

Bland Shire

Local Flood Emergency Sub Plan



BLAND SHIRE FLOOD EMERGENCY SUB PLAN

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

Volume 1 of the Bland Shire Flood Emergency Sub Plan

Endorsed by the Bland Shire Emergency Management Committee

13 March 2024

Version 2.0

AUTHORISATION

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

Authorised

Signature:



NSW SES Local/Unit Commander

Print Name:

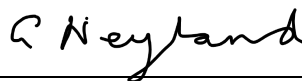
Delwyn Wright

Date:

13/03/2024

Endorsed

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Chair, Local Emergency Management Committee

Print Name:

Glenn Neyland

Date:

13/03/2024

VERSION HISTORY

Version Number	Description	Date
1.0	Bland Shire Flood Emergency Sub Plan	July 2013

AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to:

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Amendments in the list below have been entered in this plan.

Amendment Number	Description	Updated by	Date

DISTRIBUTION LIST

Available for general use and distribution on the NSW State Emergency Service website
www.ses.nsw.gov.au

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1 OUTLINE AND SCOPE

1.1 PURPOSE

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

1.2 AUTHORITY

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

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

1.3 ACTIVATION

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

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

1.4 SCOPE

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

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

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

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

1.4.5 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 Emergency 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.
 - h. Protection of the environment and conservation values considering the cultural, biodiversity and social values of the environment.

1.6 KEY PRINCIPLES

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

1.7 ROLES AND RESPONSIBILITIES

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

1.8 PLAN MAINTENANCE AND REVIEW

- 1.8.1 NSW SES will maintain the currency of this plan by:
- a. Ensuring that all supporting emergency services and functional areas, organisations and officers mentioned in it are aware of their roles and responsibilities.
 - b. Conduct a minimum of one exercise every five years or within two years of the plan being reviewed.

- c. Reviewing the contents of the plan:
 - When there are changes which alter agreed plan arrangements.
 - When changes to land use strategic plans and policies increase the population at risk.
 - After a flood including recommendations from after action reviews, reports, or inquiries.
 - As determined by the NSW SES Commissioner.
- d. The plan is to be reviewed no less frequently than every five years or after a significant flood event.

1.9 SUPPLEMENTARY DOCUMENTS

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

2 OVERVIEW OF NSW FLOOD HAZARD AND RISK

2.1 THE FLOOD THREAT

- 2.1.1 NSW SES maintains information on the nature of flooding and effects of flooding on the community in the Bland Shire LGA. This is outlined in Volume 2 – Hazard and Risk in Bland Shire.
- 2.1.2 Declared dams in or upstream of the Bland Shire Local Government Area.

Dam Name	Owner	High Risk Dam
Cowal Gold Mine Reserve D9	Evolution Mining Ltd	No
Cowal Northern Tailings Dam	Evolution Mining Ltd	No
Cowal Southern Tailings Dam	Evolution Mining Ltd	No

3 PREVENTION/ MITIGATION

3.1 INTRODUCTION

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

3.2 LAND USE PLANNING

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

Actions:

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

3.3 FLOODPLAIN RISK MANAGEMENT

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

Actions:

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

4 PREPARATION

4.1 INTRODUCTION

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

4.2 FLOOD EMERGENCY PLANNING

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

Actions:

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

4.2.2 Local EMPLAN Consequence Management Guides (CMG's) for flood are not required for communities covered by NSW SES Local Flood Emergency Sub Plans

however may be utilised in place of Local Flood Emergency Sub Plan if agreed to by NSW SES.

4.3 FLOOD INTELLIGENCE SYSTEMS

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

Actions:

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

4.4 DEVELOPMENT OF WARNING SYSTEMS

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

Actions:

- a. All levels of government work in partnership to develop and maintain flood warning infrastructure.
- b. NSW SES maintains a list of the requirements for flood warnings for flood gauges in NSW (including flood classifications, warning times required and key statistics) and can be found in the supplementary document to the NSW State Flood Plan (see Section 1.9). Gauges of relevance within the Bland Shire LGA are also listed in Volume 3 of this plan.
- c. NSW SES will recommend new warning services and changes to warning alert levels for gauges to the NSW and ACT Flood Warning Consultative Committee.
- d. The State Government, in partnership with Local Government, is responsible for developing and maintaining flash flood warning systems for local catchments where required.
- e. Dam Owners will provide Dam Emergency Plans (where required) and consult with NSW SES on alert levels and messaging. Alert level definitions are listed in Dam Emergency Plans.
- f. NSW SES maintains a dedicated dam failure hotline and procedures to ensure priority dissemination of dam failure warnings.
- g. NSW SES develops and maintains warning and flood information products by:
 - Utilising flood intelligence data.
 - Developing warning and flood information products.
 - Continuously reviewing warning and flood information products.
 - Consulting with affected communities, key stakeholders, Dam Safety NSW and the NSW and ACT Flood Warning Consultative Committee and maintains Operational Readiness.

- Participating in the development of public information and warning systems.
- h. Gauge owners adequately maintain flood warning gauges and systems, including those identified in the 'Service Level Specification' maintained by the Bureau of Meteorology (Bureau) and those identified in the 'Provision and Requirements for Flood Warning in New South Wales' maintained by NSW SES.

4.5 BRIEFING, TRAINING AND EXERCISING

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

Actions:

- a. NSW SES will consult stakeholders throughout the development of plans.
- b. NSW SES will inform stakeholders of content changes after revisions.
- c. NSW SES will ensure their facilities and resources are maintained and operationally ready.
- d. NSW SES will train personnel for their expected flood operation roles.
- e. NSW SES will regularly brief stakeholders on the exercise arrangements contained in the NSW Flood Emergency Sub Plan.

4.6 COMMUNITY RESILIENCE TO FLOODING

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

Actions:

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

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

Actions:

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

- e. Collaborate with community sector and recognise the needs of individuals within communities who have an increased susceptibility during floods.

5 RESPONSE

5.1 INTRODUCTION

5.1.1 Flood response operations will begin:

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

5.2 INCIDENT MANAGEMENT ARRANGEMENTS

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

Actions:

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

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

Actions:

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

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

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

Actions:

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

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

Actions:

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

5.3 USE OF INFORMATION AND COLLECTION OF INTELLIGENCE

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

Actions:

- 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.
- All supporting emergency services and functional areas and Council will accurately record and report information relevant to their activities and any real time flood information (including road closure information) to the NSW SES Incident Controller. This may be in the form of a combined Emergency Operations Centre (EOC) report, or direct from agencies where an EOC has not been established.
- NSW SES may establish and operate a Joint Intelligence Unit to coordinate the collection, collation, interpretation, mapping, actioning and dissemination of information.

- d. Reconnaissance, mapping, damage assessments, intelligence validation and post flood evaluation will be coordinated by NSW SES. This may occur post impact and continue into the recovery phase.
- e. NSW SES may request Engineering to assist with the gathering of flood intelligence including (not limited to) maximum flood extents, peak flood heights, recording major flood damage at key high velocity locations and preparation of After-Flood Report.

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

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

5.4 PROVISION OF INFORMATION AND WARNINGS TO THE COMMUNITY

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

Actions:

- a. The Bureau issues public weather and flood warning products before and during a flood. These may include:
 - Severe Thunderstorm Warnings – Detailed - issued for all capital cities and surrounding areas when individual severe thunderstorms are within range of the capital city radars.
 - Severe Thunderstorm Warnings - Broad-based - issued for the entire Australian State or territories affected highlighting broad areas where severe storms may occur within the next 3 hours.
 - Severe Weather Warnings with reference to heavy rainfall and/or storm surge.
 - Flood Watches.
 - Flood Warnings.
- b. Dam Owners will utilise the Dam Emergency Plan to provide warnings and information to NSW SES and communities (where appropriate).
- c. NSW SES Incident Controllers will issue the following NSW SES Flood Warnings aligning to the Australian Warning System:
 - Advice
 - Watch and Act
 - Emergency Warning
- d. NSW SES liaises with the Bureau to discuss the development of flood warnings as required.
- e. NSW SES provides alerts and deliver flood information to affected communities using a combination of public information.
- f. NSW SES may request supporting agencies redistribute NSW SES alerts and information, including through the provision of doorknocking teams.

- g. Road closure information will be provided to the community through the following agencies/methods:
 - Local Government websites.
 - Transport for NSW 'Live Traffic' website: www.livetraffic.com or 'Transport Info Line': 131 500. VMS messaging on roadways may also be used to advise motorists.
- h. The Public Information and Inquiry Centre will be established by NSW Police Force where required to provide information regarding evacuees and emergency information. Contact details will be broadcast once the centre is established.
- i. The Disaster Welfare Assistance Line will be established by Disaster Welfare Services where required to provide information on welfare services and assistance. Assistance line contact details will be broadcast once Disaster Welfare Services commence.

5.5 PROTECTION OF PROPERTY

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

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

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

5.6 ROAD AND TRAFFIC CONTROL

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

Actions:

- a. Bland Shire Council will coordinate the closure and reopening of council managed roads once inspections have been carried out by the relevant authority.
- b. Transport for NSW will coordinate the closure and reopening of the state road network.
- c. NSW Police Force may close and re-open roads but will normally only do so (if the Bland 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 Emergency Sub 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, utility services and lifelines.

Actions:

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

5.8 EVACUATION

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

5.8.2 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.
 - Evacuation of people where essential energy and/or utility services are likely to fail or where buildings have been or may be made uninhabitable.
- b. NSW SES will consider the following in evacuation decisions:
 - Duration of evacuation.
 - Characteristics of the community.
 - Numbers requiring evacuation.
 - Availability of evacuation routes and transport.
 - The ability for existing levees or other flood protection works to fulfil their intended function.
 - Time available for evacuation.
 - Evacuee management requirements.
 - Resources and delivery of evacuation information.
 - Length of isolation.
- c. NSW SES Incident Controllers, planning and intelligence officers will carefully consider the risks involved in conducting evacuations.
- d. All evacuation decisions will be made as per the current NSW SES policies and procedures, and consistent with the NSW Evacuation Management Guidelines.
- e. Potential Evacuation Centres are located in Volume 3 / Local EMPLAN.
- f. 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 Commissioner (or delegate) will warn communities to prepare for a possible evacuation, where circumstances allow such lead time.
- c. The NSW SES Commissioner (or delegate) will order any necessary evacuations and provide information to the community about when and how to evacuate.
- d. Support to evacuation operations may be requested from other emergency services and supporting agencies using arrangements in the local EMPLAN and supporting plans.
- e. The Health Services Functional Area will coordinate the evacuation of hospitals, health centres and aged care facilities (including nursing homes) in consultation with NSW SES and Welfare Services.

- f. School administration offices (Government and Private) will coordinate the evacuation of schools in consultation with NSW SES and Welfare Services, if not already closed.
- g. Caravan Park proprietors will inform the NSW SES Incident Controller when caravan park evacuations have been completed.
- h. People who are reluctant or refuse to comply with any Emergency Warning will be referred to NSW Police Force.

5.9 EVACUEE MANAGEMENT AND WELFARE

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

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

Actions:

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

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

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

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

Actions:

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

5.10 FLOOD RESCUE

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

Actions:

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

5.11 RESUPPLY

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

Actions:

- a. NSW SES will advise communities and businesses if flood predictions indicate that areas are likely to become isolated, and indicative timeframes where possible.
- b. Retailers should be advised to ensure sufficient stock is available for the duration of the flood.

- c. When isolation occurs, NSW SES will establish loading points where retailers can instruct suppliers to deliver goods.
- d. NSW SES will endeavour to support the delivery of mail to isolated communities but may not be able to do so according to normal Australia Post timetables.
- e. NSW SES will assist hospitals with resupply of linen and other consumables where able.
- f. NSW SES may request resupply assistance from supporting agencies.
- g. NSW SES may conduct resupply operations as per the designated resupply plan for the event.
- h. Where additional supplies are required, Engineering Services Functional Area will be requested to coordinate the supply of goods and services in response to and recovery from the emergency.

