contribute effectively to 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

4.2.2 **Actions**:

a. Develop and review this NSW SES Local Flood Plan as required. Local Flood Plans outline the specific arrangements for management of flood events within an LGA, and may include cross boundary arrangements; and

b. Review plans as per Section 1.8.

4.2.3 Local EMPLAN Consequence Management Guides (CMG) for flood are not required for communities covered by NSW SES Local Flood Plans.

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; and

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 Forbes Shire Council LGA are also listed in Volume 3 of this plan.

c. The NSW SES will recommend new warning services and changes to warning alert levels for gauges to the NSW 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 Failure Warning Systems (where required) and consult 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 pre-written warning and flood information products.
- Continuously reviewing warning and flood information products; and
- Consulting with affected communities, key stakeholders, Dam Safety NSW and the NSW Flood Warning Consultative Committee; and maintain Operational Readiness.

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 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; and

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. Work with 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.

5 RESPONSE

5.1 INTRODUCTION

5.1.1 Flood response operations will begin:

a. On receipt of a Bureau of Meteorology (BoM) Severe Weather Warning or Thunderstorm Warning that includes heavy rain or storm surge; or

b. On the receipt of a BoM 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 New South Wales.

Actions:

a. The 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 Duty Commander will appoint Incident Controllers and establish Incident Control Centres at NSW SES Facilities.

d. The Incident Controller, in consultation with participating supporting emergency services and Functional Areas will determine the appropriate breakdown of an incident area into Divisions and/or Sectors in accordance with the principles of AIIMS as well as the predefined Divisions and Sectors outlined within the NSW SES Intelligence System

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; and
- Coordinate information flow, including warnings, public information and social media.

5.2.3 **Strategy**: Provide effective liaison between the 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; and

b. NSW SES will provide Liaison Officer(s) to Emergency Operations Centres as required.

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. The 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 communicated and collected during 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 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. The NSW SES may establish and operate a Joint Intelligence Unit to coordinate the collection, collation, interpretation, mapping, actioning and dissemination of information; and

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.

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

Action: The NSW SES will use flood intelligence and official forecasts and warnings, 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 BoM issues public weather and flood warning products before and during a flood. These may include:

- Severe Thunderstorm Warnings with reference to heavy rainfall
- Regional Severe Thunderstorm Warnings with reference to heavy rainfall
- Detailed Severe Thunderstorm Warnings (for Sydney / Newcastle / Wollongong) with reference to heavy rainfall,

- Severe Weather Warnings with reference to heavy rainfall and/or storm surge,
- Flood Watches, and
- Flood Warnings.

b. Dam Owners will utilise Dam Failure Warning Systems to provide warnings and information to NSW SES and communities (where appropriate).

c. NSW SES Incident Controllers or Zone Duty Commanders will issue the following NSW SES flood information products incorporating warnings from the above, expected consequences and safety messages:

- Livestock and Equipment (including pumps) Warnings
- Local Flood Advices
- Flood Bulletins
- NSW SES Evacuation Warning
- NSW SES Evacuation Order
- NSW SES All Clear

d. NSW SES liaises with the Bureau of Meteorology 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 the following methods:

- Mobile and fixed public address systems.
- Two-way radio.
- Emergency Alert (SMS and voice message alerting system).
- Telecommunications (including Auto dial systems).
- Facsimile
- Standard Emergency Warning Signal.
- Doorknocking.
- Mobile and fixed sirens.
- Variable message signs.
- Community notices in identified hubs.
- Distribution through established community liaison networks, partnerships and relationships; and
- NSW SES social media and website.

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; and

- My Road Info
- Transport for NSW 'Live Traffic' website: www.livetraffic.com or 'Transport InfoLine': 131 500. VMS messaging on roadways may also be used to advise motorists.

h. The Public Information and Inquiry Centre will be established by the 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 through flood protection systems (e.g. sandbagging) to minimise entry of water into buildings; and

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. Forbes Shire Council will coordinate the closure and reopening of Council managed roads once inspections have been carried out by the relevant authority.

b. The Transport Management Centre (TMC) in coordination with Transport for NSW will coordinate the closure and reopening of the state road network.

c. The NSW Police Force may close and re-open roads but will normally only do so (if the Forbes 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 Arrangements for the protection of local assets are outlined in Volume 3 of this NSW SES local Flood Plan. In addition, 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 and utility services.

Actions:

a. Transport Services Functional Area will keep the NSW SES informed of the status 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 Government Radio Network.

d. The Engineering Services Functional Area is to coordinate the assessment and restoration of critical public buildings for example hospitals; and

e. Functional Areas will keep the NSW SES informed of the status of utilities and infrastructure.

5.8 EVACUATION

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

5.8.2 Community specific evacuation arrangements are located in Volume 3 of this Plan.

5.8.3 **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; and
- Evacuation of people where essential energy and/or utility services are likely to fail or where buildings have been or may be made uninhabitable; and

b. The 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.
- Time available for evacuation.
- Evacuee management requirements; and
- Resources and delivery of evacuation information.

c. NSW SES Incident Controllers, and flood planners 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 Volume 3 / Local EMPLAN; and

f. The NSW Police Force will coordinate the provision of overall security for evacuated areas.

5.8.4 **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 Incident Controller will warn communities to prepare for a possible evacuation, where circumstances allow such lead time.

c. The NSW SES Incident Controller 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. Health Services Functional Area will coordinate the evacuation of hospitals, health centres and aged care facilities (including nursing homes) in consultation with the NSW SES and Welfare Services.

f. School administration offices (Government and Private) will coordinate the evacuation of schools in consultation with the 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 Evacuation Order will be referred to the 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. In these cases, the NSW SES will brief the Welfare Services Functional Area at the earliest opportunity regarding the level of assistance required.

b. 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 the 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 the NSW Police Force with the assistance of NSW SES and 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; and

g. The decision to establish Major Evacuation Centres or Mass Care Facilities will be made by the 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 Health Services Functional Area.

5.9.4 **Strategy**: Coordinate maintenance of food supplies for flood affected communities.

Actions: All matters relating to the primary production, manufacturing, processing and handling of all food from primary industries to retail, inclusive of all restaurants, food services and catering businesses should be referred to the NSW Food Authority through the Agriculture and Animal Services Functional Area.

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

Actions:

a. 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; and

b. Agriculture and Animal Services Functional Area role will assist with 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 Land Rescue Policy and the NSW State Rescue Board Flood 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 the 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 the NSW SES. Notification arrangements with NSW Police Force are outlined in the NSW State Rescue Board Flood Rescue Policy; and

d. Rescue agencies will conduct rescue of domestic small and large animals as per the State Rescue Board Land 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 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 deliver 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.

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; and

c. Isolated households unable to afford resupply items will be referred to Welfare Services Functional Area for assistance.

5.12 ALL CLEAR AND 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. 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 impact on the following:

- Access and egress
- Communications
- Power supply
- Gas supply
- Infrastructure damage
- Hazardous materials; and
- Public health risks (including sewerage)

b. NSW SES Incident Controller will specify the level of access to affected communities as the following:

- Not suitable for access.
- Limited access by emergency services and response agencies.
- Limited access by residents and/or business operators; or
- Full access

c. NSW SES Incident Controller will issue an 'All Clear' message when the immediate danger to life and property has passed for areas assessed as safe; and

d. The 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:

- The physical impact of the flood has ceased.
- All requests for assistance related to the flood have been completed;
- The need for warning and evacuation no longer exist.
- 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); and
- All affected areas have had an 'All Clear' 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 of Meteorology, Welfare Services, Resilience NSW and Forbes Shire Council representatives.

b. NSW SES will ensure that damage assessment information is provided to the relevant Emergency Operations Controller to inform the recovery impact assessment.

c. NSW SES will conduct After Action Reviews, wherever possible, within three weeks of the end of response operations, which will involve all stakeholders. Findings will be shared and incorporated into improved disaster resilience planning.

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 will work with the NSW Department of Planning, Industry and Environment (DPIE) and Forbes Shire Council 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 Resilience NSW to support applications to Treasury for Natural Disaster Relief and Recovery Arrangements.

d. The NSW SES, in conjunction with a Recovery Committee, will provide a service to support the information needs of a community immediately following a flood; and

e. NSW SES and where required supporting agencies will assist with clean-up operations after floods, where possible when resources and personnel permit.

7 ABBREVIATIONS

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

8 GLOSSARY

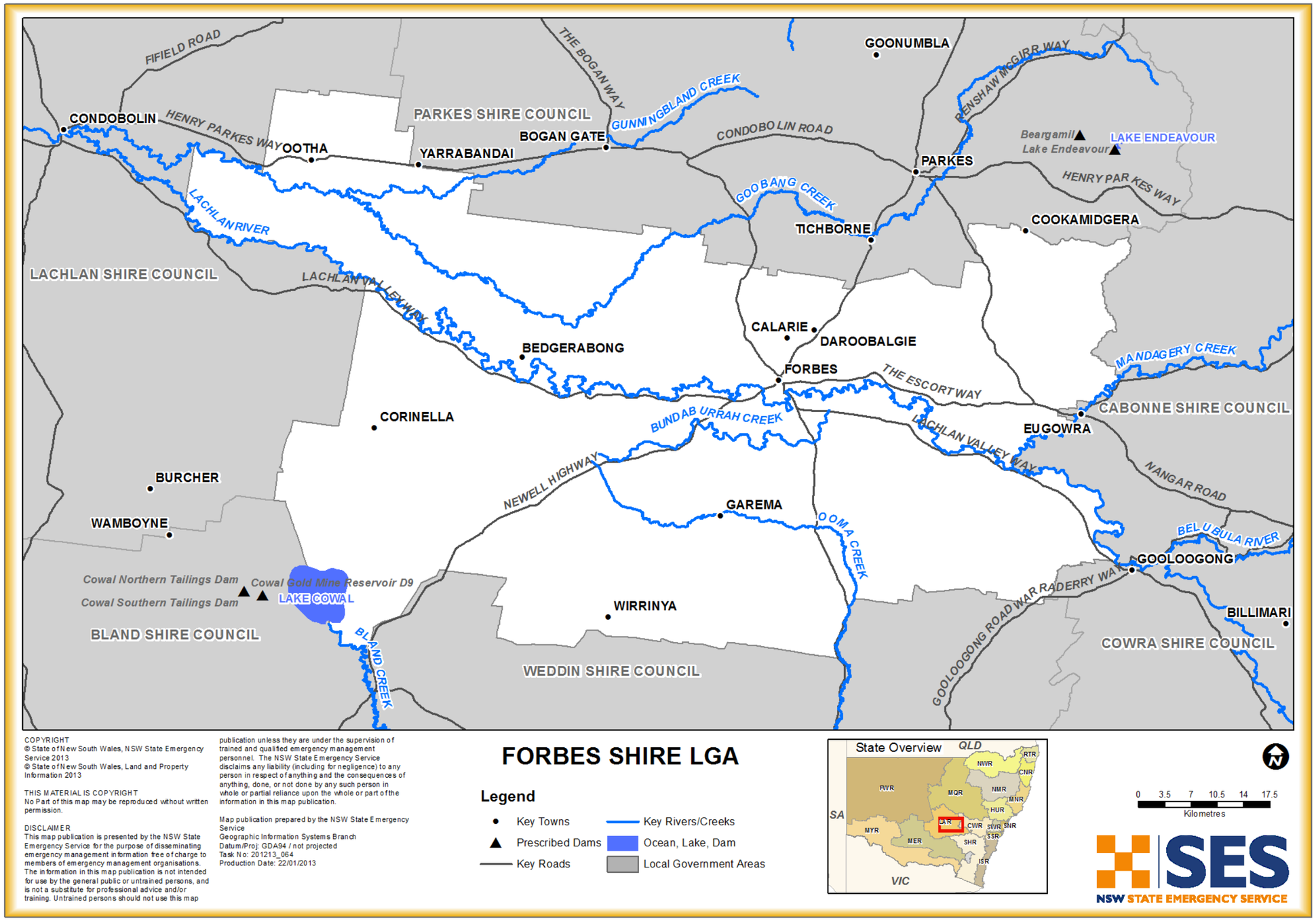
Common emergency service terminology can be found within the Australian Disaster Resilience Glossary.

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

1 Appendix A – Map of Forbes Shire Council Area



1 Appendix B – Roles and Responsibilities

AGENCY	RESPONSIBILITIES
NSW State Emergency Service	The 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 detailed within the New South Wales 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 Roles and responsibilities in addition to the Supporting Plan are: • Disseminate briefing information to participating agriculture and animal services and related stakeholders. • When activated the Agriculture and Animal Services will coordinate the provision of required services which may include: – Coordinate response for animal welfare including pets, livestock and wildlife. – Supply and delivery of emergency fodder. – Emergency water replacement in certain circumstances; and – Financial, welfare and damage assessment assistance to flood affected primary producers. • Support recovery arrangements including: – Administer transport subsidies to primary producers.
Australian Government Bureau of Meteorology	The roles and responsibilities of the Australian Government Bureau of Meteorology (BoM) are outlined in the NSW State Flood Plan.
Forbes Shire Council	**Preparedness** • 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 Development Manual. • Provide Levee Studies, Flood Studies and Floodplain Management Studies to the 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.

AGENCY	RESPONSIBILITIES
	• Maintain a plant and equipment resource list for the Council area. • Contribute to community engagement activities. **Response** • Subject to the availability of Council resources, assist the NSW SES with flood operations including: – Traffic management on Council managed roads. – Provision of assistance to the 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; and – Technical advice on the impacts of flooding. – Close and reopen Council roads (and other roads nominated by agreement with Transport for NSW) and advise the NSW SES, the NSW Police Force and people who contact the Council for road information. – Assist the 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 the NSW SES regarding their operation. • Manage and protect Council-owned infrastructure facilities during floods. • Provide advice to the 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 Agency of any sewerage overflow caused by flooding. • Work with the NSW SES and DPIE to collect flood related data during and after flood events. **Recovery** • Provide for the management of health hazards associated with flooding including removing debris and waste.

AGENCY	RESPONSIBILITIES
	• 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.
Caravan Park Proprietor(s)	• 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: – Provide the manager of the caravan park with a contact address and telephone number in case of an emergency; and – 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: – Ensure that they have spare batteries for their radios. – Listen to a local radio station for updated flood information; and – 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. • Secure any movable dwellings that are not able to be relocated to prevent floatation; and • Inform the 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	• When notified of possible flooding or isolation, childcare centres and preschools should.

AGENCY	RESPONSIBILITIES
	– Liaise with the NSW SES and arrange for the early release of children whose travel arrangements are likely to be disrupted by flooding and/or road closures; and – Assist with coordinating the evacuation of preschools and childcare centres.
Dams Safety NSW	The roles and responsibilities of the 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).
Department of Industry	The roles and responsibilities for the Department of Industry (Crown Lands and Water Division) are outlined in the NSW State Flood Plan.
Energy and Utilities Services Functional Area	The roles and responsibilities for Energy and Utilities Services are outlined in the Energy and Utility Services Supporting Plan (EUSPLAN). Roles and responsibilities in addition to the Supporting Plan are: • 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: – Provide advice to the NSW SES of any need to disconnect power/gas/water/wastewater supplies or of any timetable for reconnection. – Advise the NSW SES of any hazards from utility services during flooding and coastal erosion/inundation. – Advise the public with regard to 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 the 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.
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 of Floodplain Management Australia are outlined in the New South Wales State Flood Plan.

AGENCY	RESPONSIBILITIES
Fire and Rescue NSW (as per NSW State Flood Plan)	**Preparedness** • Identify and notify the NSW SES of any locations at risk of fire (within Fire Districts (13) or hazardous materials that pose a significant threat to surrounding populations due to the impact of a flood for incorporation into NSW SES flood intelligence and planning; and **Response** • Meet the agreed arrangements described in the NSW SES and Fire and Rescue NSW Mutual Aid Agreement. • Provide Incident Management personnel and Liaison Officers to the NSW SES where required. • When requested by NSW SES, provide support to the NSW SES in response to flood emergencies across the State. • Assist the NSW SES with the warning and/or evacuation of at-risk communities. • Assist the NSW SES with the monitoring/reconnaissance of flood prone areas. • Provision of Land Based and In Water Flood Rescue Operators as required. • Provision of appropriately trained personnel to perform Down the Wire (DTW) functions as required. • Conduct Hazmat operations including asbestos risks, rising from flood emergencies in coordination with the SES Incident Controller. • Decontamination of Flood Rescue Operators as required. • Assist the NSW SES with the resupply of isolated communities and/or properties. • Assist the NSW SES with property protection tasks including sandbagging. • Provide resources for pumping flood water out of buildings and from low-lying areas. • Assist with clean-up operations, including the hosing out of flood affected properties. • Provide trained staff to support a joint intelligence unit, if established by NSW SES, including Remotely Piloted Aircraft System (RPAS) pilots to assist with field observations. • Assist the NSW SES to undertake damage assessment including structural collapse risks.

AGENCY	RESPONSIBILITIES
	• Coordinate the pre-deployment of fire resources to communities within NSW Fire Districts if access is expected to be lost, in consultation with the NSW SES; and • Coordinate the deployment of the FRNSW High trans Pump to locations in consultation with NSW SES. **Recovery** • Participate in After Action Reviews as required.
Forestry Corporation of NSW	**Response** • Close and reopen Forestry Corporation of NSW roads when affected by flood waters and advise the NSW SES of its status. • Manage traffic on Forestry Corporation of NSW roads. • Facilitate the safe reliable access of emergency resources on Forestry Corporation managed roads. • Assist the NSW SES with identification of road infrastructure at risk of flooding. • Assist the NSW SES with the communication of warnings and information provision to the public through variable message signs and other appropriate means; and • Close and relocate people from camping grounds at risk of flooding in State Forest managed areas.
Health Services Functional Area	The roles and responsibilities for Health Services Functional Area are outlined in the Health Services (HEALTHPLAN) Supporting Plan. Roles and responsibilities in addition to the Supporting Plan are: • Ensure that appropriate business continuity plans are developed for essential health infrastructure and are activated during floods.
Local Emergency Operations Controller (LEOCON)	• Monitor flood operations. • If requested, coordinate support for the NSW SES Incident Controller.
Local Emergency Management Officer (LEMO)	• 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 of Manly Hydraulic Laboratory are outlined in the NSW State Flood Plan.
Marine Rescue NSW (as per NSW State Flood Plan)	**Response** • When requested by NSW SES, assist in flood operations when training and equipment are available and suitable including assistance with: – Warning and/or evacuation of at-risk communities. – Providing communications personnel.

AGENCY	RESPONSIBILITIES
	– Property protection tasks including sandbagging; and – Flood rescue operations.
NSW Ambulance	The roles and responsibilities for NSW Ambulance are outlined in the Health Services (HEALTHPLAN) Supporting Plan.
NSW Department of Education	**Preparedness** • Liaise with the NSW SES and arrange for the early release of students whose travel arrangements are likely to be disrupted by flooding and/or road closures (or where required, for students to be moved to a suitable location until normal school closing time); • Ensure that evacuation plans for flood liable schools have arrangements for flooding; and • Assist NSW SES with community engagement and capacity building programs. **Response** • Assist with the coordination of the evacuation of schools and the immediate welfare of students until returned to the appropriate carer. • Pass information to school bus drivers/companies and/or school principals on expected or actual impacts of flooding; and • Provide space in schools for evacuation centres where necessary.
NSW Department of Industry, Planning and Environment (as per NSW State Flood Plan)	**Prevention** • Oversee the delivery of the NSW Flood Prone Land Policy including financial support through the Floodplain Management Program. Provide technical advice to Councils and state agencies including assistance with the identification of risks, the preparation and implementation of Floodplain Risk Management Plans and associated mitigation and management actions and understanding flood mitigation schemes including levees. • Work with the NSW SES on the Flood Data Access Program to improve the provision of flood information through the NSW Flood Data Portal. • Assist the Department of Industry-Water in the preparation of rural floodplain management plans under the *Water Management Act 2000* (NSW); and • Provision of strategic technical advice to support floodplain risk management and environmental water management in rural areas of the Murray Darling Basin. **Preparedness** • Assist the NSW SES in the exercising of Flood Sub Plans.