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

Actions:

- a. When requested, NSW SES will establish a resupply schedule and coordinate the resupply for isolated rural properties.
- b. NSW SES will provide local suppliers with designated loading points. Resupply items are to be packaged by the supplier.
- c. Isolated households unable to afford resupply items will be referred to the Welfare Services Functional Area for assistance.

5.12 RETURN

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

Actions:

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

5.13 END OF RESPONSE OPERATIONS

5.13.1 **Strategy:** Conclude response operations.

Actions:

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

5.14 POST IMPACT ACTIONS

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

Actions:

- a. NSW SES will continue to engage with communities after significant floods through convening one or more community forums, workshops or other opportunities to provide communities a chance to provide feedback, address any concerns and provide input into the recovery process. These will typically include other agencies such as the Bureau, Welfare Services and Bland Shire Council representatives.
- b. NSW SES will conduct After Action Reviews, at the conclusion of response operations, which will involve all stakeholders. Findings will be shared and incorporated into improved disaster resilience planning.
- c. NSW SES will provide information and data throughout the emergency response to inform community recovery. A report will be developed at the request of the SERCON at the conclusion of the response within an area. Should a response summary report be required it will include the following:
 - The emergency action plan in place at conclusion of the response emphasising any continuing activities including community meetings/ engagement activities.
 - Resources allocated to the emergency response and associated exit strategies.
 - Details of any areas or situations with potential to re-escalate the emergency.

- A recommendation for the conclusion of NSW SES as lead agency to transition to NSW Reconstruction Authority as the lead agency for Recovery.
- Any actions that are incomplete or outstanding.
- Damage Assessment Data and Information obtained throughout the response phase which will further support the long-term recovery of communities.

d. NSW SES will undertake/coordinate a comprehensive review of intelligence and plans following significant flood events.

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

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

6 RECOVERY OPERATIONS

6.1 INTRODUCTION

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

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

6.2 NSW SES RECOVERY ROLE

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

6.2.2 **Actions:**

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

- f. NSW SES may coordinate immediate relief in collaboration with SEOCON and SERCON

7 ABBREVIATIONS

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

8 GLOSSARY

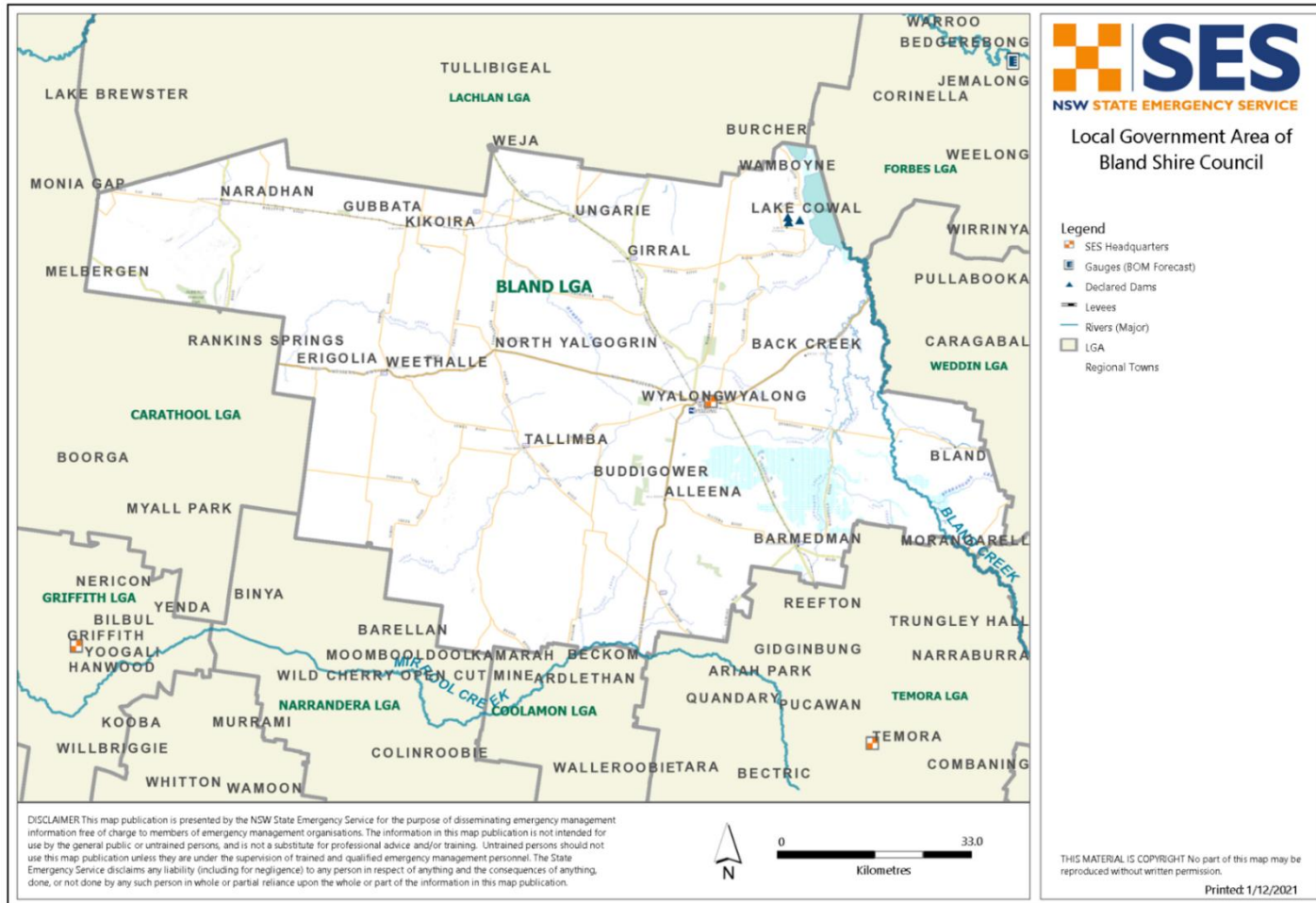
Common emergency service terminology can be found within the Australian Disaster Resilience Glossary.

Readers should refer to EMPLAN Annex 9 – Definitions.

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

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

9 Appendix A – Map of Bland Shire Council Area



10 Appendix B – Roles and Responsibilities

AGENCY	RESPONSIBILITIES
NSW State Emergency Service	NSW SES is the designated Combat Agency for floods, storms and tsunami and controls response operations. NSW SES roles and responsibilities in relation to floods are outlined in the NSW State Flood Plan .

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

AGENCY	RESPONSIBILITIES
	<ul style="list-style-type: none"> – Resupply of isolated properties. – Technical advice on the impacts of flooding. – Close and reopen council roads (and other roads nominated by agreement with Transport for NSW) and advise NSW SES, NSW Police Force and people who contact the council for road information. – Assist NSW SES to provide filled sandbags and filling facilities to residents and business in areas which flooding is expected. <ul style="list-style-type: none"> • Assist with making facilities available for domestic pets and companion animals of evacuees during evacuations. • Operate flood mitigation works including critical structures such as detention basins and levees and advise NSW SES regarding their operation. • Manage and protect council-owned infrastructure facilities during floods. • Provide advice to NSW SES and the Health Services Functional Area during floods about key council managed infrastructure such as sewerage treatment and water supply. • Advise the Environmental Protection Authority of any sewerage overflow caused by flooding. • Work with NSW SES and NSW Department of Planning and Environment to collect flood related data during and after flood events. <p>Recovery</p> <ul style="list-style-type: none"> • Provide for the management of health hazards associated with flooding including removing debris and waste. • Ensure premises are fit and safe for reoccupation and assess any need for demolition. • Provide services, assistance and advice to State Government in accordance with the State Recovery Plan.
Caravan Park Proprietor(s)	<ul style="list-style-type: none"> • Prepare a flood emergency plan for the Caravan Park. • Ensure that owners and occupiers of movable dwellings are aware that the caravan park is flood liable by providing a written notice to occupiers taking up residence and displaying this notice and emergency management arrangement within the park. • Ensure that owners and occupiers of movable dwellings are aware that if they are expecting to be absent for extended periods, they should: <ul style="list-style-type: none"> – Provide the manager of the caravan park with a contact address and telephone number in case of an emergency. – Leave any movable dwelling in a condition allowing it to be relocated in an emergency (i.e.: should ensure that the wheels, axles and draw

AGENCY	RESPONSIBILITIES
	<p>bar of the caravans are not removed and are maintained in proper working order).</p> <ul style="list-style-type: none"> • Ensure that occupiers are informed of Flood Information. At this time, occupiers should be advised to: <ul style="list-style-type: none"> – Ensure that they have spare batteries for their radios. – Listen to a local radio station for updated flood information. – Prepare for evacuation and movable dwelling (cabins) relocation. • Ensure that owners and occupiers of caravans are aware of what they must do to facilitate evacuation and movable dwelling relocation when flooding occurs. • Coordinate the evacuation of people and the relocation of movable dwellings when floods are rising and their return when flood waters have subsided. Movable dwellings will be relocated back to the caravan park(s) by owners or by vehicles and drivers arranged by the park managers. • Secure any movable dwellings that are not able to be relocated to prevent floatation. • Inform NSW SES of the progress of evacuation and/or movable dwellings relocation operations and of any need for assistance in the conduct of these tasks.
Childcare Centres and Preschools	<ul style="list-style-type: none"> • When notified of possible flooding or isolation, childcare centres and preschools should. <ul style="list-style-type: none"> – Liaise with NSW SES and arrange for the early release of children whose travel arrangements are likely to be disrupted by flooding and/or road closures. – Assist with coordinating the evacuation of preschools and childcare centres.
Dams Safety NSW	The roles and responsibilities for Dams Safety NSW (formerly NSW Dam Safety Committee) are outlined in the NSW State Flood Plan.
Department of Defence	Arrangements for Defence Assistance to the Civil Community are detailed within the State EMPLAN (section 448).
Energy and Utilities Services Functional Area	<p>The roles and responsibilities for Energy and Utilities Services are outlined in the Energy and Utility Services Supporting Plan (EUSPLAN).</p> <p>Roles and responsibilities in addition to the Supporting Plan are:</p> <ul style="list-style-type: none"> • Assist NSW SES with identification of infrastructure at risk of flood damage where resources are available. • Facilitate local utility service distribution providers (electricity, gas, water, wastewater) to:

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

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

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

11 Appendix C – Community Specific Roles and Responsibilities

Community Members	<p>Preparedness</p> <ul style="list-style-type: none"> • Understand the potential risk and impact of flooding. • Prepare homes and property to reduce the impact of flooding. • Understand warnings and other triggers for action and the safest actions to take in a flood. • Households, institutions and businesses develop plans to manage flood risks, sharing and practicing this with family, friends, employees and neighbours. • Have an emergency kit. • Be involved in local emergency planning processes. <p>Recovery</p> <ul style="list-style-type: none"> • Assist with community clean-up if required and able to do so. • Participate in After Action Reviews if required.
Private Companies or other Organisation	<ul style="list-style-type: none"> • Assist with the provision of filling sandbags. Evolution Mining located at Lake Cowal.
Aboriginal Organisations or Groups	<ul style="list-style-type: none"> • West Wyalong Aboriginal Land Council, 76-78 Main Street, West Wyalong NSW 2671 - (02) 6972 3493. • Act as the point of contact between the NSW SES and local indigenous communities in Bland Shire. • Inform the NSW SES Unit Commander about flood conditions and response needs. • Disseminate flood information, including flood and evacuation warnings, to local indigenous communities in Bland Shire.
Communication	<ul style="list-style-type: none"> • West Wyalong Unit NSW SES Facebook page.

HAZARD AND RISK IN BLAND SHIRE

Volume 2 of the Bland Shire Local Flood Plan

Last Update: August 2017

AUTHORISATION

The Hazard and Risk in Bland 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



Manager Emergency Risk Management

Date: 2-8-17

Approved



NSW SES Lachlan Region Controller

Date: 31.07.17

Tabled at LEMC

Date: 16 August 2017

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VERSION LIST

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

Description	Date
Bland Shire Local Flood Plan – Annexes A and B	August 2007
Bland Shire Local Flood Plan – Volume 2	August 2016

AMENDMENT LIST

Suggestions for amendments to this Volume should be forwarded to:

The West Wyalong 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

Document Issue: Version 3-02052016

1 THE FLOOD THREAT

1.1 OVERVIEW

Lachlan River Valley and Murrumbidgee River Valley

- a. Bland Local Government Area (LGA) is located on the northern fringes of the Riverina, New South Wales. The Bland Shire LGA covers 8,482 square kilometers.

1.2 LANDFORMS AND RIVER SYSTEMS

- a. The Bland LGA falls within two river basins, the Lachlan River Basin (412) (Annex 1) and the Murrumbidgee River Basin (410) (Annex 2). However, neither of these two rivers actually traverse the Bland LGA (Map 1 and 2).
- b. The main tributaries of these river systems in the Bland LGA are Barmedman Creek, Warralonga Cowl which flows into Lake Cowal, Bland Creek, Back Creek, Wallaroi and Humbug Creek in the Lachlan River Basin. These creeks generally flow north west. Narriah Creek, Mirrool Creek and Sandy Creek are in the Murrumbidgee River Basin, travelling generally south west.

1.3 STORAGE DAMS

- a. Dam locations are shown on the River Basin Map.

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

Cowal Gold Mine Reservoir	
Owner / Operator	Evolution Mining
Description of Dam	800ML Water storage for gold mine
Location	Off stream to the west of Lake Cowal
Communities Downstream	No known consequences on communities in the Bland Shire
Monitoring System	n/a
Warning System	n/a
Other	n/a

Cowal Northern Tailings	
Owner / Operator	Evolution Mining
Description of Dam	14500 ML Storage of tailings from gold mine
Location	Off stream to the west of Lake Cowal
Communities Downstream	No known consequences on communities in the Bland Shire
Monitoring System	n/a
Warning System	n/a
Other	n/a

Cowal Southern Tailings	
Owner / Operator	Evolution Mining
Description of Dam	1535 ML Storage of tailings from gold mine
Location	Off stream to the west of Lake Cowal
Communities Downstream	No known consequences on communities in the Bland Shire
Monitoring System	n/a
Warning System	n/a
Other	n/a

- b. These dams and the reservoir are in the most north western part of the Bland Shire LGA.

1.4 WEATHER SYSTEMS AND FLOODING

Lachlan River Valley

- a. High monthly rainfalls over the Lachlan catchment are usually generated from either of two meteorological conditions. In warmer months of the year, during spring and summer, heavy falls occur over the upper catchment areas when a depression forms to the north of the valley. These depressions result in a moist northerly airstream west of the Divide, usually forming in a trough extending from the north of the continent southwards. In the vicinity of the depression intense short-period rainfalls may occur (2).

- b. In the cooler months of the year, during autumn and winter, high monthly rainfalls may result when a series of well-developed troughs associated with southern depressions cross the region causing several substantial falls in one month.
- c. It is the latter of the above two meteorological conditions that usually has greater influence on flooding within the Lachlan Valley. By nature of its direction of movement, from west to east, the depression usually results in significant rainfall over the entire valley, saturating the downstream catchments and creating increased river flows before the occurrence of the intense rainfall over the upper catchment areas. As a result, the Lachlan River and its tributaries will be already experiencing substantially higher flows when the discharges from the upper catchments pass through Wyangala Dam (2).

Murrumbidgee River Valley

- d. The average annual rainfall varies considerably over the basin. The average annual rainfall over the flood plain is 500 millimetres whereas on the Snowy Mountains the rainfall ranges from 1,000-1,500 millimetres. May to October tend to be the wettest months. Heavy rain may occur at any time of the year, but more particularly in the colder months. Falls of 125 millimetres in 24 hours have been recorded at many stations on the catchment area.
- e. Floods along the Murrumbidgee are generally caused by two types of atmospheric conditions. Firstly, there is the flood which results from extensive rains caused by large inland depressions which form in the tropical regions of Australia in summer. The other form in the Antarctic region during the winter and early spring months, and move in a north easterly direction over the catchment (3).

1.5 CHARACTERISTICS OF FLOODING

- a. From Burrinjuck Dam, the Murrumbidgee River broadens and flows through the flood plain in a westerly direction for a distance of 1185 kilometres, finally entering the Murray River about 33 kilometres south west of Balranald. It is in this section of the valley where most of the flood affected centres are situated (1).
- b. The Lachlan River flows from Forbes in a westerly direction to Condobolin. On this reach the course is characterised by extensive meanders and swampy depressions. South of this section is Lake Cowal which is fed by a catchment of about 9,800 square kilometres which, during wet years, fills and overflows down its escape to the Lachlan River and tributaries. About 60 kilometres downstream from Condobolin the river turns south westerly and flows through flat country for about 800 kilometres before joining the Murrumbidgee River approximately 35 kilometres downstream of Maude (1).

- c. Flooding in the Bland LGA is predominantly from creek systems that start in or flow through the LGA.
- d. The creeks within Bland LGA include:
 - i. Humbug Creek also known as Euglo Creek near Ungarie;
 - ii. Bland Creek also known as Yeo Creek which is on the LGA north eastern boundary and flows north into Lake Cowal;
 - iii. Barmedman Creek (also known as Back Creek in the Marsden vicinity) which flows in a north-easterly direction to the south and east of Barmedman; and
 - iv. Mirrool Creek which flows west along the southern LGA border (1).
- e. The town of Ungarie is situated on Humbug Creek which rises to the west of West Wyalong and flows northward to meet Wallaroi Creek south of Condobolin (4). Ungarie can experience flooding from Humbug Creek and a nearby (unnamed) tributary which runs through town and joins Humbug Creek on its right bank (4). Flooding usually results from rainfall in the Humbug Creek catchment. The country is quite flat and at Ungarie the width of floodwaters in a major flood can be greater than one kilometre (5).

1.6 FLOOD HISTORY

Ungarie

- a. Major floods were experienced in January / February 1928, January 1962, January 1984 and more recently in December 2007, March 2011 and March 2012 and again in June and September 2016 (1) (4).
January 1962 Flood
- b. While the 1962 flood resulted in deeper floodwaters, the 1928 flood was regarded as the biggest flood by local residents as it lasted for 5 days whereas the 1962 flood lasted for 2.5 days The 2012 is now considered the flood of record (4) (1).
- c. The deeper flood waters in 1962 appear to have resulted from local run off from the unnamed tributary which runs through the town coinciding with floodwater from Humbug Creek. For this reason local residents consider the 1928 flood event to have been a bigger flood on Humbug Creek (5).
- d. In 1962 water was 0.5 metres deep in Caroon Street adjacent to the Railway and 2-3 metres deep in Wollongough Street near Humbug Street. A total of 71 commercial and residential properties were flood affected and approximately 25 buildings had water above floor levels (5).
- e. During the 1962 flood Lake Cargelligo to West Wyalong Road (MR 231) was under water for about one kilometre to the east and west of the town. The lowest part of

the road on the eastern side of the town has since been built up. The railway embankment remained above the flood level with floodwaters from Humbug Creek backing up through culverts under the embankment into the residential area to the south (5).

January 1984 Flood

- f. In January 1984 two thirds of Ungarie was flooded after 100 millimetres of rain fell in 24 hours. As a result resupply was required and the sewerage system failed (1).

December 2007 Flood

- g. In 2007 (21 December) a severe storm impacted the area with the Humbug Creek rising and impacting 15 properties in Eugalo Street. Residents were placed on standby to evacuate and properties were sandbagged to minimise inundation. No further rain was experienced, the creek levels dropped and evacuations were not necessary.; however significant infrastructure damage (roads and railway tracks) was reported and a Natural Disaster was declared for the Bland Shire (6).

March 2011 Flood

- h. The flooding that was experienced in March 2011 was a result of widespread heavy rain that fell across the Humbug Creek catchment, the majority of which occurred on the rain day of 22 March 2011, approximately 36 hours prior to the arrival of the flood peak. Two-day rainfall totals for the rain days of 21 and 22 March 2011 generally ranged between 75 and 95 millimetres (4).

March 2012 Flood

- i. The flooding experienced in March 2012 was a result of widespread heavy rain that fell across the Humbug Creek catchment, the majority of which occurred on the rain day of 29 February 2012, approximately four days prior to the arrival of the flood peak. Two-day rainfall totals for the rain days of 29 February and 1 March 2012 generally ranged between 80 and 100 millimetres, with a maximum of 144.4 millimetres recorded at the Ungarie Post Office (4). This resulted in 17 residents and businesses flooded over floor on Caroon, Euglo, Wilga, Wollongough (4), Mackrell Street and Herbert Streets for two to four days, with those to the south of the railway inundated for two days. A section of the Cootamundra-Lake Cargelligo railway line near the eastern end of the village failed during the March 2012 flood. The resulting flood wave caused a rapid rise in above-floor inundation in several properties located along Robert and Herbert Streets (4).

June 2016 Flood

- j. Heavy rainfall in the upper catchment of the Humbug Creek on Sunday 19th June 2016 resulted in flooding of Ungarie on 20th June. 51 millimetres of rainfall was recorded at the Yalgogrin North BoM gauge to 9.00 am on Monday 20th June and an additional 14 millimetres had fallen in the previous three days. This was on top of a wet May with 74.2 millimetres recorded at the gauge (7). The road bridge on Crown

Camp Road in Ungarie was overtopped by floodwaters (8). Floodwaters inundated a number of properties in Ungarie mostly over ground but some homes and businesses experienced over floor flooding (8). The Ungarie Central School was closed for the week because of flooding in Ungarie and at least one rural property required resupply because of inundation of rural roads (8). Part of the sewerage system failed during the event (8). An evacuation order was issued with six commercial properties in Wollongough Street and various levels of flooding (10 millimetres to 1 metre) to 22 residential properties in Euglo, Wollongough, Caroon, Roberts and Herbert Streets.

- k. The West Wyalong to Lake Cargelligo and the Kikiora Roads at Ungarie were closed for a number of days due to water over road, but the community was not isolated as alternative routes were available.
- l. An indication of water height for the Humbug Creek is through the use of a mail box with five bell shapes as a post at the rural property "Hillside", 10.8 kilometres north west of Ungarie. In the June 2016 flood the water was measured at 4.25 bells.

September 2016 Flood

- m. Heavy rainfall of around 40-70 millimetres fell in the already wet Humbug Creek catchment on Sunday 9th September 2016. This resulted in flooding of Ungarie between 10th and 25th September. The flood peaked at Ungarie on the 23rd of September at a height of 1.525 metres on the bridge (8).
- n. There were no reports of livestock losses, however there were large amounts of pasture and crop losses and welfare drops were made to livestock (8).
- o. Many businesses in Ungarie were severely affected by the loss of trade, the sewer system failed and the school was closed due to the flooded bridge for five and a half days. The local show was cancelled and council elections postponed (8).
- p. Much of the road infrastructure was severely damaged and there were at least three residential, three businesses, five vacant houses and four not-for-profit buildings inundated above floor. In addition to this, 27 properties were flooded including sheds, carports and garages, 12 farm houses isolated, four houses saved by sandbags and 170 people inconvenienced by sewer system failure (8).

Alleena

- q. In January 1984 100 millimetres of rain fell in 24 hours resulting in four evacuations (1). There is no other flood history for this locality.

Barmedman

- r. Flooding was experienced in 1990; the extent and effects are unknown (1).
- s. 85 millimetres of rainfall was recorded at Barmedman Post Office over March 21 – 22 2011 and 156 millimetres over the period February 29 – March 5 2012 (9).

- t. 122.5 millimetres of rain was recorded at Barmedman Post Office during the month of June 2016 causing localised flooding to rural roads and properties.

West Wyalong

- u. On the 7th November, 2005 very heavy rain from 9 pm to midnight caused flooding. Flash flooding occurred within West Wyalong with a small number of properties along Kurrajong Street experienced minor inundation as a result of the storm water drains overflowing. Flash flooding occurred on town roads during rainfall and dissipated soon after (1).
- v. 76 millimetres of rainfall was recorded at West Wyalong Post Office over March 21 – 22 2011 and 135 millimetres over the period February 29 – March 5 2012 (9). In March 2012 large areas of farmland were under water east of West Wyalong on or near Barmedman (or Back) Creek (11).
- x. In 2016 flooding occurred along the Newell Highway between Kalmns Lane and the Midwestern Highway intersections for several days. A number of roads in Bland Shire and adjoining LGAs were closed by Councils during this event also. A request for assistance was received for flood threatening on “Warralong” situated on Quandialla Road near Back Creek.