AGENCY	RESPONSIBILITIES
	• Management of the state government's water level gauges for the flood warning network in tidal areas in NSW (Manly Hydraulic Laboratory operates this system as a service provider on behalf of DPIE.). • Advise NSW SES about conditions which may lead to coastal inundation or retarded river drainage near the coast. **Response** • Provide related advice on flood risks to the NSW SES on request; and • Work with the relevant local Council and NSW SES to collect flood related data during and after flood events. **Recovery** Support recovery committees as required.
NSW Food Authority	The roles and responsibilities for NSW Food Authority are outlined in the Food Industry Emergency Sub Plan.
NSW National Parks and Wildlife Services (as per NSW State Flood Plan)	**Preparedness** • Assist the NSW SES with identification of road infrastructure in National Parks at risk of flooding. **Response** • Close and reopen National Parks and Wildlife Service roads when affected by flood waters and advise the NSW SES of its status. • Facilitate the safe reliable access by emergency resources on National Parks and Wildlife Service managed roads. • Assist the NSW SES with the communication of warnings and information provision to the public through variable message signs and other appropriate means; and Close and direct people to leave camping grounds at risk of flooding in National Parks and Wildlife Service managed areas.
NSW Police Force (as per NSW State Flood Plan)	**Preparedness** • Participate in NSW SES briefings, training and exercises as required. **Response** • Provide a Liaison Officer to the NSW SES Operation Centre if required. • When requested by NSW SES, in flood operations when training and equipment are available and suitable. – Assist with warning and/or evacuation of at-risk communities. – Assist with monitoring / reconnaissance of flood prone areas. – Assist with flood rescue operations.

AGENCY	RESPONSIBILITIES
	• Conduct road and traffic control operations in conjunction with Council and/or Transport NSW. • Coordinate searches for missing people within flood affected areas. • Coordinate security of supply lines evacuated and damaged areas. • Manage Disaster Victim Registration; and • Operate the Public Information and Inquiry Centre, if requested or otherwise needed during flood events. **Recovery** • Participate in After Action Reviews as required.
NSW Rural Fire Service (as per NSW State Flood Plan)	**Preparedness** • Participate in NSW SES briefings, training and exercises as required; and • Meet the agreed arrangements described in the NSW SES/NSW RFS Memorandum of Understanding. **Response** • Provide a Liaison Officer to the NSW SES Operation Centre or Emergency Operations Centre as required. • Provide Incident Management Personnel when requested. • Provide trained staff to support a joint intelligence unit, if established by NSW SES. • Provide aviation support, management and advice as requested through the State Air Desk. • Provide speciality aircraft and appropriately trained personnel to perform Down the Wire (DTW) functions as required. • Assist with Damage Assessments; and • Provide Strike Teams during flood operations when requested by NSW SES. This may include assistance with: – Warning and/or evacuation of at-risk communities. – Monitoring / reconnaissance of flood prone areas. – Property protection tasks including sandbagging. – Pumping flood water out of buildings and from low-lying areas. – Back-up radio communications. – Clean-up operations, including the hosing out of flood affected properties. – Deploying resources to communities within Rural Fire Districts where access is expected to be lost in consultation with the NSW SES. – The resupply of isolated communities and/or properties; and

AGENCY	RESPONSIBILITIES
	– Decontamination of NSW SES Flood Rescue Operators as required. **Recovery** • Participate in After Action Reviews as required.
NSW Volunteer Rescue Association (as per NSW State Flood Plan)	**Response** • Where requested by the NSW SES, assist in flood operations when training and equipment are available and suitable, including assistance with: – The warning and/or evacuation of at-risk communities. – Flood rescue operations. – Monitoring / reconnaissance of flood prone areas. – Resupply of isolated communities and/or properties; and – Property protection tasks including sandbagging.
Owners of Declared Dams within or upstream of the LGA (as per NSW State Flood Plan)	**Preparedness** • Assist the NSW SES with community engagement programs. • Provide NSW SES with information necessary for response planning and warning distribution. • Assist the NSW SES identify correlations between water level and/or discharges at the dam for use in flood response operations (warning and evacuation); and • Consult with the NSW SES State Headquarters in the development of Dam Emergency Plans, including the development of dam failure alerts, in accordance with the Dam Safety Committee Guidelines. **Response** • Where water level monitoring or other instrumentation allows, provide NSW SES with flood advices as per pre-agreed thresholds for use in downstream flood response operations (warnings). • Notify NSW SES of potential or actual dam failures in accordance with the Dam Emergency Plan and Dam Safety NSW Guidelines. • Close at-risk camping grounds / recreational areas within their managed areas. • In the case of declared dams whose risks are intolerable, assist the NSW SES in planning to warn and evacuate people at risk of dam failure and maintain and operate any special Dam Failure Warning Systems and/or automatic telemetered monitoring devices to assist with early detection of incidents which are installed until such time that the risks have been lowered to an acceptable level; and Owners of gated dams:

AGENCY	RESPONSIBILITIES
	• Provide all available information to the BoM and the NSW SES on storage levels and actual and prospective water releases and their likely impacts on downstream river levels. • Advise the downstream community of prospective and actual water releases, except in those circumstances where the BoM would issue flood warnings; and • Where possible actively work with NSW SES and the BoM to reduce the impacts of flooding on communities through management of water releases within identified safe parameters and within statutory licencing provisions under the *Water Management Act 2000* and *Water NSW Act 2014*.
Public Information Services Functional Area	The roles and responsibilities for Public Information Services are outlined in the Public Information Services Supporting Plan. Roles and responsibilities in addition to the Supporting Plan are: • On receipt of advice from NSW SES of any weather event likely to result in significant multi agency operational activity, the Public Information Functional Area Coordinator PIFAC determines if a daily multi-agency teleconference is required to ensure that the information needs of each agency are being met and to address any issues. These teleconferences continue through the response phase into the recovery phase.
Rail Corporation NSW and the Australian Rail Track Corporation	• Close and reopen railway lines affected by flood waters and advise the NSW SES Incident Controller.
Resilience NSW	• The roles and responsibilities of Resilience NSW are outlined in the NSW State Flood Plan.
SEOCON/SEOC	The roles and responsibilities of the SEOCON/SEOC are outlined in the New South Wales 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	• 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. • Transport for NSW in conjunction will assist the NSW SES with the evacuation of at-risk communities by maintaining access and egress routes.

AGENCY	RESPONSIBILITIES
	• TMC will assist the 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 the 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 Supporting Plan. Roles and responsibilities in addition to the Supporting Plan are: • Participate in risk management studies. • Assist the NSW SES to identify transport infrastructure at risk of flood damage for incorporation into planning and intelligence; and • Coordinate the provision of traffic and transport operations as consistent with the roles of Transport organisations.
Water NSW	The roles and responsibilities for Water NSW are outlined in the New South Wales State Flood Plan.
Welfare Services Functional Area	The roles and responsibilities for Welfare Services are outlined in the Welfare Services Functional Area Supporting Plan.

2 Appendix C – Community Specific Roles and Responsibilities

Community Members	**Preparedness** • 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; and • Be involved in local emergency planning processes. **Recovery** • Assist with community clean-up if required and able to do so. Participate in After Action Reviews if required.
Yoorana Gunya Family Healing Centre Aboriginal Coroporation	• 40-70 Church Street, Forbes, NSW Telephone: (02) 6850 1222 (Donna@yooranagunya.com.au) • Act as the point of contact between the NSW SES and the Indigenous community of Forbes. • Disseminate flood information, including flood and evacuation warnings, to the Indigenous community of Forbes.
Jemalong Irrigation Limited (Irrigation Landholders)	• Provide flood information to the NSW SES Incident Controller. • Distribute flood warnings and flood information provided by the NSW SES Incident Controller.

HAZARD AND RISK IN FORBES SHIRE

Volume 2 of the Forbes Shire Flood Emergency Sub-Plan

Last Update: 27 February 2025

AUTHORISATION

The Hazard and Risk in Forbes Shire has been prepared by the NSW State Emergency Service (NSW SES) as part of a comprehensive planning process. The information contained herein has been compiled from the latest available technical studies.

Approved

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NSW SES Southern Zone Commander

Print Name Benjamin Pickup

Date: 18/03/25

Date Tabled at LEMC 27 February 2025

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LIST OF TABLES

VERSION LIST

The following table lists all previously approved versions of this Volume.

Version	Description	Date
1.0	Forbes Shire Local Flood Plan Annex A and Annex B	September 2002
2.0	Forbes Shire Local Flood Plan Volume 2	November 2016
3.0	Forbes Shire Local Flood Plan Volume 2	August 2017
4.0	Forbes Flood Emergency Sub-plan – Volume 2	February 2025

AMENDMENT LIST

Suggestions for amendments to this Volume should be forwarded to:

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Amendments promulgated in the amendments list below have been entered in this Volume.

Amendment Number	Description	Updated by	Date

Document Issue: Version 3-02052016

1 THE FLOOD THREAT

1.1 OVERVIEW

Forbes Shire Council is west of the Great Dividing Range, nestled on the banks of the westward-flowing Lachlan River Basin. The local government finds itself bisected in four sections, the Newell Highway running north-south, and the Lachlan River running east to west.

The Local Government Area (LGA) extends from the east near Eugowra and Gooloogong upstream to near Derriwong village downstream along the Lachlan River to the west. It includes portions of Goobang Creek in the north, which is a significant tributary of the Lachlan River, into Lachlan Shire to the west. The Forbes Shire LGA extends southwest to Lake Cowal, another important tributary system of the Lachlan River.

Forbes is the largest urban community in the area, providing a wide range of commercial and medical services. The LGA includes small villages such as Bedgerabong, Garema, and Ootha, as well as other rural localities like Wirrinya, Corinella, and Warroo. Forbes serves as the commercial centre for a vast rural region.

A significant proportion (87%) of the LGA is used for crop cultivation and livestock production.

1.2 LANDFORMS AND RIVER SYSTEMS

Lachlan River

The Lachlan River Valley covers an area of 84,700 square kilometres and stretches westward from the Great Dividing Range for 560 kilometres as a long, narrow basin. The river passes from a relatively high rainfall area near its headwaters in the east (which has an average annual rainfall of 760 to 900 millimetres) to low rainfall areas in the west (with an average annual rainfall of about 300 millimetres). Consequently, the Lachlan River and its upper tributaries produce most of the source of floodwaters in the Forbes Local Government Area (LGA).

The Lachlan Valley throughout the Forbes LGA is mostly flat plains with extensive anabranches and swampy depressions that form a large part of the complex river system and snakes its way through the LGA and impacts the community so extensively.

Wyangala Dam forms the junction point between the Upper Lachlan and Lachlan Rivers downstream of the dam and is fed by the two major tributaries in the upper catchment of the Abercrombie River and the Lachlan Rivers. The scale and timing of floodwaters from Wyangala Dam releases and various tributaries and anabranches affect Lachlan River

behaviour and therefore the scale of floods through the Forbes area, including potential reinforcement if they combine.

Belubula River

The Belubula River is a perennial river that originates south of Vittoria, located between Bathurst and Orange. It flows south and west before joining the Lachlan River approximately 4 kilometres upstream from Gooloogong. The river is fed by eight minor tributaries and is regulated through Carcoar Lake.

The Belubula River can significantly influence flooding within the Lachlan River, due to the volumes of inflows that move across its floodplain during times of moderate flows.

Kangarooby Creek

Kangarooby Creek is a minor tributary to the east of Forbes that has its head waters in the Conimbla National Park, which flows north to the Lachlan River, joining immediately upstream of Gooloogong.

Goonigal Creek

Goonigal Creek is a minor tributary to the east of Forbes that is a combination of the Warranderry Creek with its headwaters around Grenfell, and Native Dog Creek with its head waters close to Red Cliff Mountain, on the eastern edge of Conimbla National Park.

Mandagery Creek

Mandagery Creek is a tributary of the Lachlan River that has its headwaters to the west of Molong, with Manildra Creek and numerous other tributaries along the length of the creek to a confluence with the Lachlan River south of Eugowra, to the East of Forbes.

Mulyandry Creek

Mulyandry Creek Is a minor tributary of the Lachlan River within the Forbes Local Government Area, that has its head waters in the rural fields to the South-east of the Mulyandry Nature Reserve.

Lake Forbes

Lake Forbes is a non-perennial anabranch of the Lachlan River that is fed by rainfall to the north-east of Forbes and retains water year-round due to artificial intervention. During droughts water may be pumped from the Lachlan River into the lake to maintain this feature year-round. The lake also plays an important part in the flooding around the township of Forbes, where it was estimated to carry approximately 26% of the peak flows from the 1952, 1974 and March 2012 floods.

During times of flooding, Lake Forbes is fed by multiple breakouts to the east of Forbes, which activate at different heights, and these are known as:

- Waugan Road – at the corner of Waugan Road and the Escort Way.
- Southern-Cross – On the Escort Way, approx. 16km from the Forbes CBD.
- Lower Bathurst Street – at the corner of Torig Road, and also at Bathurst St near Ferry St.
- "Battye Street floodway" along Lawler St – Across Sherriff St (Newell Hwy) between Spring St and Dowling Street.

Bundaburrah Creek

Bundaburrah Creek is a non-perennial anabranch of the Lachlan River system that is fed by multiple breakouts to the south-east of Forbes.

- Pilgrim Hill TSR – across Tomanbil Road to the Joss lagoon.
- Cumbijowa Forest – where the forest meets the river.
- Wandary Lane – across Wandary Lane and Lachlan Valley Way at Dukes Crossing into Bundaburrah Creek.

The flood waters~~,~~ flow through the Bundaburrah Creek towards Bundaburrah Cowal, a swampy wetland to the South-west of Forbes, nestled against the Jemalong Ridge. Bundaburrah Cowal is the junction of Bundaburrah Creek and Ooma Creek, where it ponds before it flows through the Jemalong Creek to join the Lachlan River and through the Jemalong Gap.

Ooma Creek

Ooma Creek joins the Bundaburrah Creek at Bundaburrah Cowal before flowing to the Lachlan River at Jemalong and can cut the Newell Highway south of Forbes. Ooma Creek rises in the Weddin Mountains near Grenfell. A tributary Pinnacle Creek joining upstream of Garema rises in the Piney Range south of Garema.

Goobang Creek

Goobang Creek is a tributary of the Lachlan River. Its headwaters are located in the Harvey Ranges, northeast of Parkes. The creek flows into Forbes Shire along its northern boundary, just east of the Corridgery Range, and continues through Culgans Gap, where it meets Crooked Creek. Goobang Creek continues into the Gunning Gap area, between the Gunning Ridge and Corridgery Ridge.

During significant floods, the Broad Creek breakout from the Lachlan River at Bogoin Lane west of Forbes Airport, flows through Gunning Lagoon and joins Goobang Creek in the Gunning Gap area. This combined flow continues through the Goobang Creek floodplain before rejoining the Lachlan River at Condobolin.

The flood behaviour in the western part of Forbes (LGA) is influenced by the interactions among the Lachlan River, Goobang Creek to the north, and Lake Cowal to the south. Extended road closures can hinder access throughout the region, affecting nearby towns and areas.

Lake Cowal

Lake Cowal is located to the south-west of the Jemalong Ridge. It is a large natural basin that receives water from several creeks flowing northward, including Lignum Creek which joins Caragabal (Barbingal) Creek at Gum Swamp, and Barmedman (Back) Creek which joins Bland Creek at Marsden. Lake Cowal influences a significant area of the floodplain south of the Lachlan River. Lake Cowal spans approximately 14,600 hectares, and when full, it can retain water for several years.

During floods, Lake Cowal significantly impacts the flooding of the Lachlan River on the western side of the Jemalong Ranges. It acts as a storage area for floodwaters when the Lachlan River overflows toward it or when there are significant water flows from Bland and Barmedman Creeks. This can result in Lake Cowal flowing north into the Lachlan River, increasing the effects of riverine flooding to the west of the Jemalong Ranges.

For details of the catchment, refer to 2- ANNEX River Schematics and Catchment maps.

1.3 STORAGE DAMS

Dam locations are shown on ANNEX River Schematics and Catchment maps.

There are five declared dams upstream of the Forbes Shire LGA: Wyangala Dam, Boorowa Dam, Cadia Dam, Carcoar Dam, and Lake Rowlands Dam. Each one of the dams has its own impact on the river system, with Wyangala Dam the one of most consequence, followed by Carcoar Dam, with the rest of the Dams unlikely to impact the river system with significant flooding.

Table 1: Prescribed Dams in Forbes Shire LGA; summary of information about each storage.

Wyangala Dam	
Owner / Operator	WaterNSW
Description of Dam	Wyangala Dam consists of an earth and rockfill embankment with a spillway on the left abutment controlled by radial gates, with 3 outlet valves and a Hydro-electrical power station. The embankment is 85m high and 1,510m long and partly supported at the upstream toe by the 60m high original concrete gravity dam in the valley section.
Location	Wyangala Dam is located at the junction of the Lachlan and Abercrombie rivers in central NSW, 29km south-east of

	Cowra.
Communities Downstream	Wyangala, Cowra, Gooloogong, Mulyandry, Forbes, Jemalong, Bedgerabong and Condobolin.
Monitoring System	Hydraulic Piezometers, V-Notch Weir, Seepage Points, and Reservoir Level Gauge
Warning System	Primary method of notification of the downstream community of flood or potential flood is via the NSW State Emergency Service (NSW SES).
Other	Wyangala Dam is not designed for flood mitigation. WaterNSW may have some operational capacity to mitigate flows sometimes but cannot be expected. During the floods of 2022/23, Wyangala Dam was discharging up to 230K Ml/day the highest discharge since 1990. Releases from the dam strongly influence the level of flooding downstream, but this relationship also depends on inflows from the tributaries.

Carcoar Dam	
Owner / Operator	WaterNSW
Description of Dam	Carcoar Dam is a 52m high double curvature arch concrete dam on the Belubula River. Free overflow spillway extending full length of arch section with two fixed dispersion cones, a 100mm and 150mm flow regulators for releases.
Location	Carcoar Dam is located on the Belubula River approximately 6km east of Carcoar, NSW
Communities Downstream	Carcoar, Canowindra, Gooloogong and Forbes.
Monitoring System	Seepage Weirs, Uplift Gauges and Reservoir Level Gauge.
Warning System	Primary method of notification of the downstream community of flood or potential flood is via the NSW State Emergency Service (NSW SES).
Other	This dam is used for irrigation in the Belubula River valley, once water levels reach crest of the concrete arch, flows along the river are uncontrolled with an estimated peak travel time 13-16h to junction of Belubula River with Lachlan River near Gooloogong.

1.4 WEATHER SYSTEMS AND FLOODING

Much of the rainfall in the Forbes Shire occurs in the winter and early spring, this is when flooding is most likely. Three-quarters of the flood peaks above the major flood level (10.55 metres), recorded at the Forbes Iron Bridge gauge since 1916 have occurred between July and October as shown in Figure 1 below (2).

Flooding in the Forbes Shire usually results from one of the following three weather mechanisms (1):

a) **Well-developed low-pressure troughs.** The most usual set of meteorological conditions causing flooding is a series of well-developed inland troughs associated with southern depressions crossing the council area from west to east. Sequences of such troughs can produce high rainfall totals over a period of weeks, usually in the winter months.
b) **East-coast low-pressure systems.** These systems develop off the NSW coast, usually during the cooler months. They direct moist winds onto the coast and across the Great Dividing Range, often producing very heavy rain.
c) **Sequences of cold fronts.** Fronts crossing the state from west to east can produce flooding in the Lachlan River catchment during the winter months. The individual fronts are not usually associated with very heavy falls, but the cumulative effect of a series of them over a period of a few weeks may result in flooding.