1.7 FLOOD MITIGATION SYSTEMS

- a. There is a complex drainage system that runs from the west to east (The Green Corridor) of West Wyalong to divert storm water into the wetlands between West Wyalong and Wyalong. A drainage system has been installed near the Ungarie water tower to alleviate flood waters south of the railway line. There are no other known flood mitigation levees or flood mitigation systems within the Bland Shire LGA.

1.8 EXTREME FLOODING

- a. Extreme flooding across the Bland Shire LGA is likely to cause significant damage to farmland, farm infrastructure, roads and railway lines resulting in widespread disruption to normal business and daily activities. Because the LGA is very flat extreme flooding from a significant rainfall event could be expected to be widespread across the LGA and surrounding areas for a long period of time.

2 EFFECTS ON THE COMMUNITY

2.1 COMMUNITY PROFILE

Table 2: Census of Housing and Population data (2011) (10)

Census Description	Bland LGA	Barmedman	Ungarie	West Wyalong
Total Persons	5,865	212	322	2643
Aged 0-4 yrs	460	8	24	212
Aged 5-14 yrs	826	36	42	322
Aged 65 + yrs	1,124	47	74	630
Of Indigenous Origin	238	12	17	121
Who do not speak English well	0	0	0	0
Have a need for assistance (profound/severe disability)	290	20	22	147
Living alone (Total)	642	23	48	357
Living alone (Aged 65+)	283	14	20	171
Residing in caravans, cabins or houseboats or improvised dwellings	11	0	0	13
Occupied Private Dwellings (Households)	2,262	91	301	1,077
No Motor Vehicle	141	7	14	101
Caravan, cabin, houseboat or improvised dwell	12	0	0	6
Rented via State or Housing Authority	45	0	3	37
Rented via Housing Co-Op or Community Church Group	16	0	4	15
No Internet Connection	722	36	47	368
Unoccupied Private Dwellings	503	18	30	177
Average persons per occup dwelling	2.4	2.4	2.5	2.4
Average vehicles per occup dwelling	1.9	1.9	1.8	1.7

SPECIFIC RISK AREAS - FLOOD

Lachlan River Valley

2.2 UNGARIE

2.2.1 Community Overview

- a. The town of Ungarie is located about 42 kilometres north west of West Wyalong between West Wyalong and Lake Cargelligo on the Giral - Lake Cargelligo Road (MR231). It is situated on Humbug Creek, which rises to the west of West Wyalong and flows northward to meet Wallaroi Creek south of Condobolin (4).
- b. The population in 2011 was about 322 persons, with a mean age of 45 years. There are about 170 private dwellings in the town (10). Demographics are summarised in table 2 (10).

2.2.2 Characteristics of flooding

- a. Ungarie is situated on Humbug Creek (also known as Euglo Creek) and can experience flooding from this creek, its tributary, Youngara Creek and a nearby (unnamed) tributary as well as overland flow. The catchment for the unnamed creek is approximately 90 square kilometres.
- b. Flooding usually results from storms in the Humbug Creek catchment.
- c. The surrounding country is flat, therefore during major floods floodwaters can be one kilometre in width (4) (9).

2.2.3 Flood Behaviour

- a. Flooding at Ungarie can be characterised as a relatively slow moving flood wave which takes about 48 hours to travel from “Merringreen” and 24 hours from “Gleneen” in the upper Humbug Creek catchment to the township (4).
- b. Floodwaters originating from the greater Humbug Creek catchment flow into the town from the west on the northern side of the Cootamundra-Lake Cargelligo Railway. At the outset of the flood event the floodwater is contained within the Humbug Creek channel and enters the town area about 1.5 kilometres to the north. Once the capacity of the channel is exceeded floodwaters spread across the floodplain (9).
- c. The Humbug Creek catchment is traversed by a number of major road and rail infrastructure including the Cootamundra-Lake Cargelligo Railway; Ungarie-Naradhan Railway; Giral-Lake Cargelligo Road; Naradhan Road and Kikiora Road. These road and particularly rail alignments form raised embankments across the floodplain and have the potential to redistribute and attenuate floodwaters during major flood events (9).

- d. The Cootamundra-Lake Cargelligo Railway acts as a levee and prevents the further spread of floodwaters from the southern side of the railway. The width of the floodplain inundation on the northern side of the railway upstream of the town is up to 1.5 kilometres. There is also a flow path alignment nested within the floodplain between Humbug Creek and the railway that conveys floodwaters before joining the Humbug Creek upstream of the township (9). Floodwater can back up through the adjacent railway culverts from the direction of Humbug Creek and lead to property inundation (4).
- e. Flooding from Humbug Creek is aggravated by flows in the unnamed tributary creek which contributed to the high flood levels south of the railway line in the 1962 flood. The tributary creek outlet has since been reconstructed as a large drain passing under the railway embankment and extending to Humbug Creek. This work has reportedly alleviated local flooding south of the railway line. It is likely that it will also have a small beneficial effect in major floods by reducing the backwater effect on the tributary creek. However floodwaters will still back up from Humbug Creek in major floods (5).
- f. Floods generally last up to five to seven days (e.g. 1928 and 2016) (4).

2.2.4 Classification of Floodplain

- a. Based on historical flooding (4), Ungarie township can be classified as a Rising Road Access with road access to Condobolin remaining open.

2.2.5 Inundation

- a. There are no telemetered flood gauges in the Bland LGA. However, there is a depth indicator at the Mackrell Street bridge in Ungarie that is generally monitored by locals for flood water heights. In 2016, it reached 1.6 metres at this location. There is also reliable information from the recent flood events of 2011, 2012 and 2016 as the water level depths have been recorded and the flood heights marked and recorded at strategic locations (two rural properties “Merringreen” and “Gleneen” and one building in town).
- b. Based on flood history, significant flooding can be expected to occur in Ungarie when more than about 50-75 millimetres of rain falls on the Humbug Creek catchment over either a 24 to 48 hour period (4). This includes the **public school, some business properties** and generally around **25 residential properties**. 71 commercial and 15 residential properties may be flooded and approximately 25 buildings may have water above floor levels (5) in the area bound by and including Euglo, Lynda and Mackrell Streets including Caroon, Herbert, Wilga and Wollongough Streets (4). A grain store, with a small private levee, is also at risk of inundation with rainfalls in this range, as is the golf course clubhouse on Crown Camp Road (4). Properties located on the northern side of the railway can remain inundated for a period of 2

and 4 days, whilst those to the south of the railway may remain inundated for a period of up to 2 days (4).

- c. In March 2012, a section of the Cootamundra-Lake Cargelligo railway line near the eastern end of the village failed, causing a rapid rise in above-floor inundation in several properties located along Robert and Herbert streets (4).

Table 3: Residences in Ungarie impacted by over ground or over floor flooding in 2012, by street (4)

Street	Range of Over Floor Depths (m)	No. Properties with Over floor Flooding	No. Properties with Over-ground Flooding
Caroon Street	0.3 – 1.0m	2	
Condamine Street	0.02	1	2
Crown Camp Road	0.09 – 0.16m	2	3
Euglo Street	0.59m	1	4
Herbert Street	0.21 – 0.83m	1	1
Kikiora Road			1
Lynda Street	0.33m	1	2
Muriel Street			1
Robert Street	0.27m	1	3
Ungarie Street	0.21m	1	1
Wollongough Street	0.09 – 1.0m	11	14

2.2.6 Isolation

- a. The village of Ungarie has not become isolated by floodwaters in any of the most recent flood events.
- b. At least one rural property requires resupply, and 12 rural farm houses are at risk of isolation because of inundation of rural roads, for example in 2016.

2.2.7 Flood Mitigation Systems

- a. There are no formal flood mitigation systems in Ungarie, however the grain storage has a private levee bank and a drainage system has been installed near the Ungarie water tower to alleviate flood waters south of the railway line.

2.2.8 Dams

- a. There are no dams on Humbug Creek or the unnamed creek that would impact on Ungarie.

2.2.9 At Risk Facilities

- a. The facilities that are at risk of flooding and/or isolation are listed in Annex 3, and include the Ungarie Central School, the Sports Club and the grain storage facility (4).
- b. Itinerant caravan campers generally use the showgrounds for overnight camping.

- c. There are anecdotal reports that the sewerage plant has experienced inundation in the past and failed, with failure occurring in 2010, 2012 and 2016, although full effects are unknown due to limited information (1).

2.2.10 Other Considerations

- a. The Ungarie Local Show is held early September each year as well as a number of significant sporting events throughout the year.

2.3 ALLEENA

2.3.1 Community Overview

- a. Alleena is a rural farmland locality 20 kilometres south of West Wyalong on the Newell Highway.
- b. It is part of the Census collection area of Mirrool, which has a total population of 234 persons and 106 private dwellings. Alleena itself has a population of approximately 80 people. The area is zoned farming land and has no residential properties other than farm houses (11).

2.3.2 Characteristics of Flooding

- a. This area is subject to widespread farmland flooding from unnamed creeks that flow predominantly in a north-easterly direction (1).

2.3.3 Inundation

- a. In 1984, when 100 millimetres of rain fell, four dwellings experienced inundation resulting in relocation of residents (4) (1). In 2016, there was a significant amount of rural farmland inundation (8).

2.3.4 Isolation

- a. There is no known risk of isolation.

2.3.5 Flood Mitigation Systems

- a. There are no known flood mitigation levees in this area.

2.3.6 Dams

- a. No prescribed dams have been identified.

2.3.7 At Risk Facilities

- a. There are no known facilities at risk in this area.

2.3.8 Other Considerations

- a. No other information is currently available.

2.4 BARMEDMAN

2.4.1 Community Overview

- a. Barmedman is a rural village on the Goldfields Way in central New South Wales situated 30 km north of Temora on the road to West Wyalong.
- b. There are about 400 persons in Barmedman, with a median age of 43 years. Demographic characteristics are summarised in table 2 (10).

2.4.2 Characteristics of Flooding

- a. Barmedman is situated about 4 kilometres northwest of Barmedman Creek and may experience flooding from this creek and a nearby tributary (1).

2.4.3 Flood Behaviour

- a. This area is prone to flash flooding, which is generally shallow, but can be over a metres.

2.4.4 Inundation

- a. Flooding was experienced in 1990 (1); the extent and effects are unknown.
- b. Flash flooding can occur in the middle of the town. This occurred in 2016, with significant amounts of water on the roads, particularly on the Star Street and Goldfields Way; however no inundation occurred (8).

2.4.5 Isolation

- a. No information is currently available. In 2016, the localised flooding resulted in a number of roads being cut for a few days between West Wyalong and Barmedman (Goldfields Way, Quandialla Road and Waarbilla Road), however this did not result in isolation (8).

2.4.6 Flood Mitigation Systems

- a. There are no known flood mitigation levees in this area.

2.4.7 Dams

- a. No prescribed dams have been identified.

2.4.8 At Risk Facilities

- a. There are no known facilities at risk in this area.

2.4.9 Other Considerations

- a. No other information is currently available.

2.5 WEST WYALONG

2.5.1 Community Overview

- a. West Wyalong is located at the junction of the Newell and Mid-Western Highways on the northern fringes of the Riverina, NSW and 483 km from Sydney. The twin townships of West Wyalong and Wyalong have a joint population of 3,950 and serve the role of the major service centre for the Bland Shire (1).
- b. See Weddin Shire Local Flood Plan for Quandialla (which may require flood response operations from NSW SES West Wyalong Unit, in Bland Shire LGA).

2.5.2 Characteristics of Flooding

- a. West Wyalong can experience flash flooding in times of extreme rainfall resulting in minor inundation of properties and town roads along the storm water drain system, e.g. 2005 and 2016 (1). Flash flooding occurred on town roads during rainfall and dissipated soon after (4).