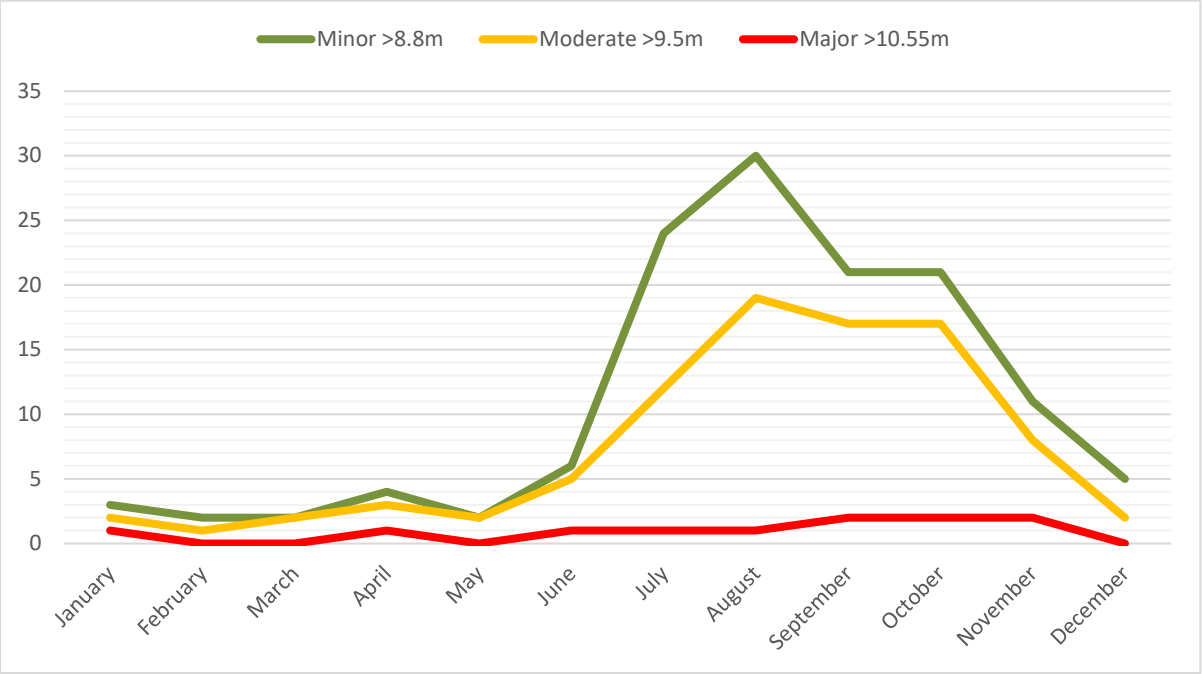


Figure 1 - Seasonal distribution of floods above Minor flood level (8.8 metres) at the Forbes Iron Bridge Gauge.

1.5 CHARACTERISTICS OF FLOODING

Downstream of Wyangala Dam, due to the nature of the topography and the river system flooding is generally confined to the river channel and small pockets of adjacent floodplain. The flood peaks travel relatively rapidly along the river downstream of Wyangala Dam towards Cowra, where the river begins to break its banks and inundate the wider floodplain. The flood remains within a narrow confine of the floodplain until Gooloogong, where the Belubula River joins. Downstream of Gooloogong, where the Lachlan River meets the Mandagery Creek, the river envelops larger spans of the floodplain as it passes through the many anabranches and the floodplains around Forbes.

The floodplain at Forbes is approximately 10-kilometres wide, and flooding in this section of the river often results in a flat peak, as the water inundates large swaths of land and has been known to last for several months. Much of this water collects in natural depressions and billabongs, which interconnect and create active flood runners.

History has shown that any of the tributaries can cause minor floods, and they have collectively contributed to major floods when combined with the main river, particularly in the area below Wyangala Dam (2).

Flood conditions in the Forbes Local Government Area (LGA) are quite complex, and conditions can vary significantly from one flood event to another, even at the same level measured by the Forbes Iron Bridge gauge. Flooding in the area typically reaches depths of around one meter. The total water flow capacity through and past Forbes is distributed between Bundaburrah Creek to the south, the Lachlan River, Lake Forbes, and the Battye Street floodway.

The flow of water is also dependent on vegetation, causing travel times to vary. On average, water flow begins in the Battye Street floodway when the Iron Bridge gauge reaches approximately 10.45 to 10.55 metres. This variation largely depends on the volume of water flow in the flood channels that branch off from the river upstream of the town, as well as the controlled and uncontrolled outflows from Wyangala Dam (2).

Table 2 - Indicative flow travel time for the Lachlan River

Locations	Travel Time	Cumulative Travel Time
Wyangala Dam to Cowra	8-12 hours	8-12 hours
Cowra to Nanami	21 hours	29-33 hours
Nanami to Mulyandry	26 hours	55-59 hours
Mulyandry to Forbes Iron Bridge	22 hours	77-81 hours
Forbes Iron Bridge to Cottons Weir	4 hours	81-85 hours
Cottons Weir to Jemalong Weir (downstream)	24*	105-109 hours

*NOTE: The flow time relationship between the peak height at the Forbes Iron Bridge gauge and the Jemalong Weir (downstream) gauge, is dictated by the amount of flood water that leaves the river before Forbes and re-enters the river at Jemalong Gap via Jemalong Creek.

1.6 FLOOD HISTORY

The Lachlan River at Forbes.

There have been approximately 131 flood peaks exceeding the current 'minor' flood level of 8.8 metres has been recorded at the Iron Bridge gauge in the town of Forbes since 1887 (Figure 2), roughly equivalent to a minor flood every year. Flood history is summarised in Table 3.

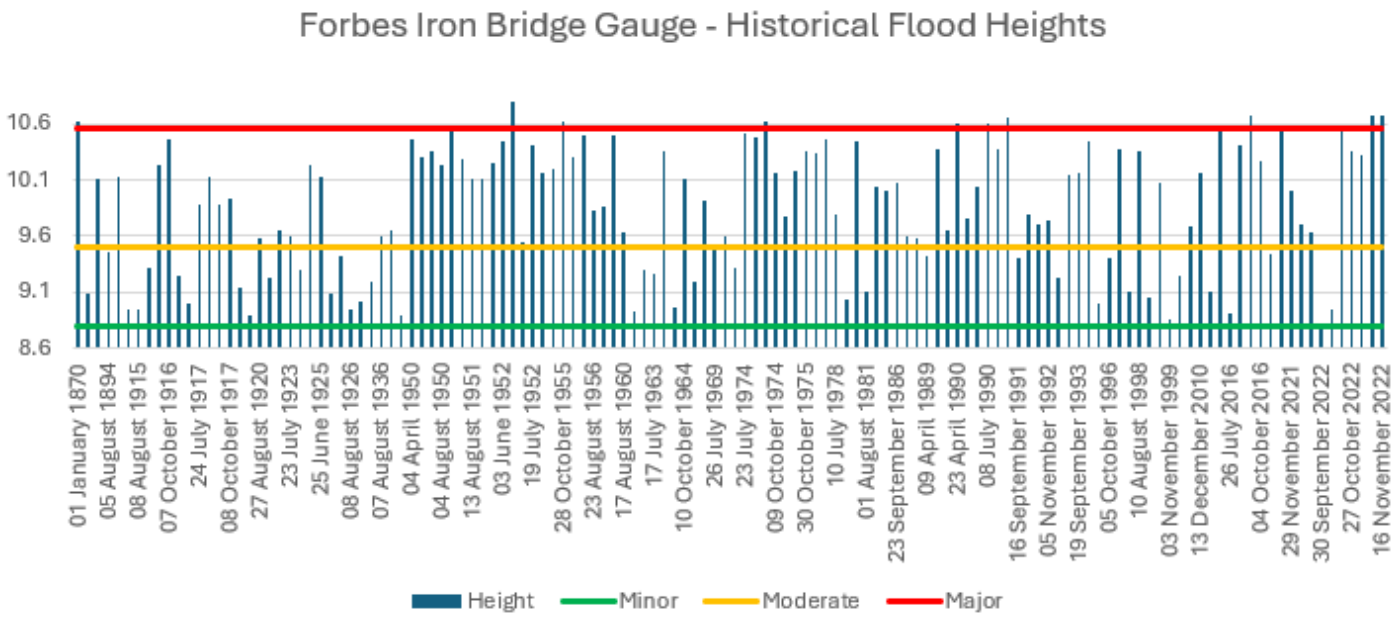


Figure 2: Forbes Iron Bridge - Historical Flood heights

The frequency of major flooding at Forbes has been very variable (Figure 2). There have been extended periods where major floods have been rare or non-existent, for example, between 1916 and 1950 and between 1978 and 1990. At the other extreme, there have been periods where major flooding has occurred several times in the space of a few months – for example, 1952, 1974, 1990 and 2022, with three major floods occurring in each of these years (1).

The Lachlan River at Cotton's Weir

Accurate records of the heights achieved at the Cotton's Weir gauging station have only been kept since 1950. Since that year there have been 21 occasions that the height has exceeded the major flood classification of 6.60 metres as shown in Figure 3 (2).

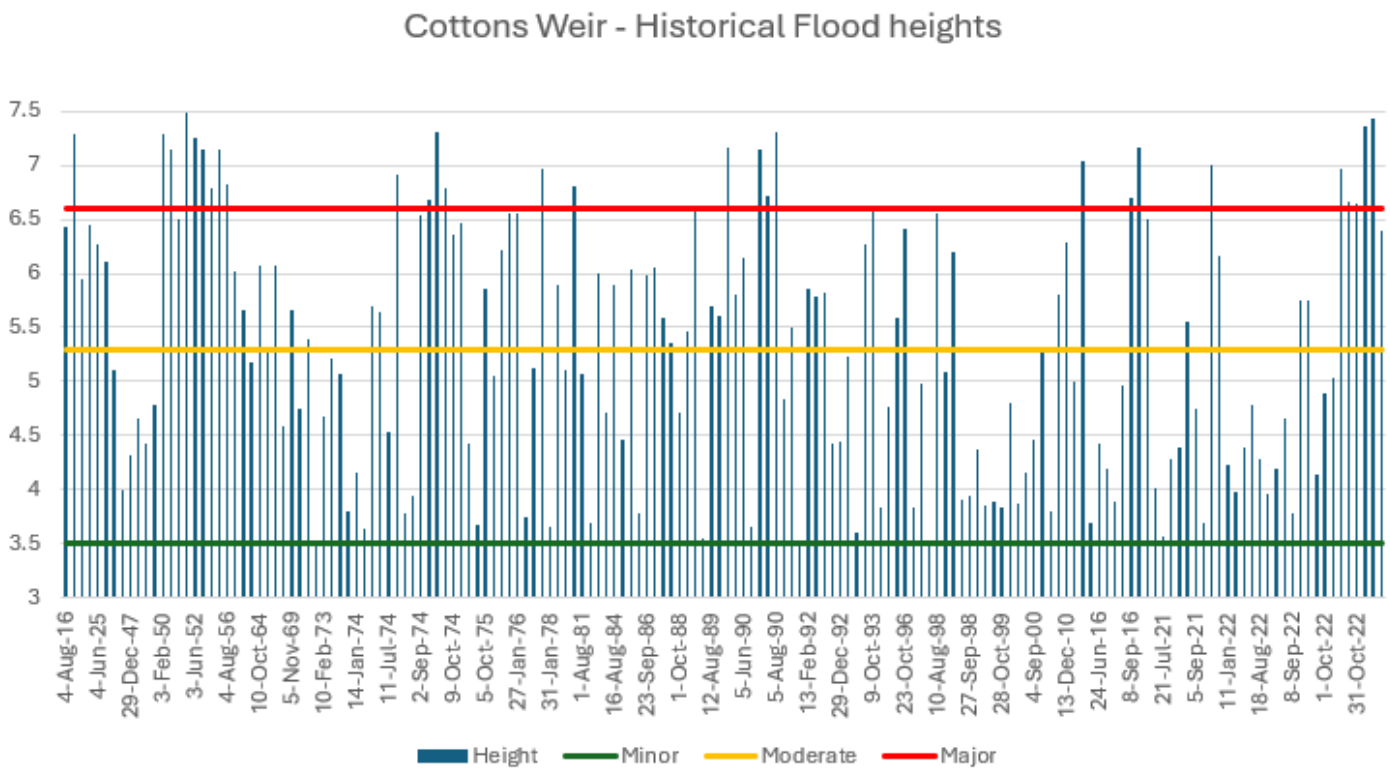


Figure 3: Cottons Weir - Historical Flood heights

The flood of record at the Cotton's Weir gauge (7.49 metres) was recorded in October 1950 (1).

The Lachlan River at Jemalong Weir (Downstream)

As with Cotton's Weir, accurate records are only available since 1950. There have been 26 occasions that the peak height has exceeded the major flood classification of 7.70 metres since that time, as illustrated in Figure 4. The flood of record (8.89 metres) occurred at this gauge in June 1952. Four major flood peaks were recorded at the Jemalong Weir (downstream) gauge during 1990 and three major peaks were recorded during the years 1950, 1952, 1974 and 1976. In comparison, the period between 1952 and 1964 there was minimal flood intelligence at this gauge. The December 2010 flood reached 7.76 metres (2).

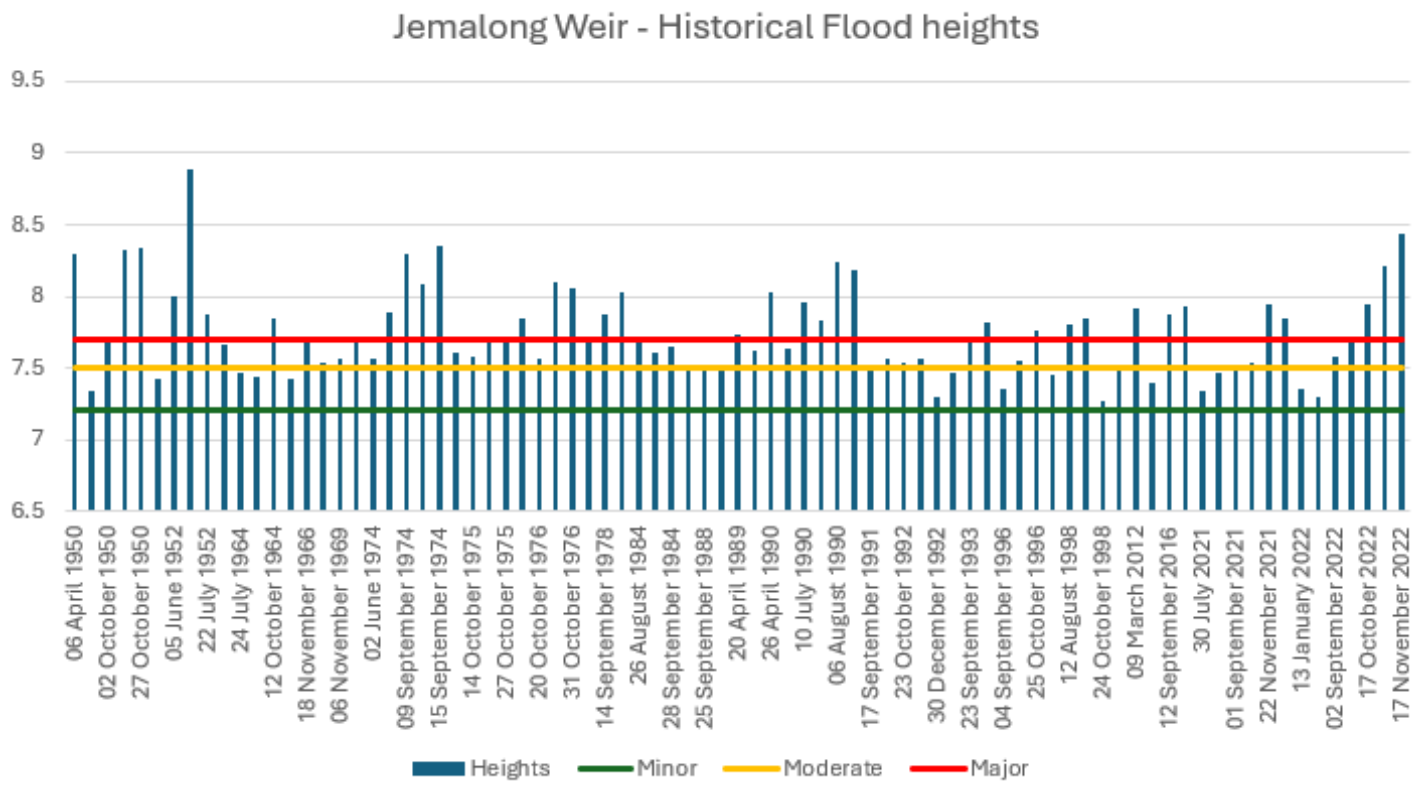


Figure 4: Jemalong Weir - Historical Flood heights

The higher frequency of major flooding recorded at this gauge compared to the Forbes Iron Bridge gauge is due, in part, to the location of the Jemalong Weir (downstream) gauge at Jemalong Gap. The gap acts as a natural dam, impeding the progress of flood water and causing a build-up flows in the more severe events and a breakout towards the northern Gunning Gap and Goobang creek (2).

Another factor that contributes to the higher number of major peaks at the Jemalong Weir (downstream) gauge, is that flood water that left the river before Forbes re-enters the river via Jemalong Creek from Bundaburrah Cowl at this point and contributes to a larger volume of water arriving at this location (2).

1.7 FLOOD MITIGATION SYSTEMS

There are no known engineered flood mitigation systems within the Forbes shire, although there may be many different structures or man-made infrastructure that may alter the natural floodplain and the flow of the water, increasing or decreasing the impact to the community.

One of the biggest impacts on flooding in the Forbes Shire can be the use of controlling 'airspace' in Wyangala Dam and modulating the flows downstream of the dam. Although this is not the Dams intended purpose and is not a reliable control mechanism due to the capacity of the dam.

Rural levees may also impact flooding within the LGA due to the extensive network that criss-crosses the floodplain and are mainly constructed to protect cropland and other agricultural pursuits under the Rural Floodplain Management plan (FMP). These levees are generally restricted up to the 15 years-ARI (6.7% AEP) design flood level, if identified to be within the floodway. In certain locations, along the floodplain are considered as High-level flood ways, where they are not expected to be activated by a 15% ARI flood, but works on the land must not increase the impact of events greater than the 15% ARI event.

Changes in land use, particularly increased irrigation, have the potential to provide wetter ground conditions than might have historically occurred and hence increase flood flows. The intensification of irrigation activities has led to a considerable redistribution of flood flows at some locations (2). From Gooloogong to Jemalong Gap and Jemalong Gap towards Condobolin, flows are conveyed in an engineered system of levees and floodways which are aimed at protecting agricultural land, while restoring the natural pattern of flow which existed under pre-development conditions.

The Red Bend college levee runs along the river bank bend, protecting the college. No design heights are available for the levee, but is estimated to have been constructed above the record flood level of 10.8 metres (7). Normal procedure for the school to self-evacuate all staff and students from the premises before it is isolated by flooded roads from around 9.70m in moderate and major floods.

The Stockinbingal to Parkes railway line that passes through the floodplain from north to south, is a known to restrict flows to the south of Forbes, along the Bundaburrah Creek, where there are only two culverts that pass through the line in this area.

1.8 EXTREME FLOODING

Major flooding at Forbes may be higher (deeper) and faster flowing with quicker onset and increased risk than experienced in recent events. The highest flood recorded since European settlement at Forbes Iron Bridge gauge of 10.80m in 1952 is estimated to be approximately only a 1% AEP event (or an event that occurs once in 100 years on average) (1).

An extreme, rare Probable Maximum Flood (PMF) event calculated by a flood study as 13.02m at Forbes Iron Bridge would be over 2m deeper than the 1952 flood. A much greater area would be inundated, including the Forbes CBD and more of the urban area.