2.5.3 Flood Behaviour

- a. Kurrajong Street, to the north of Main Street, is a floodway. This area is known as the “green corridor” walkway which runs west-east through the town to the westlands. Flooding in the town is fast flowing and can be very deep in the causeways (including Camp Street, Grenfell Street, Church Street, Monash Street and Operator Street) (8).

2.5.4 Inundation

- a. At least a few properties (yards) on the corner of Monash and Kurrajong Street are prone to flooding (as occurred in 2016) (8).

2.5.5 Isolation

- a. No areas identified as known to be at risk of isolation.

2.5.6 Flood Mitigation Systems

- a. There are no known flood mitigation levees in this area.

2.5.7 Dams

- a. No dams other than farm dams, a small park dam in McCann Park and stock dams identified. Effects of these failing are unknown but unlikely to be significant due to their small size. There are wetlands to the east of the town, which store a lot of water between Wyalong and West Wyalong (8).

2.5.8 At Risk Facilities

- a. No identified facilities within West Wyalong.

2.5.9 Other Considerations

- a. No significant events that could be flood affected.

ROAD CLOSURES AND ISOLATED COMMUNITIES

2.6 ROAD CLOSURES

- a. Table 4 lists roads liable to flooding in the Bland Shire LGA.

Table 4: Roads liable to flooding in Bland Shire LGA.

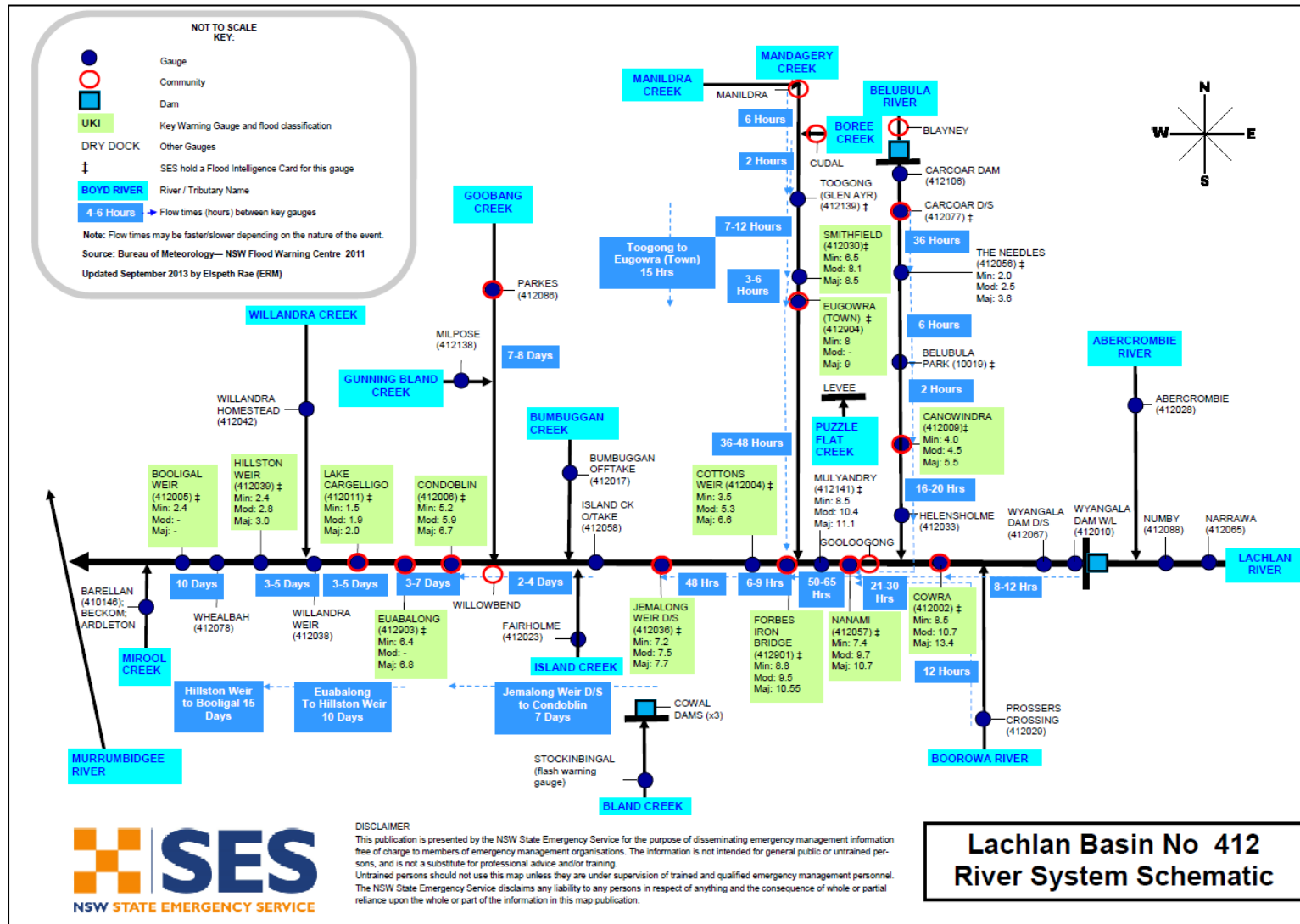
Road	Closure location	Consequence of closure	Alternate Route	Gauge
West Wyalong-Condobolin Road	Ditchfields Lane at Tee Tree Creek, 5km north of West Wyalong near Wamboyne Road, as well as large expanses of road towards Ungarie	May be closed for up to 12 hours following very heavy rainfall (12). Restricts access between Ungarie and West Wyalong	None	Rainfall in the order of 100mm over two days is likely to result in this closure.
Goldfields Way	Four locations where concrete causeways had been constructed across the road. Extensive road and culvert constructions have been undertaken to combat this threat.	Restricts access between West Wyalong and Barmedman	Potential alternate route via Alleena	n/a
Quandialla Road	Around Williams Crossing Bridge	Restricts access between West Wyalong and Quandialla	Potential alternate route via Barmedman or Grenfell	n/a
Newell Highway	Between Marsden and Wyalong in an area known as Mallee Plains extends some 5 km to 16 km east of Wyalong. Extensive road and culvert constructions have been undertaken to combat this threat.	Restricts access between Marsden (on the boundary of Weddin Shire LGA) and West Wyalong. The extent of the closure can vary from a few hours to some weeks.	Potential alternate route via Grenfell	n/a
Mid Western Highway	Humbug Creek and other small creeks between Yalgogrin and West Wyalong	Restricts access between Yalgogrin and West Wyalong for short periods of time	n/a	Flash flooding
Mary Gilmore Way (MR 398)	At Bland and Nurraburra Creeks (5) at Morangarell western approach – on the border of Young and Temora LGA.	Restricts access between Barmedman and Grenfell	Potential alternate route via Temora and Young	n/a

Road	Closure location	Consequence of closure	Alternate Route	Gauge
Mary Gilmore Way (MR 398)	Mirrool Creek crossing 4.2kms North of Ariaiah Park	Restricts access to Ariaiah Park township	Alternate route via Newell Highway and Burley Griffin Way	
Kikiora Road	Western side of Ungarie in several locations	Restricts access to Kikiora	Alternate route via Weethalle	n/a
Lake Road	Western side of Ungarie in several locations	Restricts access between West Wyalong and Lake Cargelligo	Potential alternate route through via Rankin Springs	n/a
Crown Camp Road	Humbug Creek Bridge in Ungarie township	Restricts access to the school, cemetery, showground, golf club and local residents	Access only to local traffic only via Bena Road	n/a
Mandamah Forest Road	At Scotts Creek crossing	Restricts access to rural properties and Ariaiah Park township	Alternate route via Newell Highway and Burley Griffin Way	Flash Flooding

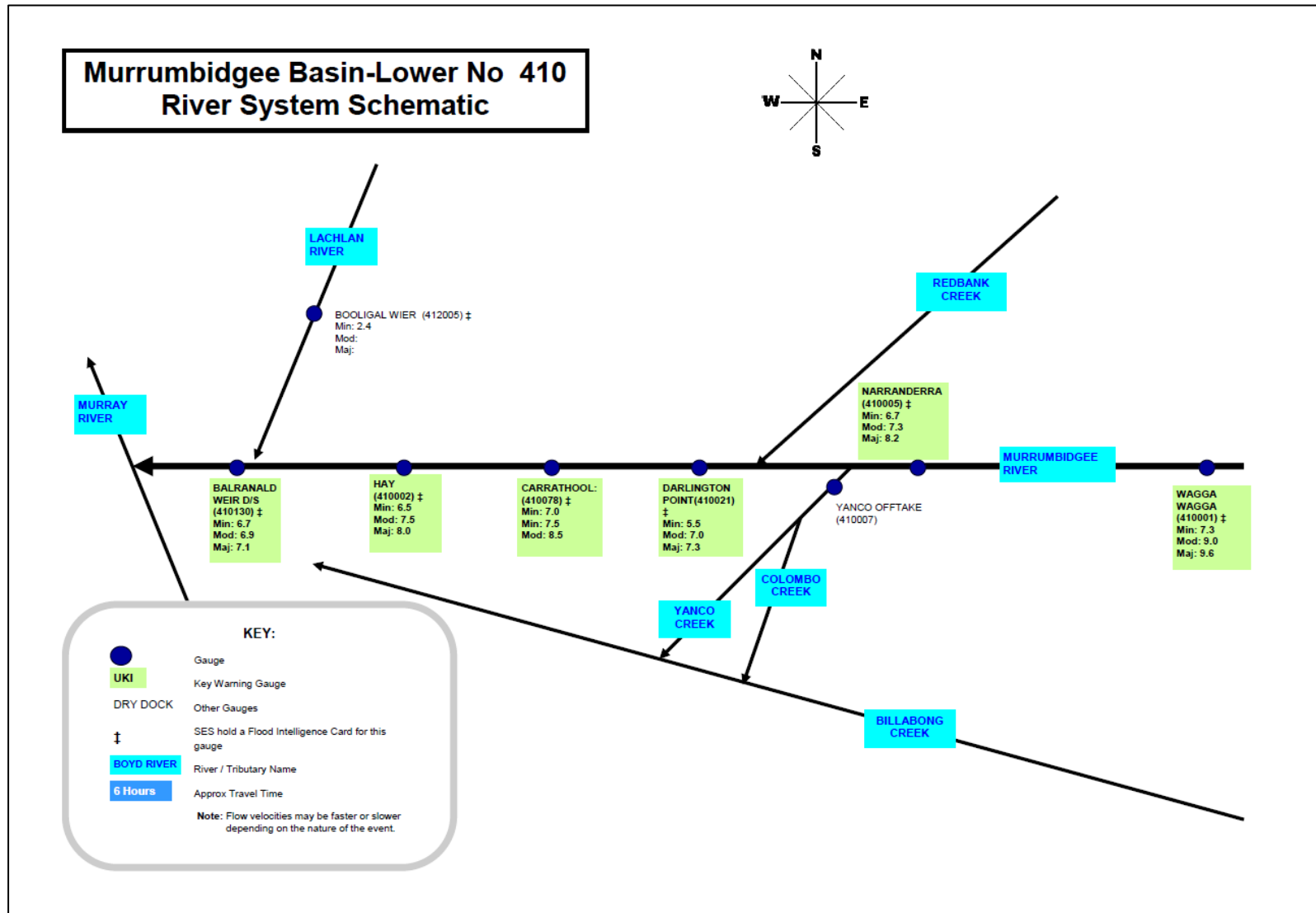
2.7 SUMMARY OF ISOLATED COMMUNITIES AND PROPERTIES

- a. A number of rural farms and properties may be isolated following heavy rainfall.

ANNEX 1: LACHLAN RIVER BASIN SCHEMATIC



ANNEX 2: LOWER MURRUMBIDGEE RIVER BASIN SCHEMATIC

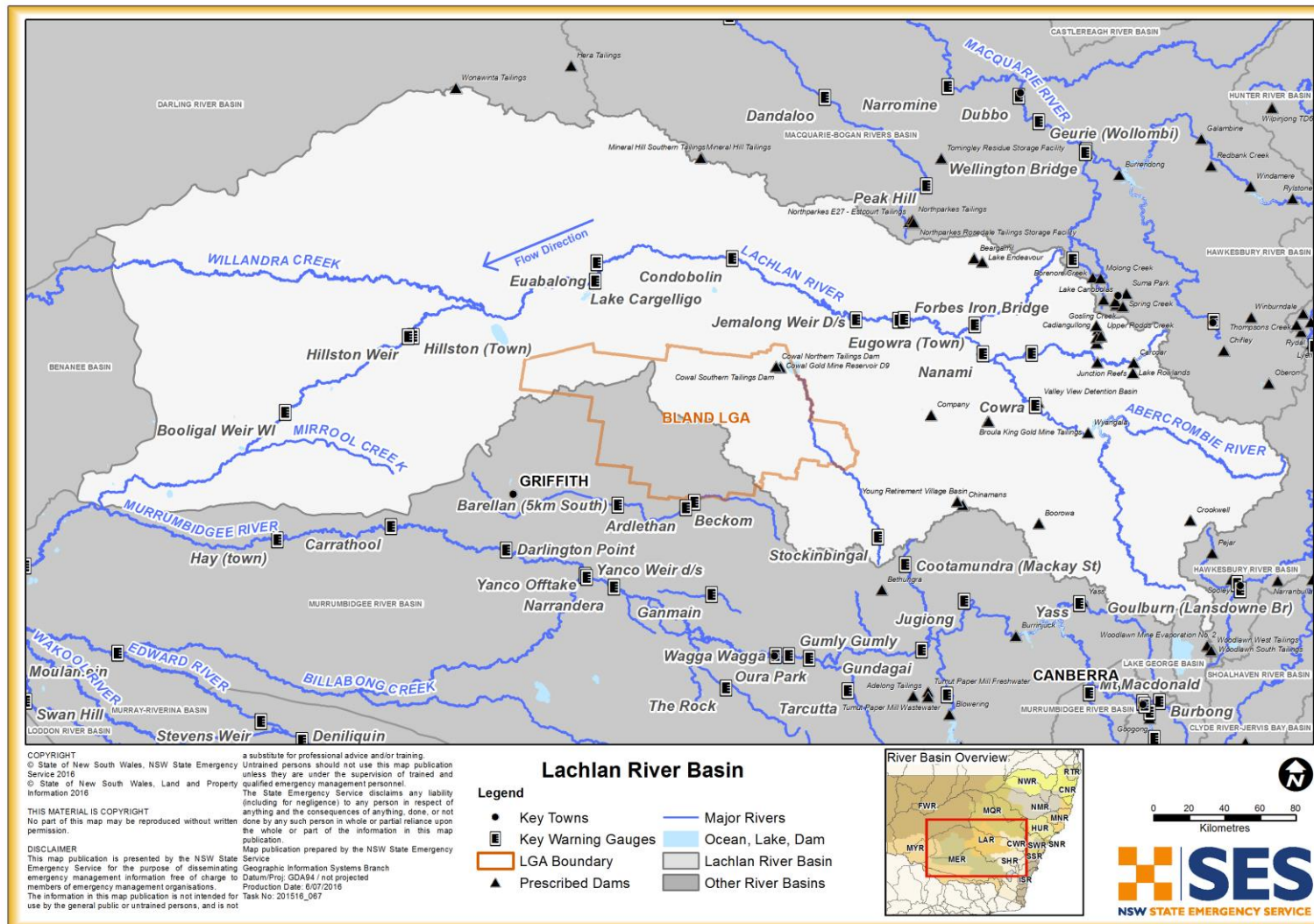


ANNEX 3: FACILITIES AT RISK OF FLOODING AND/OR ISOLATION

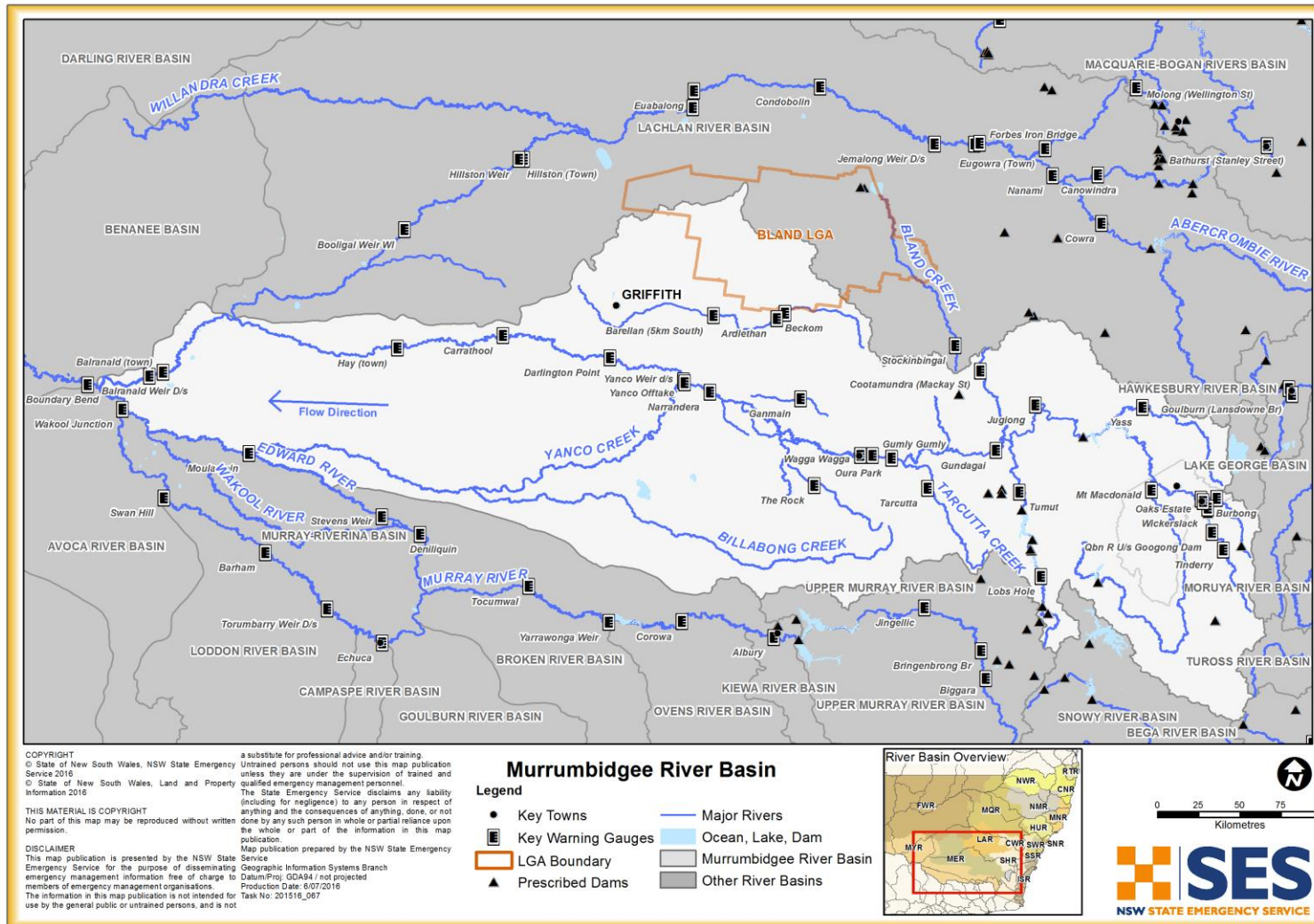
Lachlan River Valley

Facility Name	Street	Suburb	Comment
Schools			
Ungarie Central School	Crown Camp Road	Ungarie	When rainfall > 75mm over 24 – 48 hour period, school grounds may be inundated by floodwater (4). Access may be cut when floodwaters inundate the bridge across Humbug Creek on Crown Camp Road.
Child Care Centres			
Nil			
Facilities for the aged and/or infirm			
Nil			
Utilities and infrastructure			
Sewage Treatment Plant		Ungarie	There are anecdotal reports that the sewerage plant has experienced inundation in the past and failed, although full effects are unknown due to limited information (1). Part of the treatment plant / infrastructure was affected in June 2016 requiring portable toilets to be used.
Camping Ground / Caravan Parks			
Ungarie Showground	Crown Camp Road	Ungarie	When rainfall > 75mm over 24 – 48 hour period, the showground may be inundated by floodwater. This may impact on campers who use this area and sporting events.