Planning considers the Probable Maximum Precipitation (PMP) for a design rainfall event of 24 hours or 72 hours to produce the PMF. However, a coincident catastrophic failure of the Wyangala Dam could produce a greater height at Forbes. Rainfall heavy enough to support the idea of PMP has been observed in various places around the world including Australia (Wollongong 1984 – 440 millimetres in six hours over a 100 square kilometre area). Flood records from around the world demonstrate that PMF events have occurred (1).

Table 3: Summary of estimated flood heights at Forbes Iron Bridge (metres) (421901) and Cottons Weir (412004).

Gauge	20% AEP	10% AEP	5% AEP	1% AEP	0.5% AEP	0.2% AEP	PMF
Forbes Iron Bridge (421901)	**10.03**	**10.5**	**10.51**	**11.0**	**11.32**	**12.02**	**13.02**
Cottons Weir (412004)	**6.39**	**7.17**	**7.21**	**7.68**	**8.01**	**8.62**	**9.43**

2 EFFECTS ON THE COMMUNITY

2.1 COMMUNITY PROFILE

Table 4: 2021 Census - Housing and population data within Forbes Shire.

Census Description	LGA	Forbes	Bedgerabong	Garema	Ootha	Wirrinya	Corinella	Waroo
Total Persons	9319	**6837**	**127**	**84**	**44**	**92**	**72**	**123**
Aged 0-4 yrs	548	381	9	0	0	14	4	13
Aged 5-14 yrs	1302	928	25	9	7	17	11	22
Aged 65 + yrs	2158	1634	18	0	12	17	10	
Of Indigenous Origin	1236	1036	7	5	5	8	0	7
Who do not speak English well	18	-	-	-	0	-	0	12
Have a need for assistance (profound/severe disability)	570	401	-	-	-	-	-	-
Living alone (Total)	1111	963	16	4	5	6	0	8
Living alone (Aged 65+)	515	465	-	0	0	3	0	-
Residing in caravans, cabins or houseboats or improvised dwellings	81	75	0	0	0	0	0	-
Occupied Private Dwellings (Households)	4365	**2752**	**50**	**33**	**19**	**32**	**22**	**35**
No Motor Vehicle	183	178	0	0	0	0	0	-
Rented via State or Housing Authority	134	134	-	-	0	0	0	-
Rented via Housing Co-Op or Community Church Group	19	19	-	-	0	0	0	-
Unoccupied Private Dwellings	451	**302**	**7**	**9**	**0**	**10**	**5**	**18**
Average persons per occupied dwelling	2.9	**2.2**	**2.5**	**2.4**	**2.3**	**3**	**3**	**2.7**
Average vehicles per occupied dwelling	1.9	**1**	**2.2**	**2.6**	**2.5**	**2.6**	**2.8**	**2.6**

3 SPECIFIC RISK AREAS - FLOOD

3.1 FORBES

3.1.1 Community Overview

The township of Forbes is located on banks of the Lachlan River, within the central western slopes and plains of NSW. Forbes is the major urban centre in the Forbes LGA. It is located on the Newell Highway between Parkes and West Wyalong. It is called home by 6,837 residents, of which 1,634 are over 65+ years of age, and over 1,000 residents identify as indigenous.

Forbes is a services town that supports the regional community with goods and services for the rural landholders and industries within the LGA. With Agriculture, Forestry and Fishing accounting for over 19% of the economic activity within the LGA, the town of Forbes is a hub for these industries, among others, such as Health care & social assistance, and Education & Training as the top three sectors within the town.

Following the 2010 and 2012 floods, residents identified concern with evacuation of residential homes which had not historically been inundated (2). In 2016, despite flood levels exceeding those from the 1990 flood, a large number of dwellings that had flooded previously did not flood (7). Flooding is variable, but also, mapping of flood extents and evacuation areas is improving, with residents on higher ground not asked to evacuate in 2022.

3.1.2 Characteristics of flooding

Each flood in Forbes is different, as the nature of the floodplain and the sources of water interact each event to create different results. Although there are a few constants in the floodplain that when activated, lead to similar results on the inundation of the area.

Southern Cross / Yamma Homestead:

The ‘Southern Cross Breakout’ happens when water overflows from the north bank of the Lachlan River near Southern Cross homestead, about 16-kilometres upstream of Forbes. As the flow increases, floodwaters move north, cross Forbes-Eugowra Road (MR 377E), and enter the ‘Southern Cross Flood Runner’.

More breakouts can occur along the northern bank of the river, merging with the flood runner. This water then flows southwest and drains into the northern end of Lake Forbes through the railway culvert.

Bathurst Street:

In Forbes, the Bathurst Street breakouts occur when the river overflows next to the railway bridge at Bathurst Street. The water flows northwest along the railway line and enters Lake Forbes through two viaducts. The larger viaduct crosses Lake Forbes, and the smaller viaduct is next to Herbert Street. The water from the smaller viaduct crosses Hill Street and enters Lake Forbes just upstream of the Camp Street Bridge.

During these breakouts, floodwaters can also reach the northern part of the Hospital Hill area including Ooma, Oxford, and Bandon Streets. While to the south of Hospital Hill another breakout runs west across the old Botanical Gardens, College Road, and links with breakouts from Possum Lane and River Road across lower Wambat Street.

There is also a breakout at Lower Bathurst Street that flows north along Torig Road, crosses the Escort Way, and moves northwest into Lake Forbes.

Naturally Lake Forbes is fed by rainfall from the north-east of Forbes (in the Back Yamma State Forest area); Local minor flooding can occur as a result of high intensity storms and riverine flooding (6). However, in times when the Lachlan River is in flood, the Lake can be fed from breakouts from the Lachlan River to the east of Forbes from Bathurst Street breakouts and Southern Cross breakouts as described in this chapter.

As water flowing into Lake Forbes from the Southern Cross and Bathurst Street breakouts increases, it can overflow. The floodwaters can cross Dowling Street (Newell Hwy) through the town drainage system. Events show that this usually does not happen until major, prolonged flows occur on Forbes-Eugowra Road (MR 377E) near the Southern Cross breakout (2).

Bundaburrah Creek / Dukes Crossing:

Several breakouts from the south bank of the Lachlan River, upstream of Forbes in the vicinity of Cumbijowa Forest (near Kindimindi) and Wandary, direct floodwaters into Bundaburrah Creek. This water bypasses Forbes, causing flooding in a large area to the south of the town and flowing southwest towards Caragetel Swamp.

A breakout flows east towards Wongajong School (closed) and this reverses if it meets an overflow from Bundaburrah Creek.

Dukes Crossing breakout occurs 5-kilometres upstream of Forbes on the southern bank of the Lachlan River. This water flows across Wandary Lane via a culvert towards Dukes Crossing and Lachlan Valley Way and then enters Bundaburrah Creek. Bundaburrah Creek flows west and eventually returns floodwater to the Lachlan River through Bundaburrah Cowel, just east of Jemalong Gap (6).

3.1.3 Flood Behaviour

Forbes generally experiences relatively shallow riverine flooding and low velocity flood flows, although during major floods, high velocity flows have been seen around the floodplain in the river and creek channels. As well as along certain breakouts like the Battye Street and flood fringe areas in the vicinity of Marcia Street and Spooner Oval.

During floods, when the Forbes Iron Bridge reaches about 8-10 metres, breakouts are seen from the river channel into the floodway's upstream of the town; one is to the northern side of the river (Southern Cross breakout) and connects with Lake Forbes. The other is on the south side of the river and connects with Bundaburrah Creek (Cumbijowa Forest/Dukes Crossing).

As the flood peak increases, waters from Lake Forbes overtop and breaks into the Battye Street floodway (which can occur from around 10.5 metres or higher), and the town is divided into three areas.

As the flow increases, water levels rise in the floodways and spread out across the flood plain. This may or may not increase the peak at Forbes Iron Bridge there is a threshold where the river rises will plateau and spread out further across the floodplain, until the water has reached as far out as it can. Then the river will start to rise again (2).

The most significant impacts from flooding are seen in the vicinity of the Battye Street floodway and along the banks of Lake Forbes. Which at heights above 10.50 metres on the Forbes Iron Bridge gauge, the town will see more extensive impacts and may be isolated into three areas known to the SES as North Forbes, the Forbes CBD island and the Forbes Hospital island (1). Which may see isolation and inundation for a few days, or up to a few weeks as the flood waters take time to recede (1).

During these prolonged floods, the extent of flood damage experienced by the community of Forbes has been greater than in floods of shorter durations.

For example, whilst the difference between the peak heights recorded for the three major flood events in 1990 was only five centimetres, the number of properties inundated in each event varied significantly. With approximately. 140 properties (residential, commercial and rural) impacted during the April 1990 event, 50-60 in the July 1990 event and up to 265 in the August 1990 flood.

This difference can be attributed, in part, to the duration of flooding from the Southern Cross breakout – approximately five days in August compared to around two days in the two earlier events (3).

3.1.4 Classification of Floodplain

The Flood Emergency Classification of Community (FERCC) for the floodplain that surrounds the township of Forbes is made up of a majority of low-flood islands, sporadic high-flood islands with overland-escape and rising road access on the floodplain fringe.

North Forbes consisting of the homes and streets north of Bedgerabong Road, Renfree Street and Parkes Road, has rising road access to the north west via The Bogan Way where they can head north away from the flooding extent.

While the Forbes CBD is a low-flood island, as it is likely to be isolated when the road north is cut at Dowling Street, where the Battye Street flood runner overtops the road at approximately 10.8 metres on the Forbes Iron Bridge gauge. The Floodwaters are particularly hazardous in this area due to fast flowing flood waters moving from Lake Forbes into the floodway (1).

The Forbes Hospital island (Camp Hill) historically becomes a high-flood island around the Hospital, with further inundation of the surrounding houses towards a PMF. This island can become isolated when the roads to CBD to the north, and the approaches to the Camp Street Bridge are inundated and a short length of Oxford Street, where it meets the Newell Highway becomes flooded, as well as when the Forbes CBD island is isolated due to the Battye Street breakout (1).

Historically, the inner rural area to the east of the railway line, is considered low flood islands, as they become isolated by road inundation and are bound by the railway line, which limits access and egress. There is the potential for the area to become completely inundated up to a PMF (1).

The plains in the Wongajong area are low-flood islands after becoming isolated around 10.5 metres in some floods, with sporadic High-flood islands dotting the floodplain.

3.1.5 Inundation

*The community of Forbes prefers to utilise the Forbes Iron Bridge Gauge for all flooding references, due to historical records and it being a visible fixture for the community. For relative design heights between the gauges refer to Table 4 for design flood levels.

Minor floods begin to affect the low-lying areas directly connected to the river, from 9.1 metres on the Forbes Iron Bridge gauge (1). The northern residential region is predominantly flood free except for the older established sections of the industrial area and the lower portions of a number of residential streets (1).

The number of properties affected during floods is variable in Forbes, even with floods of the same height (or higher). This is further detailed in the following paragraphs.

During the August 1990 flood (10.64 metres), water crossed the Newell Highway and surrounded businesses on the northern side of the railway line and sections of the golf

course. 265 properties were flooded above floor level. This consisted of 196 residential, 33 rural and 36 commercial/industrial properties, including those on Dowling, Sherriff and Cross Streets (in the CBD) were inundated by floodwaters (1). In preceding floods in the same year, reaching 10.61 and 10.59 metres, 140 properties (consisting of 100 residential, 20 commercial and 20 rural) and around 60 properties (consisting of 30-40 residential, 10 commercial and 10 rural) were flooded, respectively (10).

In 2016 (10.76 metres), it is estimated that only 36 buildings were inundated. Residential dwellings impacted were on Racecourse Road, River Road, Wambat Street (worst affected with over a metre in the dwelling), Lachlan Valley Way, College Road, Flint Street, Bathurst Street, Wandary Lane, Church Street, Stokes Street, Wambat Street, Ferry Street, Hill Street, Templar Street, Browne Street and Gum Swamp Road (worst affected with over a metre in the dwelling). Business/commercial buildings affected were located on Newell Highway, Warrul Road, Reymond Street, Lower Rankin Street and Templar Street. A number of secondary buildings were also impacted including sheds on Bathurst Street, Ferry Street, Ooma Street and playing field toilet blocks (7).

With the exception of caravan parks, the initial dwellings that start to inundate have been in Rifle Range Road, Hill Street, Mole Lane, and Rankin Street (2).

Areas prone to flooding in South West Forbes (Lake Forbes to Newell Hwy) include Elizabeth Street, Farnell Street, Forester Street, Hilda Street, Junction Street, Lachlan Street, Marcia Street, Racecourse Road, Show Street, Thelma Street and Warrul Road which were inundated to various extents in 1990 and 2012 (10.64 and 10.55 metres respectively) (1). In 2012, Elizabeth Street, Hilda Street, Thelma Street, Mona Place and Margret Street did not flood (2).

Areas prone to flooding in North Forbes and the CBD are Battye Street, Bedgerebong Road, Browne Street, Camp Street, Clear Street, Cross Street, Farnell Street, Farrand Street, Grenfell Street, Johnson Street, North Circle Drive, Dowling Street, Parkes Road, Rankin Street, Renfree Street, Sam Street, Sherriff Street, Spring Street and Templar Street which were inundated to various extents in 1990 and 2012 (10.64 and 10.55 metres respectively) (1). In 2012, Farrand Street did not flood (2). The entire CBD is at risk of inundation in a 1% AEP flood (10.8 metres), although a few commercial properties were not inundated in 1952 around the Court House. This area may already be isolated by 10.55 metres (2).

Areas prone to flooding in Eastern residential area are Bandon Street, Barwin Street, Bridge Street, Church Street, Clark Street, Ferry Street, Flint Street, Herbert Street, Hill Street, James Street, Ooma Street, Orange Road, Oxford Street, Rifle Range Road, Sandhills Road, Twogood Lane and Young Street which were inundated to various extents in 1990 and 2012 (10.64 and 10.55 metres respectively) (1). In 2012, Bandon, Church and Young Street did not flood (2).

Areas prone to flooding in South Forbes (including Wongajong) are Bathurst Street, Blackwood Street, Cargo Lane, Church Street, Claret Street, College Road, Forbes – Cowra Road, Mole Lane, Moselle Street, Muscat Street, Reymond Street, River Road, Stacey Street, Wambat Street, and Wandary Lane which were inundated to various extents in 1990 and 2012 (10.64 and 10.55 metres respectively) (1). In 2012, Church Street, Stacey Street, Wambat Street and Koala Place did not flood (2).

Flooding in the order of 10.8 metres (similar to the 1952 flood) may inundate approximately 500 properties (1000 people), depending on the flood behaviour which can vary significantly between floods (1).

Table 5: Estimated number of properties flood affected and inundated above floor level in Forbes related to the Forbes Iron Bridge gauge

Forbes Iron Bridge Gauge Height (m)	Flood Affected	No. Properties with Over Floor Flooding
(50% AEP)	0	0
10.2m (20% AEP)	0 – Residential 9 – Commercial	0 – residential 1 – Commercial
10.4m (10% AEP)	188 – Residential 81 – Commercial/Public	124 – Residential 74 – Commercial/Public
10.5m (5% AEP)	247 – Residential 95 – Commercial/Public	171 – Residential 88 – Commercial/Public
10.8m (1% AEP)	701 – Residential 218 – Commercial/Public	569 – Residential 216 – Commercial/Public
(0.5% AEP)	799 – Residential 245 – Commercial/Public	719 – Residential 242 – Commercial/Public
(0.2% AEP)	921 – Residential 298 – Commercial/Public	878 – Residential 279 – Commercial/Public
13.02m (PMF)	1040 – Residential 295 – Commercial/Public	1015 – Residential 294 – Commercial/Public

3.1.6 Isolation

In minor floods (approximately 9 metres on the Forbes Iron Bridge gauge) Forbes Gooloogong Road (Lachlan Valley Way), Forbes Wirrinya Road at Dog and Duck Crossing on Bundaburrah Creek (Black Marsden Road), and Forbes Grenfell Road at Muddy Creek on Bundaburrah Creek (Henry Lawson Way) may flood (1).

From 10 metres on the Forbes Iron Bridge gauge, backwater flooding in the local stormwater drainage system and spread of floodwater may result in shallow flooding of a number of roads including (1):

- Eastern end of Lower Rankin Street;
- Intersection of Bathurst Street and Ferry Street;

- Flint Street south of Bathurst Street;
- Eastern end of Browne Street.

Vehicles in the Forbes CBD may still be able to travel south along the Newell Highway as far as the Fitzgeralds Bridge, but the road is inundated on the south of the Lachlan River, often even before the minor flood level is reached (1). Once the Newell Highway is cut near the golf course, access from the northern section of Forbes to the Newell Highway and then Parkes may still be available via Wyndham Avenue (1).

In past events, at heights of 10.45 metres or greater on the Forbes Iron Bridge gauge, Bedgerebong Road has been closed by flood waters and access to the airport has been lost. This road has recently been upgraded however, the airport will still be inaccessible from Forbes in major flooding (10.55 metres and above on the Forbes Iron Bridge gauge) due to road closures within Forbes itself (1).

During major flooding (from 10.55 metres):

Water from the Lachlan River generally breakouts in the vicinity of Bathurst Street may flow south to the Wongajong area, located just south of Forbes, isolating and then inundating a number of residential blocks of Lachlan Valley Way, Wandary Road, Muscat Street, Moselle Street, Reisling Street and Claret Street (1).

The CBD area and the Camp Hill area may become isolated (2). If this occurs, road access between the three sections of town in major floods is not possible and people may be isolated from their places of work and the hospital for up to a week (1).

Residents on Rifle Range Road may also be isolated, depending on the flood conditions (1).

All roads crossing Bundaburrah Creek downstream of Dukes Crossing breakout may be cut, as occurred in 2022. In 2010, this did not include Wirrinya/Wongajong Road at River Bend despite historically becoming flooded around 9.3 metres (2).

The section of the Forbes-Parkes railway line in the vicinity of Daroobalgie (north of Forbes) may be closed. During the flood of record in June 1952 (10.80 metres on the Forbes Iron Bridge gauge), the railway line was closed at the Forbes Railway Station and extensive damage to the railway line was caused when the embankment was overtopped by flood waters (1).

3.1.7 Flood Mitigation Systems

As of this time, there is no record of any engineered flood mitigation infrastructure that is known to the NSW State Emergency Service within the Forbes Shire Council area.

There are known rural levees and crop development on each side of the Lachlan River upstream and downstream of Forbes that are built in the floodway. These levees should be built to the 15% ARI (6.7% AEP), so they should not have major impacts to the manner of flooding within the floodplain.

Although, If the levees are 'topped up' beyond the 15% ARI (6.7% AEP) breaches, the flood pattern would change particularly for the regions outside the residential areas (2).

The Red Bend College levee runs along the river bank bend, protecting the college. No design heights are available for the levee, but is said to have been constructed above the record flood level of 10.8 metres (7). Normal procedure for the school to self-evacuate all staff and students from the premises before it is isolated by flooded roads from around 9.70m in moderate and major floods.

3.1.8 Dams

There are a number of dams upstream. If any of the declared dam failures were to occur, within the Lachlan floodplain the LGA may be impacted These are detailed in Volume 3, Chapter 3.

Dam failure has the potential to cut numerous roads and inundate a significant amount of residential and commercial properties in Forbes and surrounding localities (4).

Refer to 1.3 Storage Dams for further details.

3.1.9 At Risk Facilities

The facilities that are at risk of flooding and/or isolation within the Forbes LGA including schools, childcare centres, hospitals, aged and infirm, infrastructure and caravan parks are shown in Annex 1.

3.1.10 Other Considerations

a. River Arts Festival, Spring Races and National BBQ championships are held in October, causing a larger influx of tourists.