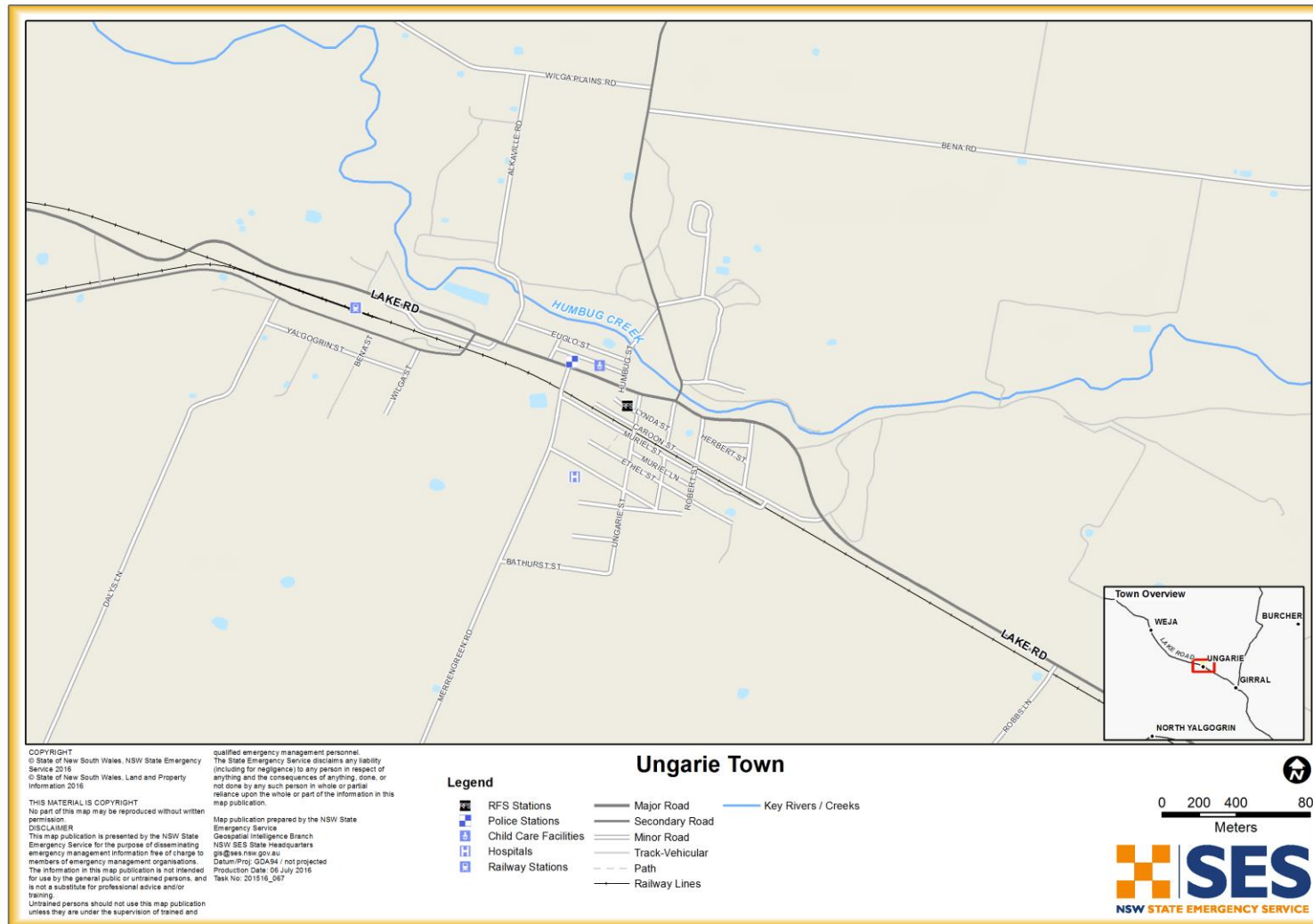
MAP 1: LACHLAN RIVER BASIN



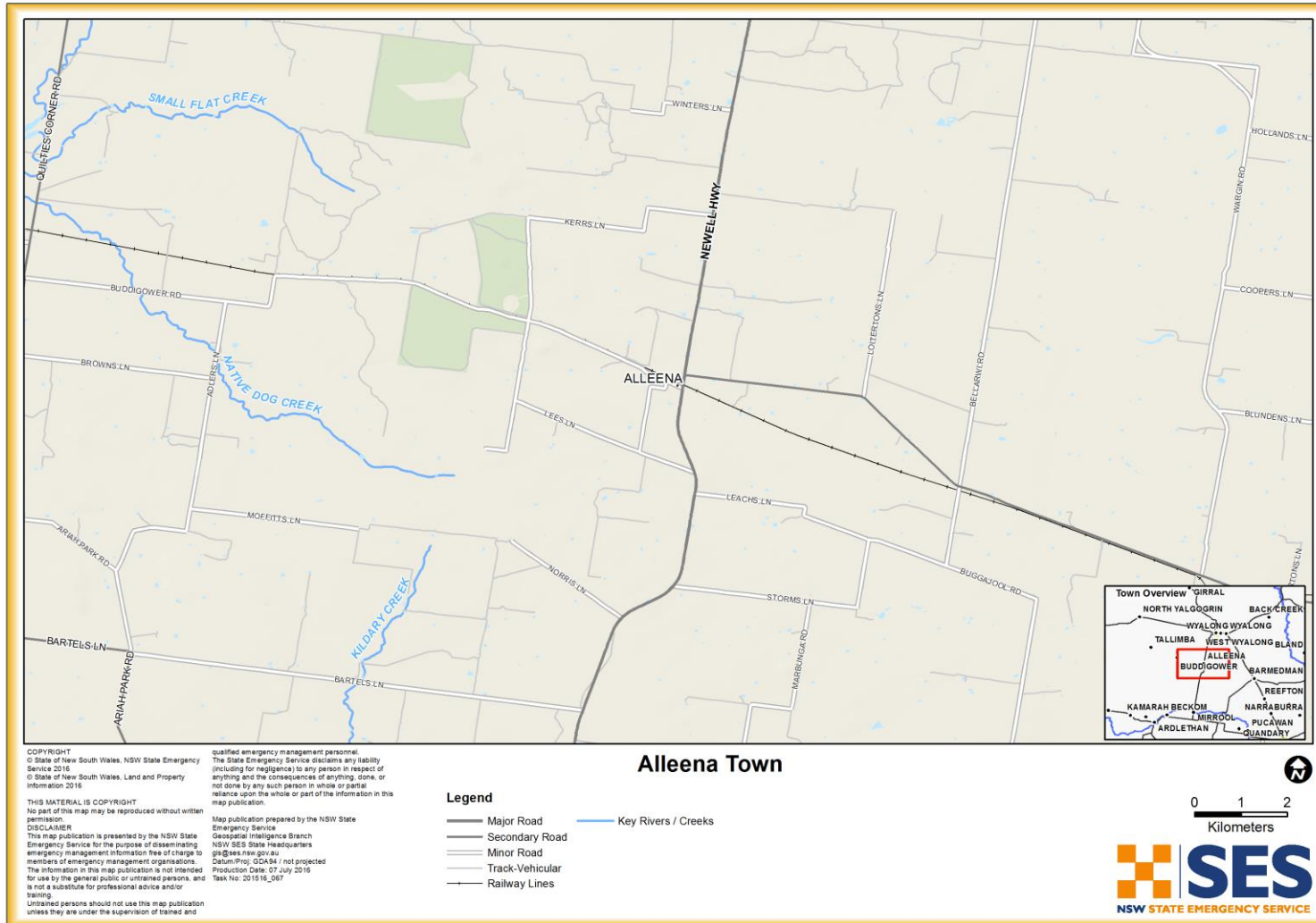
MAP 2: MURRUMBIDGEE RIVER BASIN



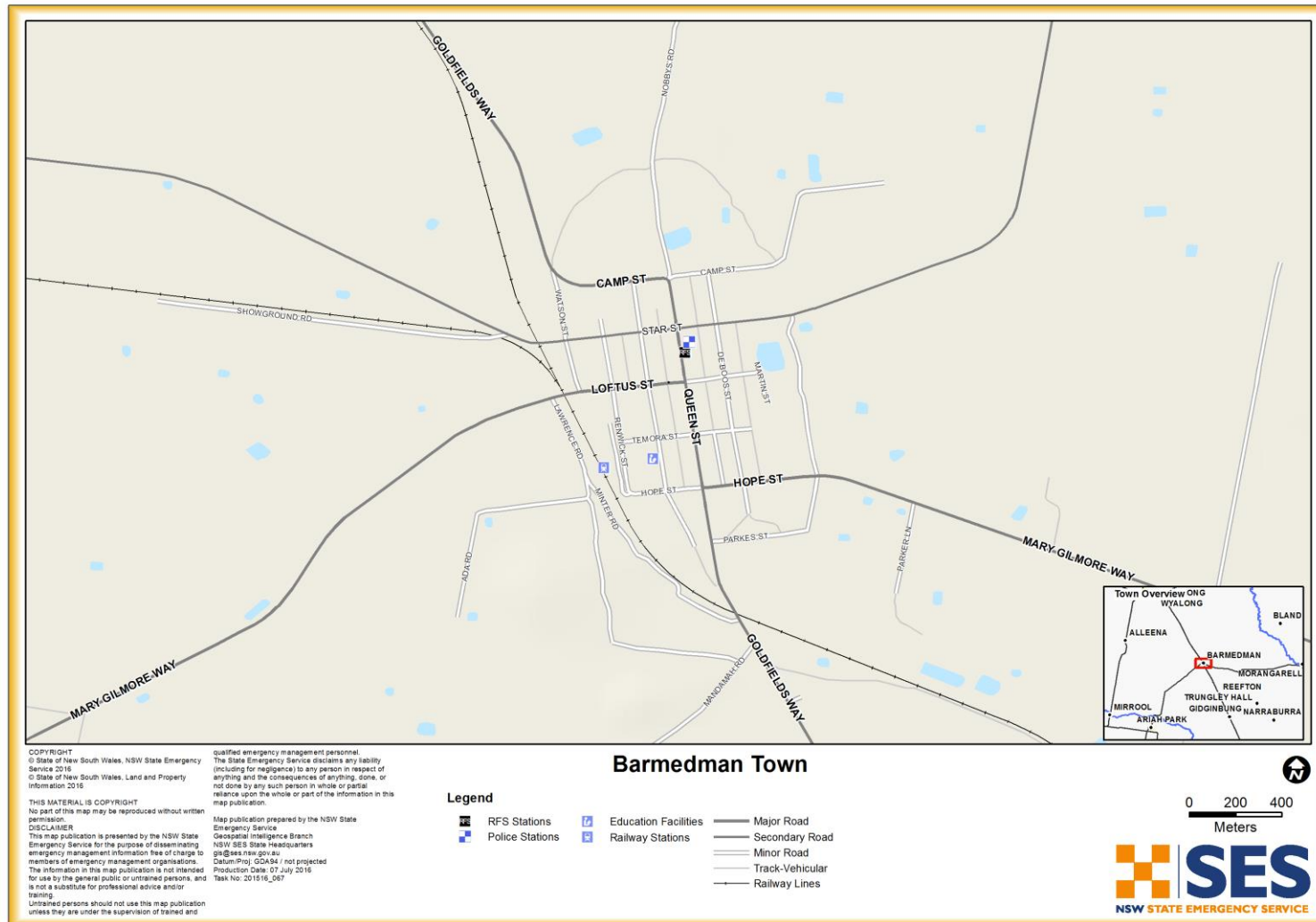
MAP 3: UNGARIE TOWN MAP



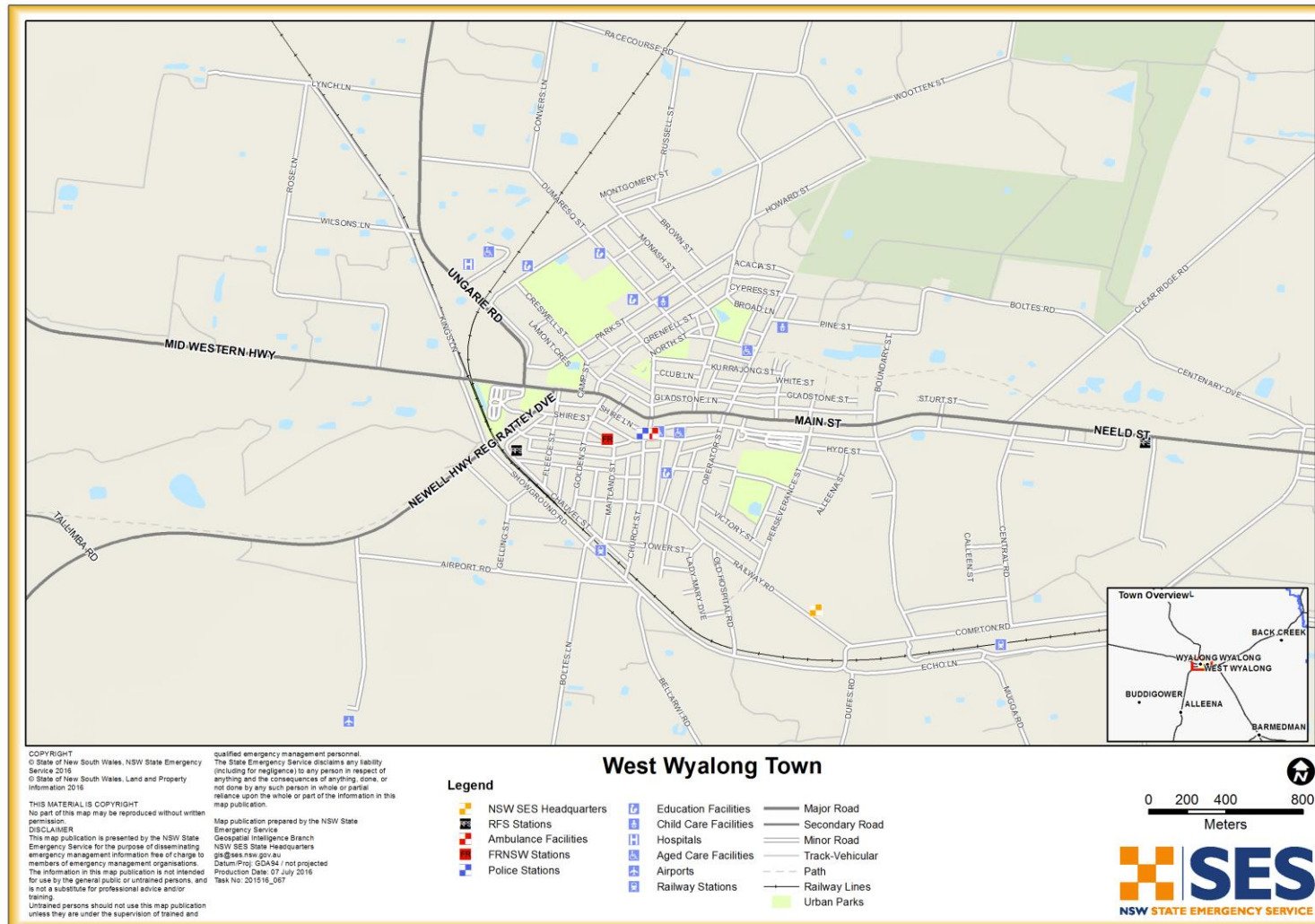
MAP 4: ALLEENA TOWN MAP



MAP 5: BARMEDMAN TOWN MAP



MAP 6: WEST WYALONG TOWN MAP



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SES RESPONSE ARRANGEMENTS FOR BLAND SHIRE

Volume 3 of the Bland Shire Local Flood Plan

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Chapter 1: Flood Warning Systems and Arrangements