3.2 BEDGERABONG

3.2.1 Community Overview

Bedgerabong is a rural community located downstream of Forbes on the Lachlan River. It comprises approximately 58 dwellings in Bedgerabong district (9). The community has a partial levee that is topped up or repaired with each major flood, but there are no surveyed levels or other data. NSW SES provides a sandbagging machine for local use.

3.2.2 Characteristics of Flooding

The Lachlan River flows from Forbes in a westerly direction toward Condobolin. This stretch of the river is characterized by extensive meanders and swampy depressions. South of this section lies Lake Cowal, which is fed by a catchment area of approximately 9,800 square kilometres. During wet years, the lake fills and overflows, sending water down its outlet to the Lachlan River and its anabranches.

The flow of the river is influenced by the surrounding vegetation, which can cause variations in travel times; however, the flow is generally slow-moving. Major floods tend to move much faster, as in 2022. If rural levees were to breach, the flood patterns would change, particularly in areas outside the residential zones. Additionally, interactions between the Lachlan River and Lake Cowal can limit access to Condobolin, even during minor floods (1).

Outflows from the Seventeen Mile and Twenty-One Mile Breakouts, situated downstream of Jemalong Gap, typically flow towards Lake Cowal. During minor floods, these outflows are unlikely to reach the lake, as they generally remain within designated floodways and may overflow onto adjacent farmland. However, in cases of moderate flooding, the outflows are likely to reach Lake Cowal and contribute to its filling.

When major floods occur, the lake can fill to the point of spilling over to the north and west, returning water to the Lachlan River downstream of Condobolin. This situation often results in road closures, isolating areas such as Corinella and Warroo in the western part of Forbes Shire.

In some instances, like in 2016, Lake Cowal can push water back into the Lachlan River at Jemalong and into Goobang Creek. This reverse flow intensifies the impact on the Corinella/Warroo area, and the Bedgerabong area, and along Goobang Creek towards Condobolin.

Lake Cowal can expand enough to close the Newell Highway to West Wyalong, particularly when the Lachlan River overflows at Jemalong during major floods.

3.2.3 Flood Behaviour

Downstream of Jemalong Gap, the meanders and swampy depressions fill with riverine flooding which then spills broadly across the floodplain with shallow inundation.

North of this section downstream of Jemalong, the river breaks out and crosses the northern floodplain towards Goobang Creek.

As floods get larger, the flooding rises on the northern floodplain, but the rise is mitigated by the increasing share of floodwater exiting Jemalong turning south.

If Goobang Creek is also running high, the combination raises flood levels in the western parts of Forbes LGA towards Condobolin, impacting rural residents. Several outflows impact in the Bedgerabong area. The last outflow is at Bumbuggan Creek, where only a small fraction of the Jemalong flow is still in the river.

South of this section downstream of Jemalong, there are major breakouts towards the Lake Cowal part of the system. The 17 Mile and 21 Mile breakouts west of Jemalong travel past Corinella locality, combining before entering the northeast corner of Lake Cowal. Kennedy's Breakout near Warroo travels west to join the Lake Cowal outflow in Bogandillon Creek and then to Bogandillon Swamp.

As floods get larger at Jemalong, more and more of the river flow diverts to the south to Lake Cowal and Bogandillon Swamp.

South of this section is Lake Cowal which is fed by a large catchment of about 9,800 square kilometres which, during wet years, fills and overflows down its escape to the Lachlan River and its tributaries (1).

The combined Lake Cowal and Lachlan River outflow travels through Bogandillon Swamp and a braided creek system on the southern floodplain past Condobolin to the south. It joins the Lachlan River downstream of Condobolin.

Occasionally, as in 2016, Lake Cowal also pushes back to Jemalong and across to Goobang Creek. This mitigates the Lake Cowal outflow to the west, but can impact in the Corinella area and increases the flooding on the northern floodplain. That includes Bedgerabong and rural properties between the river and Goobang Creek towards Condobolin in the western part of the Forbes LGA.

3.2.4 Classification of Floodplain

The Flood Emergency Classification of Community (FERCC) for the floodplain that surrounds the village of Bedgerabong is made up of a majority of low-flood islands, sporadic high-flood islands with overland-escape and rising road access on the floodplain fringe.

3.2.5 Isolation

The Bedgerabong community and surrounding farmland is affected from flooding of both the Lachlan River and the Goobang Creek system.

The village of Bedgerebong can become completely isolated when the Forbes Iron Bridge gauge reaches a height of 10.65 metres or more. During the August 1990 flood, the village was inaccessible to light vehicles for five weeks. In the years 2012, 2016, and 2022, approximately 50 properties in Bedgerebong were isolated from Forbes for several weeks, requiring resupply. These properties are located along Bedgerabong Road, Browns Road, Copeland Parade, Darcy's Lane, Grudgery Lane, Hodges Road, Kaloola Lane, Monwonga Road, Noakes Road, North Condobolin Road, Rodgers Street, Roseleigh Lane, Slimbridge Road, Wattlebower Lane, and Yarrabandai Road. (11).

3.2.6 Flood Mitigation Systems

Flood levees and crop development exist on each side of the Lachlan River upstream of Forbes. The southern side has floodways connecting with Lake Cowal, referenced by a 1983 flood study, which also recommended rural levees not to interfere with the larger floods.

3.2.7 Dams

There are a number of dams upstream. If any of the declared dam failures were to occur, within the Lachlan floodplain the LGA may be impacted. These are detailed in Volume 3, Chapter 3.

Dam failure has the potential to cut numerous roads and inundate a significant amount of residential and commercial properties in Forbes and surrounding localities (4).

Refer to 1.3 Storage Dams for further details.

3.2.8 At Risk Facilities

The facilities that are at risk of flooding and/or isolation within the Bedgerabong area including a school and showground/racecourse are shown in Annex 2.

3.2.9 Other Considerations

- Bedgerabong Picnic Races at Bedgerabong Race Track, Copeland Parade, Bedgerabong, annually in February. Location, beside Lachlan River, may be impacted by flooding, but have a few days' notice of imminent flooding.

3.3 RURAL COMMUNITIES AND VILLAGES

Rural areas and villages within the Forbes Shire are affected to varying degrees by flood waters depending on their proximity to the river and floodways. These include (9):

Garema:

Which has a population of approximately 84 people, which is located to the south of Forbes on Ooma Creek.

Ootha:

Has a population of approximately 44 people, which is located to the northwest of Forbes near Goobang Creek.

Wirrinya:

Has a population of approximately 92 people and is a locality located between Forbes and Marsden.

Corinella:

Has a population of approximately 72 people and is a locality located between the Lachlan River at Jemalong and Lake Cowal.

Warroo:

Which has a population of approximately 123 people, Warroo locality is on the Lachlan Valley Way between Forbes and Condobolin, near Lachlan River.

Flooding of rural lands brings a host of detrimental effects, particularly the widespread destruction of crops that are vital for food production. When fields remain submerged for extended periods, not only does it hinder the growth of cultivated plants, but it also makes pastures inaccessible for grazing livestock. This prolonged inundation disrupts the entire agricultural ecosystem, leading to significant economic losses for farmers and affecting food supply in the broader community.

3.3.1 Classification of Floodplain

The Flood Emergency Classification of Community (FERCC) for the floodplain that surrounds the rural areas are made up of a majority of low-flood islands, with sporadic high-flood islands with overland-escape and rising road access on the floodplain fringe.

3.3.2 Inundation

Historically a number of homesteads outside of town have been inundated near Tichborne (2).

The Lake Cowal system is not gauged and can be massive. In 2022, rural properties in the Lake Cowal area suffered the highest flood levels in memory, coinciding with record floods at Condobolin and Euabalong. That history included a property that has long term private gauge records and suffered over-floor inundation when the levee was overtopped.

No further details of rural property inundation are available.

3.3.3 Isolation

During major flooding events (approximately 7.8 metres on the Jemalong Weir gauge or 10.65 metres on the Forbes Iron Bridge gauge), the villages of Garema, Warroo (which has around five houses), Corinella, and Jemalong (which has approximately 16 houses) may become isolated from Forbes for up to five weeks. These villages often require outside assistance for supplies and services.

Access to Wirrinya, Grenfell, and West Wyalong (which are outside the Forbes Shire) can also become cut off from Forbes for several days to two weeks or longer. This has occurred during floods in August 1990, 2016, and 2022.

Several tributaries within the Forbes Shire can impact rural properties as follows.

The Goobang Creek and tributaries can isolate multiple properties and threaten some houses in the Gunning Gap and Culgans Gap area.

During major floods, Ooma Creek may close the Forbes-Grenfell Road near the Forbes Shire boundary. The most significant threat from this creek is to the village of Garema, where several houses between Garema and Caragetel Swamp may become isolated. Floodwaters from Pinnacle Creek, which joins Ooma Creek upstream of Garema, can also cut roads and cause additional rural isolations.

Gunningbland Creek can isolate certain properties southeast of Yarrabandai.

In major floods, Yarrabandai Creek can impact the Parkes-Condobolin Road and has previously washed out the Parkes-Condobolin Railway Line east of Ootha. This creek can also lead to the isolation of some rural properties for short periods. Additionally, several outlying roads around Forbes have experienced flooding (for instance, during the 1990 flood with a height of 10.64 metres), including Dowra, Possums, Tamworth, Warwee, Wilbertroy Lanes, and Greens, as well as South Lead and Yarrabandai Roads (1).

3.3.4 Flood Mitigation Systems

Flood levees and crop development exist on each side of the Lachlan River.

A levee near the now removed Jemalong School is overtopped at approximately 7.62 metres on the Jemalong Weir gauge placing the local farms and several farmhouses at risk, for example in the 2012 flood (2).

3.4 CAMPING RESERVES

There are numerous camping reserves along the Lachlan River. These are affected by low levels of flooding and require warning and evacuation.

Table 6: Popular campgrounds along the Lachlan River

Campsite	Campsite location
Wheogo Park Rest Area	Junction St Forbes
9 Mile Creek -Bush Camp by Lachlan	Bundaburrah
Bundaburrah Creek Campground	Newell Highway Forbes
Lachlan River Reserve	Bedgerabong Road Forbes
Jemalong Weir	Lachlan Valley Way between Forbes & Condobolin
The Mount Reserve	Bedgerabong Road Forbes
River Camp	Bedgerabong Road Forbes
Bumbuggan Weir	North Forbes Road Mulguthrie

4 ROAD CLOSURES AND ISOLATED COMMUNITIES

4.1 ROAD CLOSURES

Table 7 lists roads liable to flooding in the Forbes LGA, these locations are shown on Map 3 - Forbes Town Map.

Table 7: Roads liable to flooding in Forbes Shire LGA.

Road	Closure location	Consequence of closure	Alternate Route	Indicative gauge height
Bedgerebong Road	Water closes road at "Little Plains"		Via Noakes Road to 'Five Ways' and then to Forbes	7.1-7.2m Jemalong Weir (d/s) Gauge and 9.9m Forbes Iron Bridge Gauge
Bogan Gate (MR 350)	May be closed by either Goobang Creek or Crooked Creek			n/a
The Bogan Way	Crossing of Crooked Creek			Heavy rainfall in the Goobang Creek catchment north of Forbes
Burrawang Road west	Downstream of Gunning Ridge. Road inundated over 10.5 km length extending west from Goobang Creek bridge crossing.	Rural isolations		Heavy rainfall in the Goobang Creek catchment north of Forbes
Connells Lane	Extending about 2.6 km north of Burrawang Road intersection			Heavy rainfall in the Goobang Creek catchment north of Forbes
Corridgery Road			Via The Bogan Way	n/a
Dukes Road	Between Wandary Road and Forbes-Gooloogong Road (MR56) (Lachlan Valley Way)			Flooded in 2010
The Escort Way (Eugowra-Forbes Road) (SR 90)	Southern Cross Breakout over distance of 3.5 km extending west of Waugan Road intersection. Road also inundated at location of sag immediately west of Bathurst Street.	Closes access between Forbes and Eugowra.		10.3m Mulyandry Gauge
Henry Lawson Way (MR 236) at Grenfell	Road closed at Muddy Lagoon.		New Grenfell Road	9.3m Forbes Iron Bridge Gauge

	Road cut at Lachlan River and Ooma Creek.			
Lachlan Valley Way (MR 56)	Road closed at Dukes Crossing. 12 km extending east from Dukes Crossing (Parkes GR 092011) to Cumbijowa. Road also inundated over 0.5 km length about 350 m east of Mulyandry Creek bridge crossing	Forbes to Gooloogong access is restricted	Via Eugowra or Grenfell.	9.3m Forbes Iron Bridge Gauge
Lachlan Valley Way (MR 56)	Road closed at the archery club across from 'Kindimindi'		Via Eugowra or Grenfell.	10.3m Mulyandry Gauge
Lachlan Valley Way	Road closed at Jemalong School for up to 10km (for 12 days in 1974).		Via Bogan Gate or via Parkes to Condobolin	7.2 - 7.7m Jemalong Weir (d/s) Gauge
Lachlan Valley Way	2.5 km length immediately east (upstream) of Jemalong Ridge adjacent to East Mountain Road. 2.2 km length immediately west (downstream) of Jemalong Ridge at intersection with Kevin Lane. 2.7 km length about 2.7 km west of Grudgery lane. Over 1.7 km length immediately east of Waree Lane.	No direct access to Condobolin	Via Bogan Gate or via Parkes to Condobolin	From 5.6m on the Cottons Weir gauge.
Littles Road	Between The Escort Way and Forest Road. Road inundated at four separate locations.			Flooded in 2010
Newell Highway (SH 17)	Road closed, 6km from Forbes at the South Condobolin Road turn off. If Battye Street is closed, the Highway can be closed from Fitzgeralds Bridge to Bareenong/Garema turn and again at Caragabal.		May be available via Condobolin	10.5m Forbes Iron Bridge Gauge

	If Lake Cowal overfills, the Highway can also be closed just north of Marsden for some time. Newell Highway also closes at the Forbes golf course in major flooding			
Newell Highway	North of railway crossing at Tichborne			Heavy rainfall in the Goobang Creek catchment north of Forbes
Newell Highway	Along a 700 m length at the Crooked Creek crossing north of Forbes			Due to heavy rain over the catchment (e.g. in March 2012)
New Grenfell Road	Water crosses road south of Gordon Duff Bridge near Turners Road		Via Marsden	9.8m Forbes Iron Bridge Gauge
Paytens Bridge Road			Via The Escort Way	10.4m Mulyandry Gauge
Racecourse Road	Downstream end of Lake Forbes			Flooded in 2010
Salisbury Road	Crossing of Lake Forbes			
Sandhills Road	Toms Lagoon and immediately west of Littles Road.			Flooded in 2010
Sheriff Street	Crossing of Lake Forbes			Flooded in 2010
Show Street	Crossing of Lake Forbes			Flooded in 2010
Turners Road	At creek crossing			Bundaburrah Creek System
Wandary Lane	Approximately 300 m east and 1.2 km west of Dukes Road			Flooded in 2010
Warregal Road	3.5 km length extending west from Newell Highway to “Allengrove” property. Crooked Creek crossing			Heavy rainfall in the Goobang Creek catchment north of Forbes
Waugan Road (Tichbourne)	Via Escort Way, Road closed at several locations extending 2.5 km south of intersection			Flooded in 2010
Wongajong Road	Road Closed at Bundaburrah creek			9.3m Forbes Iron Bridge Gauge
Yarrabandai Road	Closes at “Four Ways”		Via Henry Parkes Way	n/a
Local service road running north of Warregal Road opposite “Allengrove” property				Heavy rainfall in the Goobang Creek catchment north of Forbes

The following table indicates roads that were flooded in 1990 and 2012. A number of roads in the outlying areas around the town of Forbes were also affected by flood waters during the August 1990 event including Dowra, Possums, Tamworth, Warwee and Wilbertroy lanes and Greens, South Lead and Yarrabandai roads (2).

Table 8: Streets in the Town of Forbes Affected During the August 1990 Flood (* indicates not flooded in the 2012 floods)

South west Forbes (Lake Forbes to Newell Highway).	North Forbes and the CBD.	Eastern residential area.	South Forbes.
Elizabeth Street*	Battye Street	Bandon Street*	Bathurst Street
Farnell Street (lower end)	Bedgerebong Road	Barwin Street	Blackwood Road
Forester Street	Browne Street	Bridge Street	Cargo Lane
Hilda Street*	Camp Street	Church Street*	Claret Street
Junction Street	Clear Street	Clark Street	College Road
Lachlan Street	Cross Street	Ferry Street	Forbes – Cowra Road
Marcia Street	Dowling Street	Flint Street	Moselle Street
Racecourse Road	Farnell Street	Herbert Street	Muscat Street
Show Street	Farrand Street*	Hill Street	Reymond Street
Thelma Street*	Grenfell Street	James Street*	River Road
Warrul Road	Johnson Street	Ooma Street	Stacey Street*
	North Circle Drive	Orange Road (Forbes – Eugowra Road)	Wandary Lane
	Parkes Road (Newell Highway)	Oxford Street	Wambat Street (lower end)*
	Rankin Street	Riflerange Road	
	Renfree Street	Sandhills Road	
	Sam Street	Twogood Lane	
	Sherriff Street	Wambat Street	
	Spring Street	Young Street*	
	Templar Street		

4.2 SUMMARY OF ISOLATED COMMUNITIES AND PROPERTIES

Table 9 lists communities liable to isolation (RED) and potential periods of isolation (BLUE). Information presented here is based on historical intelligence and does not reflect the duration of isolation expected in larger and extreme events.

Table 9: Potential Periods of Isolation for communities in the Forbes Shire LGA during a major flood.

Town / Area (River Basin)	Population/ Dwellings	Flood Affect Classification	Approximate period isolation	Days								NOTES
				1	2	3	4	5	6	7	8	
Bedgerebong	58 dwellings	High flood island	3 – 5 weeks									Resupply likely to be required after 5 days
Waroo/Garema	5 dwellings	High flood island	1 – 5 weeks									Resupply likely to be required after 5 days
Corinella	5 rural properties	High flood island	1 – 5 weeks									Resupply likely to be required after 5 days
Jemalong	16 dwellings	High flood island	3 – 5 weeks									Resupply likely to be required after 5 days
Wirrinya	9 dwellings	High flood island	2 days-3 weeks									
Forbes rural	Approx. 100	High and low flood islands	2-5 weeks									Potential resupply if prolonged isolation

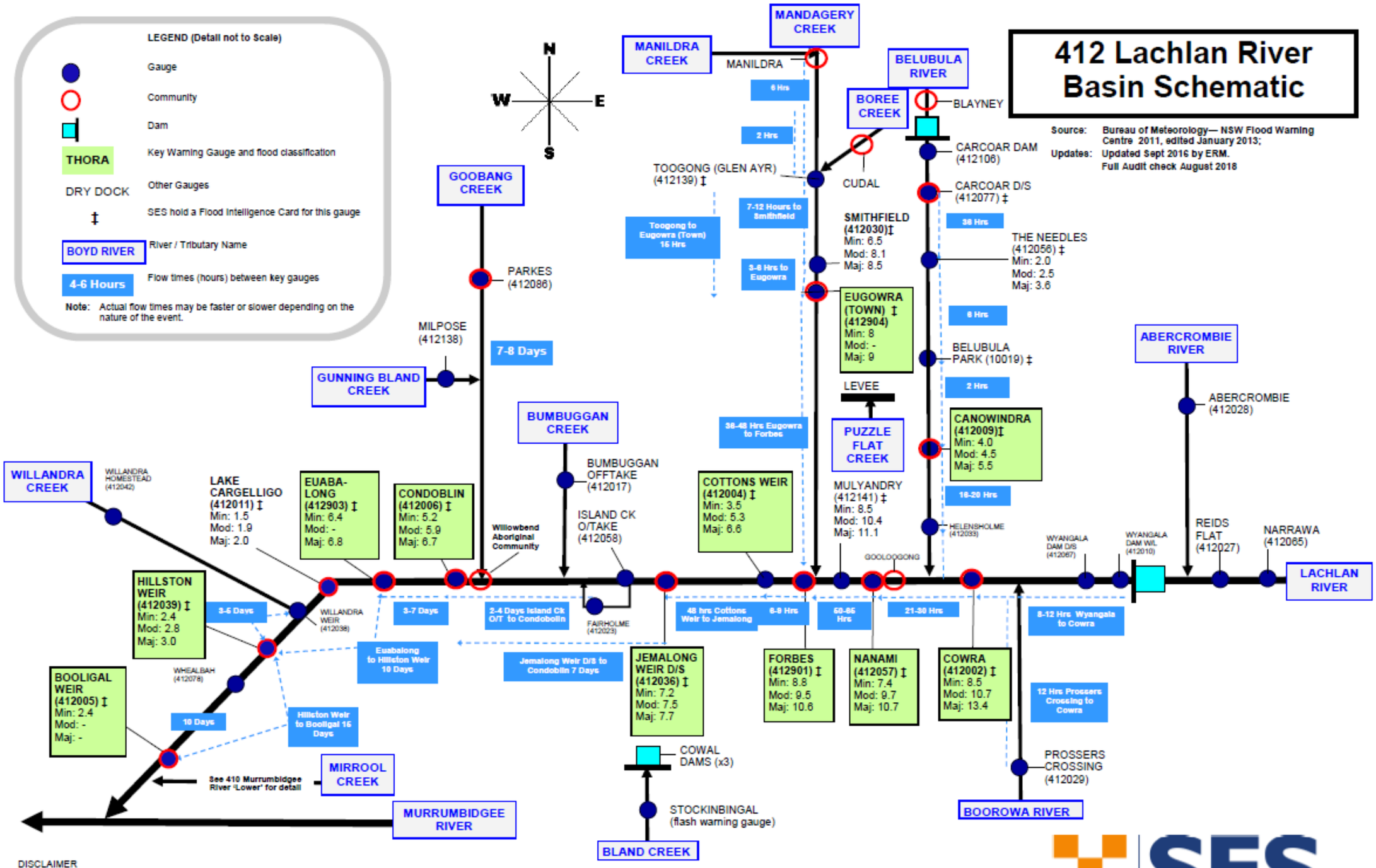
Note: Periods of isolation are a guide only. Liaison with the Local/Unit Commander and communities/residents involved is essential during periods of potential and actual isolation.

5 ANNEX 1: FACILITIES AT RISK OF FLOODING AND/OR ISOLATION

Facility Name	Street	Suburb	Comment
Schools			
Red Bend Catholic College	College Road	Forbes (in the southern residential area)	Risk of flooding and isolation. The college caters for over 200 boarders as well as day students. Forbes SES Unit Commander advises that the school manage themselves during floods with evacuation and temporary protection.
North Forbes Primary School	Thomson Street	Forbes	High ground, risk of isolation when the town is isolated.
St Laurence's Primary School	2 Dalton Street	Forbes	High ground, risk of isolation when the town is isolated.
Forbes High School	18 Wyndham Avenue	Forbes	High ground, risk of isolation when the town is isolated.
Forbes Public School	Lachlan Street	Forbes (CBD)	Risk of flooding and isolation.
TAFE NSW, Western Institute Forbes Campus	Cnr Browne and Harold Street	Forbes (CBD)	High flood island isolated when Battye Street Floodway is active.
Bedgerabong Public School	7 Golding Avenue	Bedgerabong	Risk of isolation in major floods and possible flooding if protection measures fail
Child Care Centres			Heights and depths are not known (8).
Forbes Learning Ladder	155 Farnell Street	Forbes	
Forbes Pre-School Kindergarten	Bogan Street	Forbes	
A.B.C Developmental Learning Centre	81-83 York Street	Forbes	
Bright Beginnings	9 Lot 23, Attlee Street	Forbes	
Facilities for the aged and/or infirm			
Catholic Healthcare - Jemalong Retirement Village (Forbes)	240 Edward Street	Forbes (in the northern residential area off The Bogan Way)	Possible isolation from CBD services and access to other towns
Forbes District Hospital	5 Elgin Street	South Forbes (Camp Hill in the southern residential area)	High flood island may require resupply.
Utilities and infrastructure			

Forbes aerodrome			May remain open for flood relief up to floods in the order of 10.8 metres on the Forbes Iron Bridge gauge (as it was in 1952). It may become inundated in higher floods. The airport was isolated in 2022 which peaked at 10.65m at the Forbes Iron Bridge.
Forbes-Parkes railway line			During major flooding, may be flooded.
Racecourse			May be affected to varying degrees by flood waters (1).
Showground			May be affected to varying degrees by flood waters (1).
Rifle range			May be affected to varying degrees by flood waters (1).
Golf course			May be affected to varying degrees by flood waters (1).
Lachlan Vintage Village			May be affected to varying degrees by flood waters (1).
Sewage treatment works			May be affected to varying degrees by flood waters (1). Although there may be levee infrastructure protecting this important asset.
Culturally Significant Sites			
Forbes Wiradjuri Dreaming Centre	4 Hill Street	Forbes	Affected at 10% AEP
Forbes Railway Station		Forbes	Affected at the 1% AEP. 2022 flood was close.
Forbes Post Office		Forbes	Affected in a PMF event
Camping Ground / Caravan Parks			
Caravan Parks are listed in Volume 3, Chapter 4 of this Local Flood Plan (SES Caravan Park Arrangements).			

412 Lachlan River Basin Schematic



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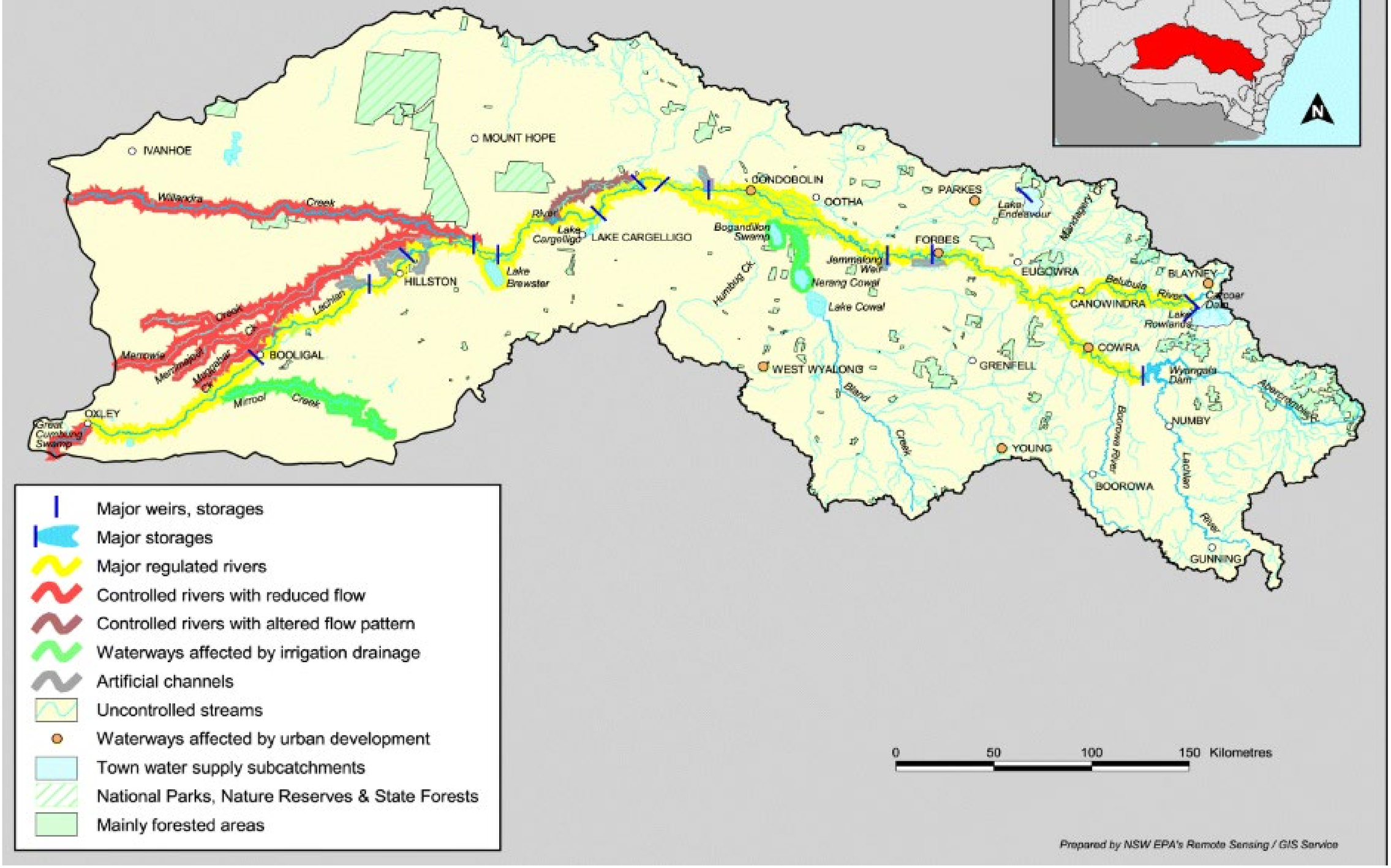
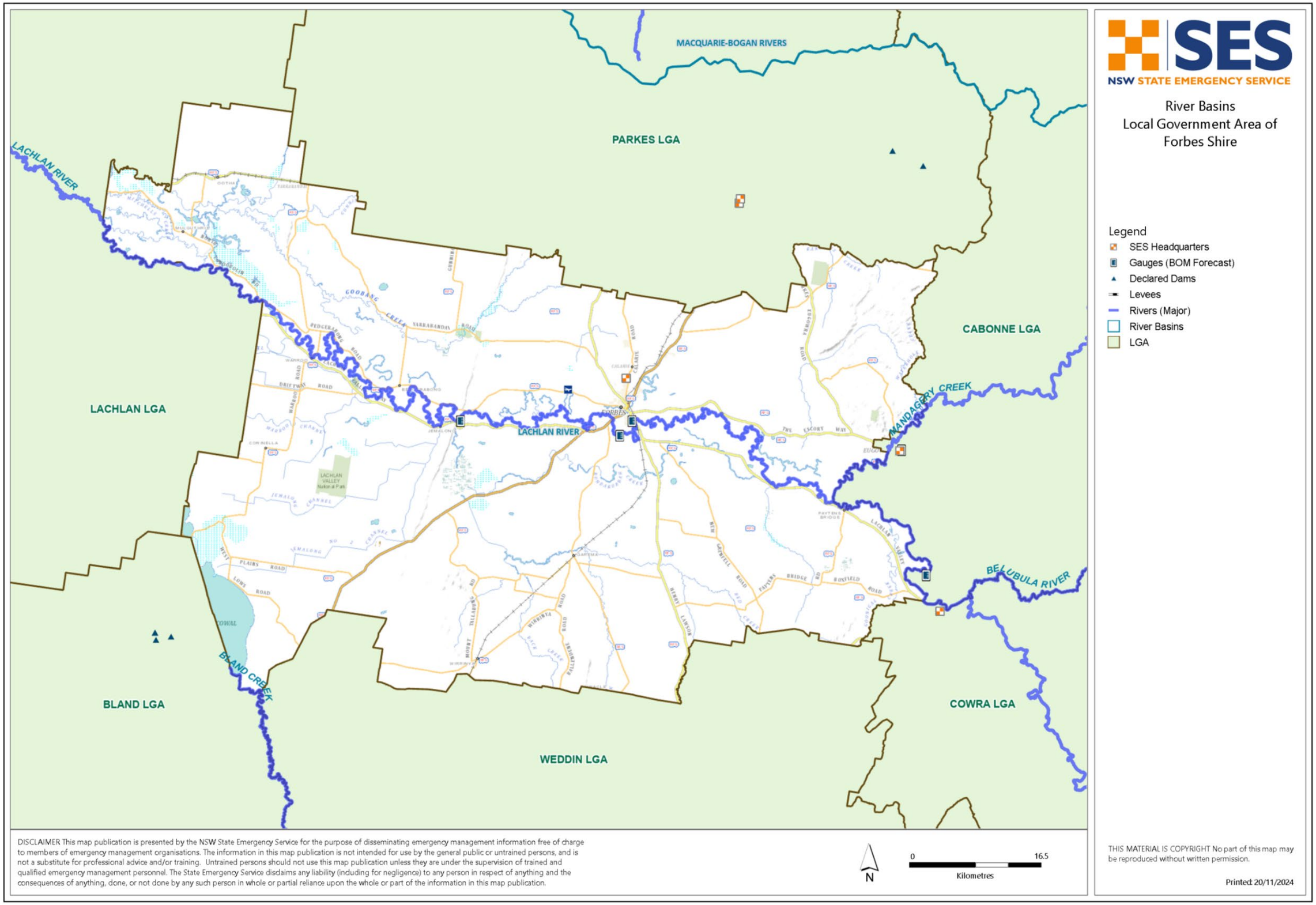
NSW STATE EMERGENCY SERVICE

Lachlan River Catchment




MACQUARIE-BOGAN RIVERS
PARKES LGA
LACHLAN RIVER
CABONNE LGA
LACHLAN LGA
LACHLAN RIVER
MANDAGERY CREEK
BELUBULA RIVER
BLAND CREEK
BLAND LGA
COWRA LGA
WEDDIN LGA
SES
NSW STATE EMERGENCY SERVICE
River Basins
Local Government Area of
Forbes Shire
Legend
SES Headquarters
Gauges (BOM Forecast)
Declared Dams
Levees
Rivers (Major)
River Basins
LGA
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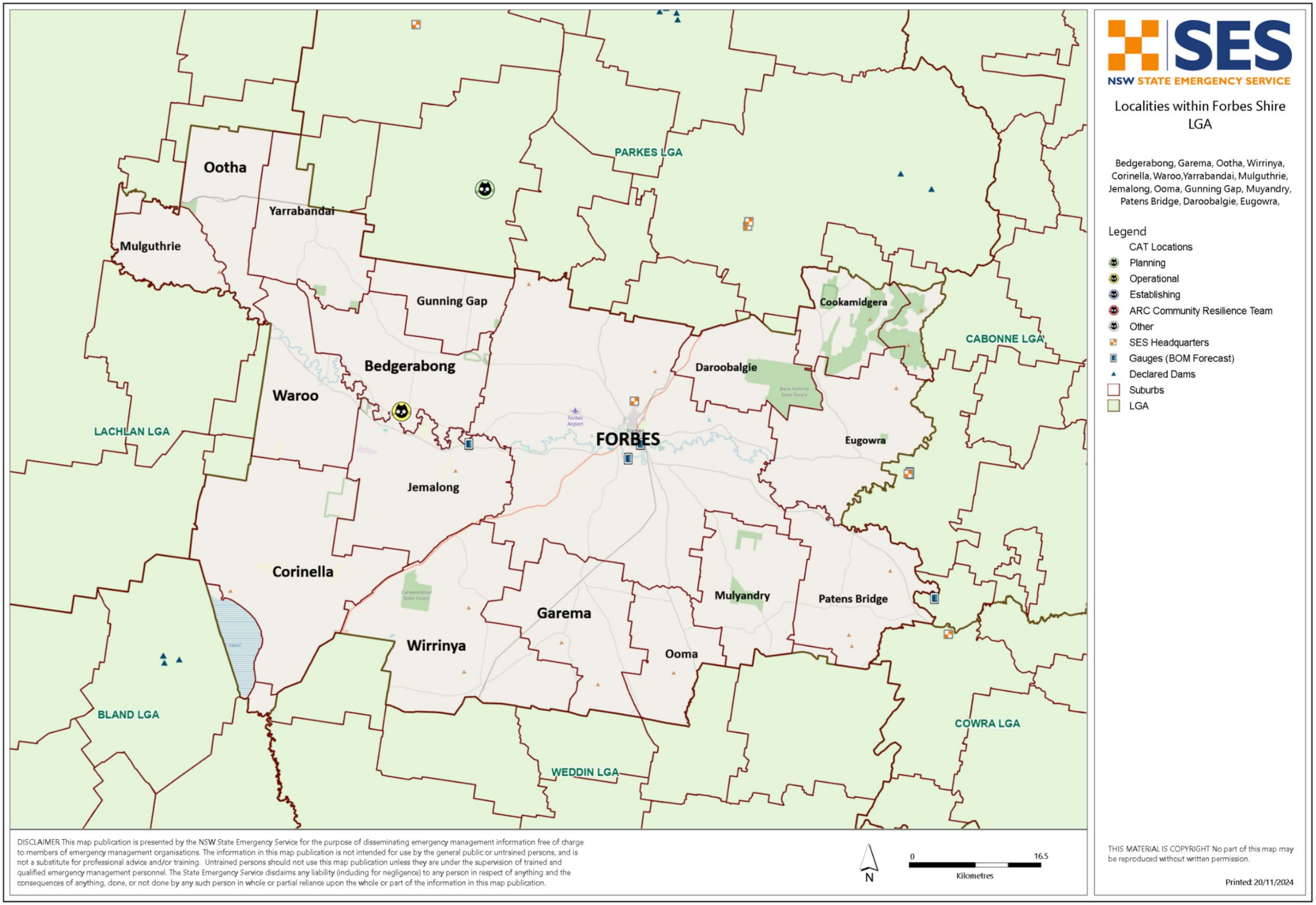
SES
NSW STATE EMERGENCY SERVICE
Localities within Forbes Shire LGA
Bedgerabong, Garema, Ootha, Wirrinya, Corinella, Waroo,Yarrabandai, Mulguthrie, Jemalong, Ooma, Gunning Gap, Muyandry, Patens Bridge, Daroobalgie, Eugowra,
Legend
CAT Locations
Planning
Operational
Establishing
ARC Community Resilience Team
Other
SES Headquarters
Gauges (BOM Forecast)
Declared Dams
Suburbs
LGA
Ootha
Yarrabandai
Mulguthrie
PARKES LGA
Gunning Gap
Cookamidgera
CABONNE LGA
Bedgerabong
Daroobalgie
Waroo
LACHLAN LGA
FORBES
Eugowra
Jemalong
Corinella
Mulyandry
Patens Bridge
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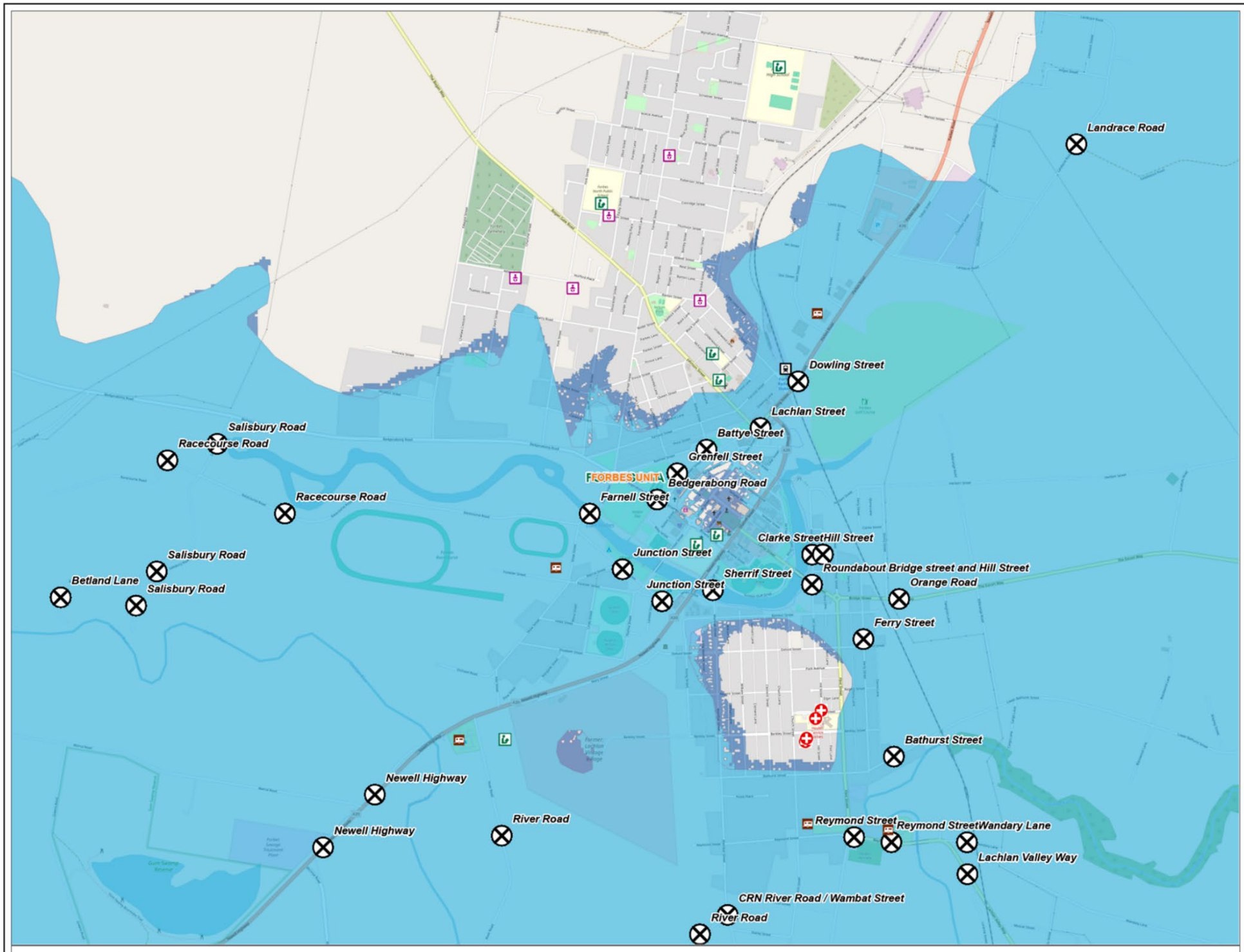

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Forbes Town Map

Legend
- Educational Facilities
- Child Care Facilities
- Health Care Facilities
- Aged Care Facilities
- Caravan Park / Camping
- Airports
- Rail Stations
- Flood Rescue Hotspots
- Road Closure Points
- SES Headquarters
- SES Zones
- SES Units
- LGA
- 1% AEP
- Probable Maximum Flood

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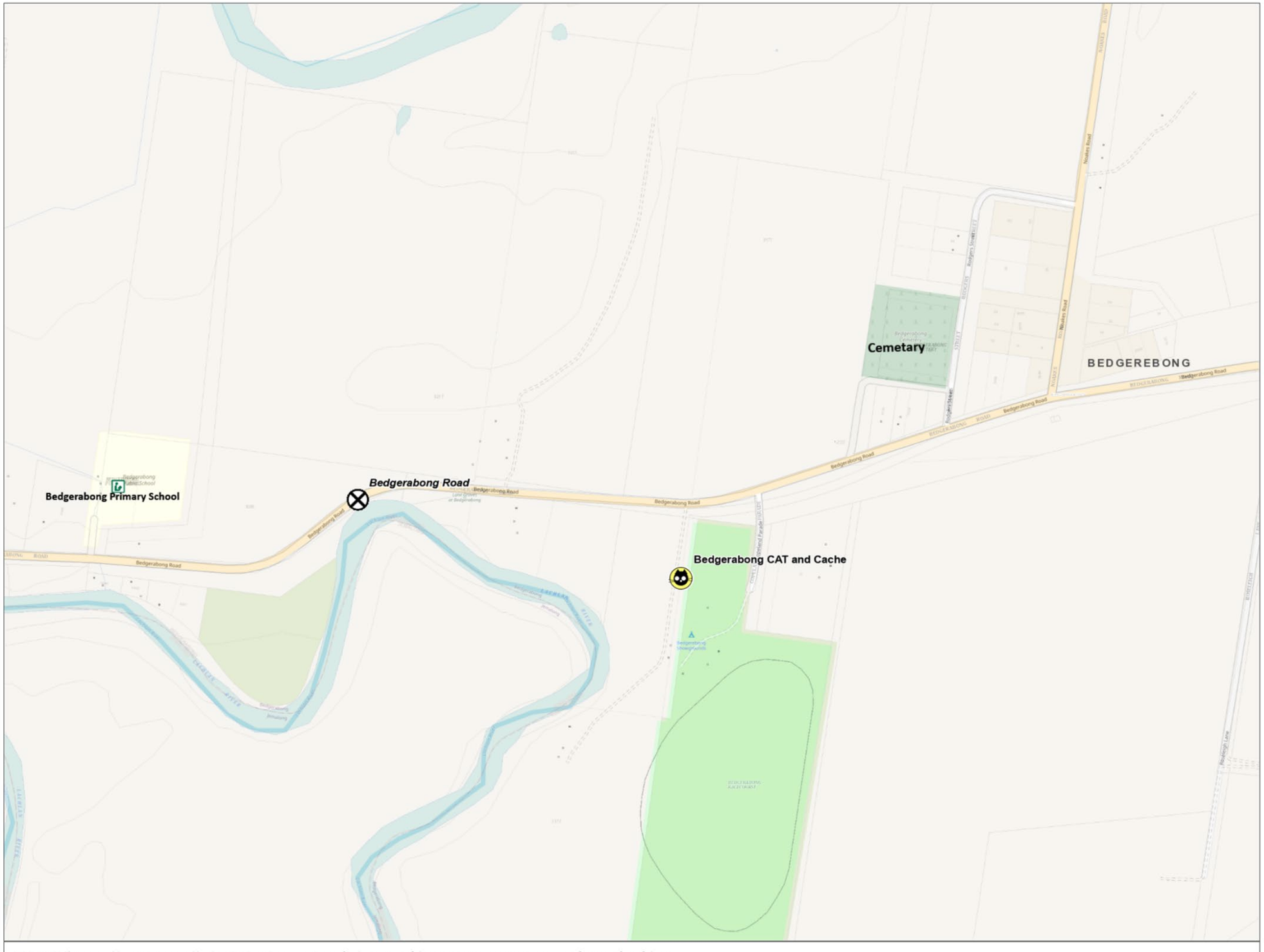

NSW STATE EMERGENCY SERVICE

Begerabong Village

Legend

- CAT Locations
- Planning
- Operational
- Establishing
- ARC Community Resilience Team
- Other
- Educational Facilities
- Road Closure Points
- SES Headquarters
- SES Units
- Levees
- Regional Towns

DISCLAIMER This map publication is presented by the NSW State Emergency Service for the purpose of disseminating emergency management information free of charge to members of emergency management organisations. The information in this map publication is not intended for use by the general public or untrained persons, and is not a substitute for professional advice and/or training. Untrained persons should not use this map publication unless they are under the supervision of trained and qualified emergency management personnel. The State Emergency Service disclaims any liability (including for negligence) to any person in respect of anything and the consequences of anything, done, or not done by any such person in whole or partial reliance upon the whole or part of the information in this map publication.

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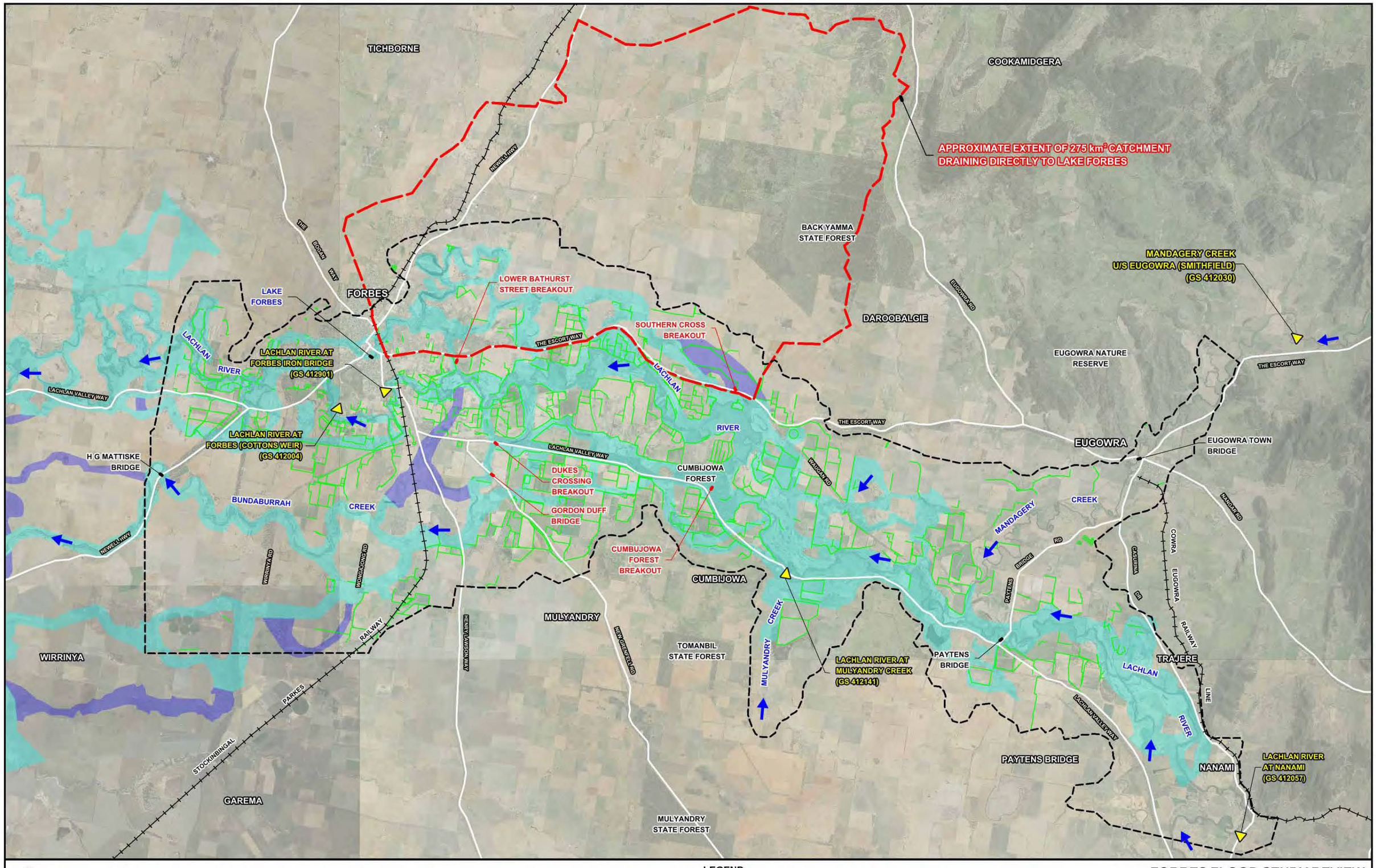
Printed: 11/02/2025



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Scale: 1:150,000

NOTE:
1. (Source: Lachlan River Floodplain Management Plan (DECCW, 2011))

Lyall & Associates

LEGEND

- Main Road
- Railway
- Catchment Boundary
- Existing Network of Levees and Irrigation Canal Embankments
- Extent of Flood Mapping at Forbes
- Rural Floodway Extent (1)
- High Level Rural Floodway Extent (1)
- WaterNSW Stream Gauge

FORBES FLOOD STUDY REVIEW

Figure 2.1
(Sheet 2 of 2)

DRAINAGE SYSTEM UPSTREAM OF FORBES

LIST OF REFERENCES

1. SES, NSW. Forbes Local Flood Plan. 2013.

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5. Don Tisdell. A summary of Lachlan River flood readings between Wyangala Dam and Jemalong Weir and eyewitness accounts of early flooding. Unknown.

6. SKM. Forbes Floodplain Management Report and Draft Floodplain Management Plan. Volumes 1 and 2. s.l. : Sinclair Knight Mertz, 1994.

7. NSW SES. 2016 Lachlan Flood observations. 2016.

8. DECCW. Lachlan River Gooloogong to Jemalong Gap Floodplain Management Plan. Sydney : Department of Environment, Climate Change and Water NSW, 2011.

9. Bureau of Statistics. Census 2021.

10. Department of Water Resources New South Wales. Forbes flood damage survey: August 1990 flood. 1992.

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SES RESPONSE ARRANGEMENTS FOR FORBES SHIRE

Volume 3 of the Forbes Shire Local Flood Plan

CONTENTS

VERSION LIST

The following table lists all previously approved versions of this Volume.

Description	Date
Forbes Shire Local Flood Plan – Annex C, Annex D, Annex E, Annex F and Annex G	September 2002

AMENDMENT LIST

Suggestions for amendments to this Volume should be forwarded to:

The Forbes Local Controller

NSW State Emergency Service

55 Matthews Street, PARKES, NSW, 2870

Amendments promulgated in the amendments list below have been entered in this Volume.

Amendment Number	Description	Updated by	Date

NSW STATE EMERGENCY SERVICE

FORBES SHIRE: FLOOD WARNING SYSTEMS AND ARRANGEMENTS

Volume 3, Chapter 1 of the Forbes Shire Local Flood Plan

(NSW SES Response Arrangements for Forbes Shire)

Last Update: **August 2017**

FloodSafe

AUTHORISATION

Forbes Shire: Flood Warning Systems and Arrangements has been prepared by the NSW State Emergency Service (NSW SES) as part of a comprehensive planning process.

Approved

Manager Emergency Risk Management

Date: 2-8-17

Approved

NSW SES Lachlan Region Controller

Date: 31.07.17

Tabled at LEMC Date: 24 August 2017

Document Issue: 3.1-07042014

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LIST OF TABLES

1. GAUGES MONITORED BY THE NSW SES FORBES LOCAL HEADQUARTERS

Table 1: Gauges monitored by the NSW SES Forbes Local Headquarters

Gauge Name	Type	AWRC No.	Bureau Gauge No.	Stream	Flood level classification in metres			Special Reading Arrangements	Owner
					MIN	MOD	MAJ		
Nanami*‡	Automatic	412057	565007	Lachlan River	7.4	9.7	10.7		NSW Office of Water
Mulyandry‡	Automatic	412141		Lachlan River	8.5	10.4	11.1		Forbes Shire Council
Forbes Iron Bridge*‡	Automatic	412901	65088	Lachlan	8.8	9.5	10.55		Forbes Shire Council
Cotton's Weir*‡	Automatic	412004	565003	Lachlan River	3.5	5.3	6.6		NSW Office of Water
Jemalong Weir (d/s)*	Automatic	412036	565000	Lachlan River	7.2	7.5	7.7		NSW Office of Water

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

NSW SES Local Flood Advices are provided for the gauges marked with a single cross (†).

The NSW SES holds a Flood Intelligence Card for the gauges marked with a double cross (‡)

2. DISSEMINATION OPTIONS FOR NSW SES FLOOD INFORMATION AND WARNING PRODUCTS

The NSW SES Lachlan Region Headquarters distributes NSW SES Flood Bulletins, NSW SES Evacuation Warnings and NSW SES Evacuation Orders to the following regional media outlets and agencies:

Television Stations:

Station	Location
Prime TV	Orange
ABC TV	Orange
WIN TV	Wollongong
Capital TV	Canberra

Radio Stations:

Station	Location	Frequency	Modulation
2GZ	Orange	105.1	FM
2CR ABC Central West	Orange	549	AM
2PK/ROK 95.5 FM	Parkes	95.5	FM
CADYAR 100.7 FM Community Radio	Cowra	100.7	FM
2LF ABC	Young	1350	AM
2LVR – Valley FM	Forbes	97.9	FM
2PK	Parkes	1404	AM

Newspapers:

Name	Location
Forbes Advocate	Forbes
The Champion Post	Parkes
The Land	Dubbo

Other Agencies:

As listed in Volume 1 of this Local Flood Plan.

FORBES SHIRE: NSW SES LOCALITY RESPONSE ARRANGEMENTS

Volume 3, Chapter 2 of the Forbes Shire Local Flood Plan

(NSW SES Response Arrangements for Forbes Shire)

Last Update: August 2017

AUTHORISATION

NSW SES Locality Response Arrangements in Forbes Shire has been prepared by the NSW State Emergency Service (NSW SES) as part of a comprehensive planning process.

Approved

Manager Emergency Risk Management

Date: 2-8-17

Approved

NSW SES Lachlan Region Controller

Date: 31.07.17

Tabled at LEMC Date: 24 August 2017

Document Issue: V3.2-07042014

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LIST OF TABLES

SECTOR OVERVIEW

Table 1: Overview of Sectors in the Forbes Shire LGA.

Sector Name	Community	Sector Basis	Total properties	Properties potentially at risk
Forbes – south sub sector	South Forbes (Muscat Street, Moselle Street and Wandary Lane/Road area) and Wongajong	Low flood island	Approximately 60 rural/semi-rural Approximately 200 urban properties	Approximately 60 at risk or inundation or isolation Approximately 35 at risk of inundation in a major flood, all at risk in a 1% AEP flood (10.8 metres)
Forbes – east sub sector	East of the railway line	Low flood island	Approximately 150 urban and rural	Approximately 150 urban and rural at risk of inundation
Forbes – west sub sector	Forbes West	Rising road access	Approximately 200 urban	Approximately 200 urban at risk of inundation
Forbes – north sub sector	North Forbes CBD	Rising road access and potentially high flood island in an extreme event High flood island	Approximately 500 urban residential and commercial	Approximately 400 urban residential and commercial at risk of inundation
Forbes - Camp Hill Sub Sector (high flood island area on map)	Camp Hill	High flood Island	Approximately 250	Sector at risk of isolation

1. FORBES SECTOR

1.1. FORBES RESPONSE ARRANGEMENTS

Refer to Volume 2: Hazard and Risk in Forbes Shire for more information about this Sector.

Sector Description	Forbes is located on either side of the Lachlan River and Lake Forbes. Almost 75% of the Forbes Shire population reside within the town of Forbes itself (1).		
Hazard	Riverine flooding from the Lachlan River. Areas surrounding the township are prone to overland flooding.		
Flood Affect Classification	South Forbes (Muscat Street, Moselle Street and Wandary Lane/Road area) - low flood island. North Forbes – rising road access and potentially high flood island. East of the railway line - low flood island Camp Hill - high flood island Forbes West – rising road access CBD - high flood island.		
At risk properties	>500	**Total number of properties within Sector/Community**	2989
Sector Control	Small-scale evacuations will be controlled by the NSW SES Forbes Local Controller. Should the evacuation operations escalate beyond the capabilities of local resources, control may be handed over to the NSW SES Lachlan Region Controller or appointed Incident Controller.		

Key Warning Gauge Name	**Name**	**AWRC No.**	**Min (m)**	**Mod (m)**	**Maj (m)**
	Forbes Iron Bridge	412901	8.8	9.5	10.55
	Cottons Weir	412004	3.5	5.3	6.6

General Strategy	• Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
	• Issue of early warning of flood level impacts and potential isolation.
	• Pre-deployment of sandbags to assist with property protection.
	• Evacuation of at risk population:
	  ○ Self-Evacuation to friends/family outside the impact area.
	  ○ Establishment of an Assembly Area/Evacuations Centre in consultation with the Welfare Services Functional Area Coordinator.
	  ○ Medical evacuation considerations.
	• Establish resupply operations where isolation has continued for several days.
	• Flood rescue where evacuation has failed, or where people have driven into floodwater.

Key Risks / Consequences	The key consequence in Forbes is the inundation of up to 500 properties. Flooding can be variable. The main transport routes are also prone to flooding and often results in a large number of flood rescues of people driving into the floodwater. Floodwaters are particularly hazardous in the Battye Street floodway area due to fast flowing flood waters moving from Lake Forbes into the floodway via Lawler Street.
Information and Warnings	On the receipt of flood warnings predicting peak heights of 9.30 metres and above at the Forbes Iron Bridge gauge; the Forbes SES Local Controller will consult as necessary to determine the level of the threat and the need to consider. As soon as possible after the decision to evacuate is made, the Forbes SES Local Controller (or Incident Controller) will

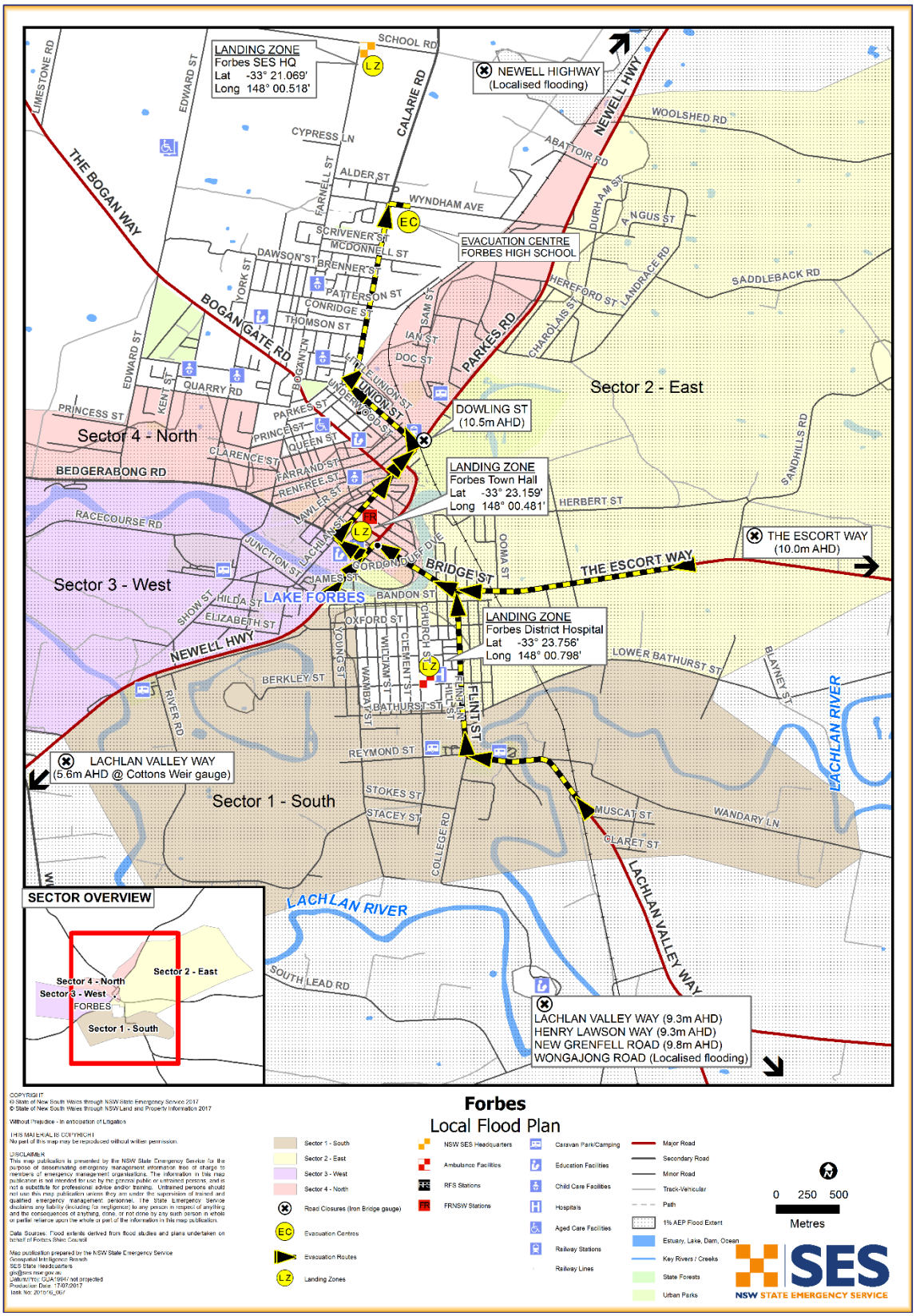
	issue evacuation warnings to the 'at risk' residents, indicating what people should do before evacuating and when actually doing so. In most events, flood travel times between Wyangala Dam and Forbes average about three days. Consequently, accurate river height predictions at the Iron Bridge gauge can usually be made up to two days in advance. NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Lachlan Region will issue timely, relevant and tailored information to the public in the following formats: NSW SES Bulletins Flood Watch Flood Warning Equipment, Livestock and Aquaculture Warnings Media Release such as– Isolation Warnings Evacuation Warning Evacuation Order All Clear Sequenced door knocking Media briefing Interagency Local Emergency Management Committee (LEMC) briefings Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.
	Doorknocking will be the principle means of informing residents of the need to evacuate. This will be supported by the use of Emergency Alert and media.
	The Forbes Shire Council has an SMS "opt in" arrangement with the local residents (if residents choose to subscribe). Local Forbes NSW SES can request the use of the use of this system to assist residents in receiving official information via SMS other than evacuation products via Emergency Alert.
Property Protection	***Specific property protection measures:*** NSW SES Forbes Unit assists elderly and infirm residents in need of assistance. A sandbagging facility is also established at the Unit Headquarters in School Road, Forbes for Forbes community to pick up sandbagging resources.
	Protection of essential infrastructure: Council arranges for protection of essential infrastructure in the Forbes community.
Evacuation and/or Isolation Triggers	Historical evidence of flooding in Forbes indicates that: • **Prediction to reach and/or exceed 9.3 metres:** Generally, the first area requiring evacuation within the Shire would be the caravan park located adjacent to the Lachlan River near the Forbes Iron Bridge. Some vans may need to be moved from low-lying areas in the park to higher ground at gauge heights of 9.30 metres or greater on the Forbes Iron Bridge gauge. Inundation of this caravan park begins at 10.20 metres. If a peak of 10.20 metres or greater is predicted, evacuation of the entire caravan park must be completed before this height is reached. (Note: Further evacuations may be required from low-lying areas in the three remaining caravan parks within Forbes). A property opposite the Caravan Park on Reymond Street also become isolated and inundated at around 9.3 metres, requiring evacuation (Forbes South Sub Sector). • **9.3 metres, if prediction to reach and/or exceed 10.4 metres**: Some evacuations may be required from the South Forbes (Muscat Street, Moselle Street and Wandary Lane/Road) and Wongajong (which can be isolated by Bundaburrah Creek) areas if a peak of 10.40 metres or greater is predicted.

	Residents wishing to evacuate from this area to Forbes will need to be complete their movements before the Lachlan Valley Way and Wongajong Road closes at approximately **9.30 metres** on the Forbes Iron Bridge gauge (Forbes South Sub Sector). • **Prediction to reach and/or exceed 10.35 metres**: If peak heights of 10.35 metres or greater are expected, evacuations may be required from a number of properties in Rifle Range Road, Forbes (Forbes East Sector). • **Prediction to reach and/or exceed 10.38 metres**: Residents in low-lying properties in Cowra Road, the bottom of Browne Street, Hill Street and Lower Rankin Street may need to be evacuated if a peak flood height of 10.38 metres or greater is predicted. • **Prediction to reach and/or exceed 10.4 metres:** Partial evacuations may also be required from a number of properties in Ferry Street, Clark Street (both Forbes East Sub Sector), Mole Lane (Forbes South Sub Sector) and other low-lying streets in the town if a peak height of 10.40 metres or above is expected. • **Prediction to reach and/or exceed 10.5 metres:** Major inundation of the town usually occurs once flows commence in the Battye Street floodway at heights of approximately 10.50 metres or greater on the Forbes Iron Bridge gauge, requiring evacuation of many businesses in the central business district. Evacuations from this area and the section of Forbes between Lake Forbes and the Newell Highway will need to be completed before water commences to flow across Dowling Street (Forbes North Sub Sector). • **Prediction to reach and/or exceed 10.7 metres:** The area to the west of Forbes, including Racecourse Road, Warrul Road, River Road and Gum Swamp Road may require evacuation (Forbes West Sub Sector). • **Prediction to reach and/or exceed 10.8 metres:** If peak heights of 10.80 metres or greater are predicted at the Forbes Iron Bridge gauge, the evacuation of up to 500 homes throughout the Shire may be required. Caution should be taken, as not all floods are the same and the consequences at this height are variable (e.g. dam outflow, vegetation, land use changes, rural levees etc.) (all sub sectors).
Sequencing of evacuation	During major flooding the town of Forbes can be divided into three areas by flood waters (above 10.55 metres or greater on the Forbes Iron Bridge gauge, variable between floods). Access between these sections of town is usually only possible by flood boat or rotary wing aircraft, although heavy truck and Australian Defence Force vehicles appropriate for partial submersion have been used in the past.
Evacuation Routes	Formal evacuation routes will be established at the time of flooding as there are multiple routes available for residents to the evacuation centre, including: • **South Forbes:** Along Lachlan Valley Way, Reymond Street, Flint Street, Bridge Street, Newell Highway, Browne Street, Lachlan Street and Dowling Street to North Forbes • **East Forbes:** The Escort Way, Bridge Street, Newell Highway, Browne Street, Lachlan Street and Dowling Street to North Forbes • **Forbes CBD:** Browne Street, Lachlan Street and Dowling Street to North Forbes • **West Forbes:** Newell Highway, Browne Street, Lachlan Street and Dowling Street to North Forbes Note: due to the variability of flooding, these routes are subject to change.
Evacuation Route Closure	• The Newell Highway may be closed in the vicinity of the Golf Course by major flooding. If this occurs, evacuees from the northern and north western parts of Forbes may still have access to the Highway and Parkes via Wyndham Avenue, until the highway is closed by Billabong Creek water at Tichbourne. Access to the evacuation centre at Forbes High School, North Forbes is still available for these residents.

	• The section of town between Lake Forbes and the Battye Street floodway becomes an island when the road north is cut at Dowling Street (NOTE: the Newell Highway is usually already closed on the southern side of the Lachlan River at minor flood levels). Evacuations from this area would need to be completed before water commences to flow across Dowling Street (at any time after the major flood level at the Forbes Iron Bridge gauge is reached). • Residents in the area between the Newell Highway and Lake Forbes would also need to complete any necessary evacuations before water commences to flow over Dowling Street due to the closure of the Newell Highway to the south. • The southern residential area (Camp Hill) can also become an island when roads to the north linking with the Camp Street Bridge are inundated. The Forbes – Gooloogong Road closes at Dukes crossing at heights of 9.3 metres or above on the Forbes Iron Bridge gauge and the Orange Road to Eugowra closes at the Southern Cross. In addition, the section of Oxford Street where it intersects with the Newell Highway also becomes un-trafficable due to flood waters. Residents from south Forbes wishing to evacuate to areas outside of Forbes will therefore need to complete evacuation early if major flooding is predicted in Forbes. • Wongajong residents will need to complete evacuations before access to Forbes is lost when water crosses the Forbes – Wongajong Road at the Dog and Duck crossing at heights of approximately 9.3 metres or above on the Forbes Iron Bridge gauge. • Residents in the Muscat Street, Moselle Street and Wandary Lane/Road area will need to complete evacuation prior to floodwater cutting Wandary Lane/Road and Lachlan Valley Way. • The roads from Forbes to Grenfell, Condobolin, Marsden and Bogan Gate will also progressively close as flood levels increase.
Method of Evacuation	Self-evacuation, with residents using their own transport is the primary means of evacuation in the Forbes community. Assistance for elderly and infirm is arranged through the EOC.
Evacuation Centre/Assembly Point	Any or all of the following sites may be used as evacuation centres: • Forbes High School, Wyndham Avenue, Forbes (in North Forbes). • Bedgerebong Community Hall, Bedgerebong.
Large scale evacuations	Large scale evacuations are unlikely in Forbes.
Rescue	The main roads surrounding Forbes become flood rescue hot spots, including Henry Lawson Way (at Muddy Lagoon), Lachlan Valley Way (at Dukes Crossing), Yarrabandai Road (at four ways) and The Escort Way (Southern Cross breakout).
	As floodwater can be quite wide and shallow, flood boat operation can be challenging and most flood rescues are performed by flood technicians entering the water by foot with the ArkAngel.
Resupply	Flood waters can remain in the Forbes Shire for several weeks in a major flood event.
	During major flooding, the villages and localities of Bedgerebong, Warroo, Jemalong and Corinella may be isolated by road for periods of up to five weeks as occurred during the flood of August 1990, requiring resupply. Road closures can also cut access between Forbes and the localities of Wirrinya, Garema, Grenfell and West Wyalong for up to two weeks, which may require resupply - noting Grenfell and West Wyalong are in the Bland and Weddin Shire LGA's. The town of Forbes itself may also be divided into three separate sections restricting vehicular access between north Forbes, the central business district and south Forbes. During such periods, there will be a requirement for the resupply of essential supplies.

	Table 2, in Volume 2 provides information about isolated communities in the Forbes area and potential periods of isolation. A flowchart illustrating the Resupply process is shown in Volume 1 of the Local Flood Plan, Attachment 1.
Aircraft Management	***Helicopter Landing Points:*** Suitable landing points are located at: ▪ NSW SES Local Headquarters, Cnr of Farnell Street and School Road, Forbes (S33° 21.069'; E148°00.518') ▪ Forbes District Hospital in Elgin Street (S33°23.756'; E148°00.798) ▪ The Town Hall in Harold Street (S33°23.159'; E148°00.481') ▪ Near the Community Hall at Bedgerebong (S33° 21'48'', E147° 41'37''). ***Airports:*** ▪ Parkes Airport is located approximately 36 kilometres to the north east of Forbes (-33.136741°N; 148.231345°E). Access may be lost in a major flood if the Newell Highway between Forbes and Parkes is cut. ▪ Forbes Airport can be utilised until access is lost during floods (when Bedgerebong Road is cut – from around 10.44 metres).
Other	River Arts Festival, Spring Races and National BBQ championships are held in October, causing a larger influx of tourists.

1.2. FORBES SECTOR MAP



FORBES SHIRE NSW SES
CARAVAN PARK ARRANGEMENTS

Volume 3, Chapter 4 of the Forbes Shire Local Flood Plan

(NSW SES Response Arrangements for Forbes Shire)

Last Update: August 2017

AUTHORISATION

The Forbes Shire NSW SES Caravan Park Arrangements have been prepared by the NSW State Emergency Service (NSW SES) as part of a comprehensive planning process.

Approved

Manager Emergency Risk Management

Date: 2-8-17

Approved

NSW SES Lachlan Region Controller

Date: 31.07.17

Tabled at LEMC Date: 24 August 2017

Document Issue: V3.3-21102014

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LIST OF TABLES

1 ARRANGEMENTS FOR THE EVACUATION OF CARAVAN PARKS AND THE RELOCATION OF MOVABLE DWELLINGS

1.1 GENERAL

1.1.1 The following caravan parks are flood liable:

a. Big4 Forbes Holiday Park

b. Country Club Caravan Park

c. Apex Riverside Tourist Park

d. Forbes River Meadows Caravan Park

1.1.2 For more information on individual caravan parks see Table 1 at the end of this Chapter.

1.2 ADVISING PROCEDURES

1.2.1 Caravan Park proprietors will ensure that the owners and occupiers of movable dwellings are:

a. Made aware that the caravan park is flood liable by:

- Providing a written notice to occupiers taking up residence. The notice will indicate that the caravan park is liable to flooding and designate the location of flood liable land within the park (1).
- Displaying this notice and the emergency arrangements for the Caravan Park prominently in the park.

b. Made aware that if they are expecting to be absent for extended periods, they should:

- 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).

c. Informed of Flood Warning Information. At this time, occupiers will be advised to:

- 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 relocation.

1.2.2 The NSW SES Forbes Shire Local Controller will ensure that the managers of caravan parks are advised of Flood Information (described in Volume 1 of the Forbes Shire Local Flood Plan).

1.3 EVACUATION OF OCCUPANTS AND RELOCATION OF MOVEABLE DWELLINGS

1.3.1 When an evacuation order is given caravan park occupants should follow the flood evacuation procedures for the park under the direction of the caravan park management. This should include advice to:

a. Isolate power to moveable dwellings.

b. Collect personal papers, medicines, a change of clothing, toiletries and bedclothes.

c. Lift the other contents in any remaining dwellings as high as possible.

d. Move to friends, relatives or a designated evacuation centre if they have their own transport, or move to the caravan office to await transport.

e. If undertaking self-managed evacuation, register their movements with the caravan park management upon leaving the park.

1.3.2 Where possible, movable dwellings that can be moved will be relocated by their owners. Park managers will arrange for the relocation of movable dwellings as required. Council and NSW SES personnel may assist if required. Vans are to be moved to the locations outlined in Tables 1 at the end of this Chapter.

1.3.3 Caravan park managers will:

a. Secure any movable dwellings that are not able to be relocated to prevent floatation.

b. Ensure that their caravan park is capable of being evacuated in a timely and safe manner.

c. Advise the NSW SES Forbes Shire Local Controller of:

- The number of people requiring transport.
- Details of any medical evacuations required.
- Whether additional assistance is required to effect the evacuation.

d. Check that all residents and visitors are accounted for.

e. Inform the NSW SES Forbes Shire Local Controller when the evacuation of the caravan park has been completed.

f. Provide the NSW SES Forbes Shire Local Controller with a register of people that have been evacuated.

1.4 RETURN OF OCCUPANTS AND MOVEABLE DWELLINGS

1.4.1 The NSW SES Forbes Shire Local Controller, using council resources as necessary, will advise when it is safe for the caravan parks to be re-occupied.

1.4.2 Moveable dwellings will be returned back to the caravan park(s) by owners or by vehicles and drivers arranged by the park managers.

1.4.3 Council and NSW SES personnel may assist by request where resources are available.

Table 1: Caravan Parks at risk of inundation and/or isolation from flooding, with gauge heights relative to the Forbes Iron Bridge gauge (FIB).

Name	Address/ Location description	Town/ Sector	Number of sites	Risk	Evacuation route closure	Moveable dwelling relocation location	Evacuation centre	Notes
Big4 Forbes Holiday Park	141 Flint Street	Forbes South sub sector	14 cabins 26 powered sites 6 unpowered sites	At risk of inundation in a 1% AEP flood (10.8 metres at FIB)	When Battye Street floodway is active (variable heights from 10.5 metres)	Relocate away from Forbes (for example Parkes)	Evacuation Centre established at North Forbes High School	No peak seasons
Country Club Caravan Park	33/37 Sam Street	Forbes East sub sector	19 cabins 20 powered sites 5 unpowered sites	Low lying areas at risk of flooding from 9.3 metres including around 11 cabins, with the remainder from around 10.2 metres (variable height). About a 30cm of water was through the caravan park in 2016	All evacuation roads may be closed in a 1% AEP flood (10.8 metres)	Relocate away from Forbes (for example Parkes)	Evacuation Centre established at North Forbes High School	No peak seasons
Apex Riverside Tourist Park	88 Reymond Street	Forbes South sub sector	4 cabins 7 motel rooms 45 powered sites 15 unpowered	9.1 metres (at FIB) low lying areas of the caravan park flooded. 10.2 metres (at FIB) further areas flooded.	When Battye Street floodway is active (variable heights from 10.5 metres)	Relocate away from Forbes (for example Parkes)	Evacuation Centre established at North Forbes High School	No peak seasons
Forbes River Meadows Caravan Park	Cnr Newell Highway and River Road	Forbes West sub sector	14 cabins 25 powered sites 20 unpowered sites	At risk of inundation in a 1% AEP flood (10.8 metres at FIB). 30cm of water out the front of the property was held back by sandbags in 2016	All evacuation roads may be closed in a 1% AEP flood (10.8 metres)	Relocate away from Forbes (for example Parkes)	Evacuation Centre established at North Forbes High School	No peak seasons

LIST OF REFERENCES

1. **NSW Government.** *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005 Part 3 Division 3 Subdivision 7 Clause 123.* 2005.