- *Dissemination options for NSW SES flood information and warning products.*
- *Gauges monitored by the NSW SES within the LGA.*

Chapter 2: SES Locality Response Arrangements

- *NSW SES flood response arrangements by individual sector within the LGA.*

Chapter 3: SES Dam Failure Arrangements

- *Not Applicable.*

Chapter 4: SES Caravan Park Arrangements

- *Not Applicable*

BLAND SHIRE: FLOOD WARNING SYSTEMS AND ARRANGEMENTS

**Chapter 1 of Volume 3 (NSW SES Response Arrangements for Bland
Shire) of the Bland Shire Local Flood Plan**

Last Update: September 2018

AUTHORISATION

Bland 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

NSW SES Lachlan Region Controller

Date: 11 September 2018

Tabled at LEMC

17 October 2018

Document Issue: 3.1-07042014

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TABLE 1: GAUGES MONITORED BY THE NSW SES BLAND SHIRE LOCAL HEADQUARTERS3

1. GAUGES MONITORED BY THE NSW SES BLAND SHIRE LOCAL HEADQUARTERS

Table 1: Gauges monitored by the NSW SES Bland Shire Local Headquarters

Gauge Name	Type	AWRC No.	Bureau Gauge No.	Stream	Flood level classification in metres			Special Reading Arrangements	Owner
					MIN	MOD	MAJ		
Ungarie (Mackrell Rd) ‡	Manual	41209901 (dummy AWRC No.)	na	Humbug Creek	1.0	1.5	2.0	Dummy AWRC number for recording purposes only. Depth indicator monitored by locals.	na

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	Wagga
ABC TV	Sydney
MTN	Griffith

Radio Stations:

Station	Location	Frequency	Modulation
2WG	Wagga Wagga	1152	AM
2RG	Griffith	963	AM
ABC Radio	Wagga Wagga	893	FM

Newspapers:

Name	Location
West Wyalong Advocate	West Wyalong
Riverina Leader	Wagga Wagga

Other Agencies:

Agencies as listed in Volume 1 of this Local Flood Plan.

BLAND SHIRE: NSW SES LOCALITY RESPONSE ARRANGEMENTS

**Chapter 2 of Volume 3 (NSW SES Response Arrangements for Bland
Shire) of the Bland Shire Local Flood Plan**

Last Update: September 2018

AUTHORISATION

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



Approved

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SECTOR OVERVIEW

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

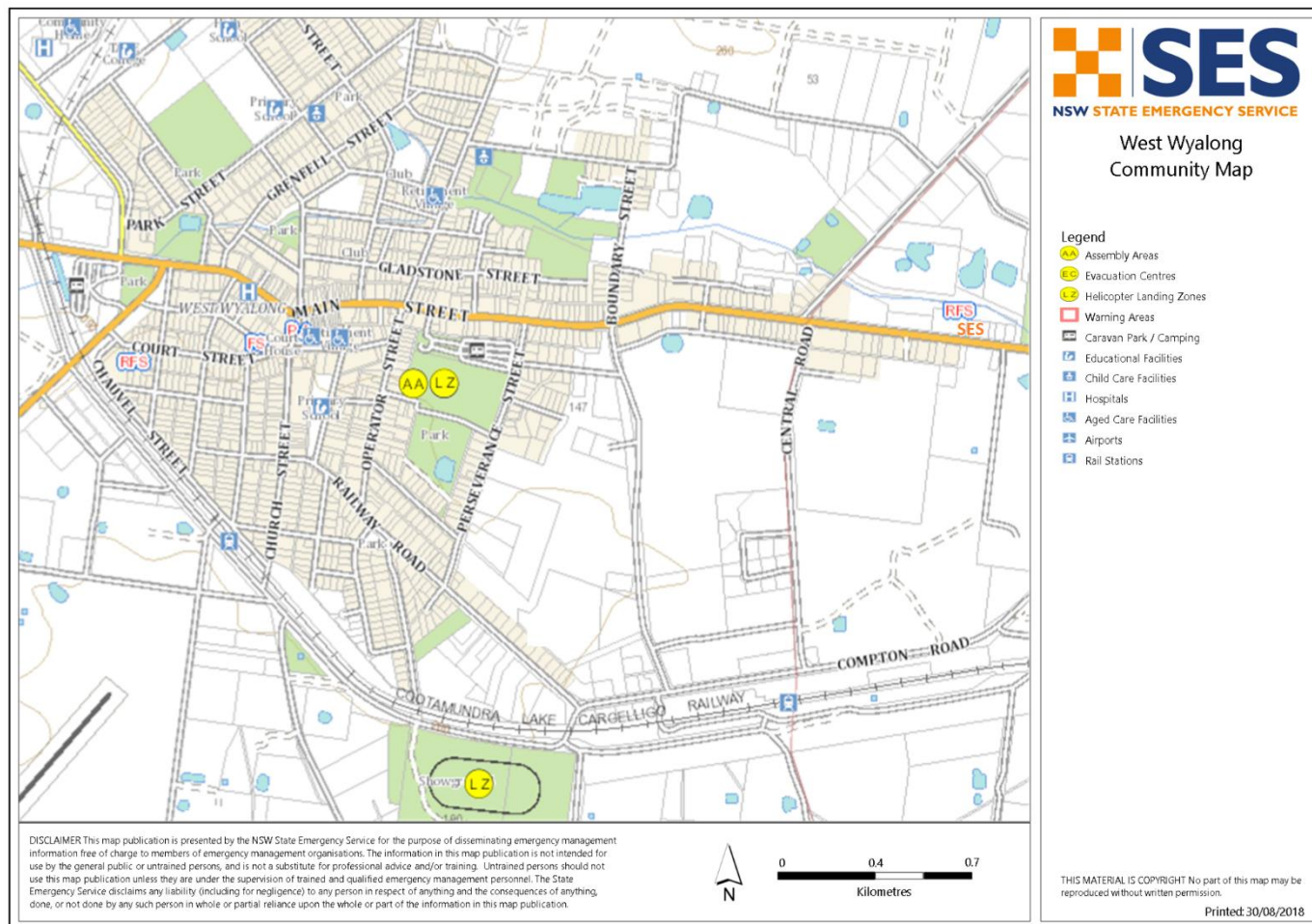
Sector Name	Community	Sector Basis	Total properties	Properties potentially at risk
Sector 1	West Wyalong	Community	3141	>6 residential and rural properties
Sector 2	Ungarie	Community	557	>27 residential, 4 commercial and rural properties isolated

1. WEST WYALONG SECTOR COMMUNITY

1.1. WEST WYALONG RESPONSE ARRANGEMENTS					
Refer to Volume 2: Hazard and Risk in Bland Shire for more information about this Sector/Community.					
Sector Description	This sector covers the community of West Wyalong Please refer to volume 2 of this Local Flood Plan for further information on this community				
Hazard	Flash Flooding				
Flood Affect Classification	Rising Road Access				
At risk properties	>6 residential and rural properties	Total number of properties within Sector/Community	1509		
Sector Control					
Key Warning Gauge Name	Name	AWRC No.	Min (m)	Mod (m)	Maj (m)
	No Key warning gauge				
General Strategy	<ul style="list-style-type: none"> • Manage operational response as required • Issue of early warning of possible flash flooding • Pre-deployment of sandbags 				
Key Risks / Consequences	The main risk at West Wyalong is flooding of the Newell Highway causing major traffic delays for weeks (8 weeks in 2016)				
Information and Warnings	<ul style="list-style-type: none"> • There are no official NSW SES bulletins or warning products issued for West Wyalong. • Warnings are provided through the Lachlan Region and Bland Shire Council Facebook pages. • Interagency Local Emergency Management Committee (LEMC) briefings as required • Bureau products will include NSW SES safety advice • Media releases 				
Property Protection	Specific property protection measures: The NSW SES West Wyalong Unit maintain stocks of sandbags and back-up supplies being held at the NSW SES Lachlan Region Headquarters. Supply of emergency stores such as sandbags will be processes through the NSW SES Lachlan Region Headquarters.				
	Assistance with property protection: Assistance with property protection is generally supported by the RFS.				
	Protection of essential infrastructure: There is no essential infrastructure that requires protection during an event.				
Evacuation and/or Isolation Triggers	No information currently available				

Evacuation Triggers	No information currently available
Sequencing of evacuation	No information currently available
Evacuation Routes	Due to the closure of the Newell Highway between West Wyalong and Forbes in 2016 the RMS diverted traffic from Melbourne to Brisbane via the Pacific Highway. All main roads are usually accessible to Wagga Wagga and Griffith.
Evacuation Route Closure	Closures are undertaken by Bland Shire Council or RMS as required.
Method of Evacuation	Self-evacuation as required
Evacuation Centre/Assembly Point	West Wyalong Stadium, 6 Short Street, West Wyalong. Noting that there would be no need to evacuate during a flash flood event as it effects more rural than urban properties.
Large scale evacuations	No information currently available
Rescue	Hot spots along the Newell highway and Barmedman road.
	Table 2, in Volume 2 provides information about isolated communities in the Bland Shire Council 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	<p>Helicopter Landing Points:</p> <ul style="list-style-type: none"> ▪ Ron Crowe Oval (-33.9255°S,147.2098°E) ▪ West Wyalong Showground (-33.93630°S, 147.21124°E) <p>Airports:</p> <ul style="list-style-type: none"> ▪ West Wyalong Airport (-33.93762°S, 147.19194°E)
Other	West Wyalong Show is held annually in the first week of September and attracts large numbers to the town as well as a number of significant sporting events throughout the year.

1.2. WEST WYALONG COMMUNITY MAP



2. UNGARIE COMMUNITY

2.1. UNGARIE RESPONSE ARRANGEMENTS

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

Sector Description	Ungarie is situated on the Humbug Creek (also known as Euglo Creek) and can experience flooding from this creek, its tributary, Youngara Creek and a nearby (unnamed) tributary as well as overland flow.				
Hazard	This area is subject to widespread farmland flooding from unnamed creeks that flow predominantly in a north-easterly direction.				
Flood Affect Classification	South of Wollongough street, the properties have overland escape routes.				
At risk properties	>27 residential, 4 commercial and rural properties isolated	Total number of properties within Community	287		
Sector Control					
Key Warning Gauge Name	Name	AWRC No.	Min (m)	Mod (m)	Maj (m)
	No key electronic warning gauges, manual gauge on Humbug Creek crossing on Mackrell Street.				
General Strategy	<ul style="list-style-type: none"> • Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions. • Issue of early warnings of flood level impacts and potential isolations. • Pre-deploy sandbags to assist with property protection. • Evacuate or at risk population: <ul style="list-style-type: none"> ○ Self-evacuation to family and friends outside the impacted area ○ Establishment of an assembly area/evacuation centre in consultation with welfare services functional area coordinator ○ Medical evacuation considerations. • Establish resupply operations where isolation has occurred. • Flood rescue where evacuation has failed, or where people have driven into flood water. 				
Key Risks / Consequences	<p>Significate rural and main roads are flooded in the area, inundation of residential and commercial properties within the township of Ungarie.</p> <p>Closure of Ungarie Central school due to flooding across Humbug Creek bridge crossing on Mackrell street.</p>				
Information and Warnings	NSW SES Flood Warning Equipment and Livestock Warnings Media Release such as Isolation Warnings Evacuation Warnings Evacuation Orders All clear Sequenced door knocking Media briefing Interagency Local Emergency Management Committee (LEMC) briefings				

Property Protection	<i>Specific property protection measures:</i> The NSW SES West Wyalong unit and the Ungarie Rural Fire Service maintain stocks of sandbags with backup supplies held at the Lachlan Region Headquarters. The supply of emergency stores such as sandbags will be processed through the NSW SES Lachlan Region headquarters.
	<i>Assistance with property protection:</i> Assistance with property protection is generally undertaken with the support of the Ungarie Rural Fire Service and Bland Shire Council personnel.
	<i>Protection of essential infrastructure:</i> The Sewage System is shut down prior to inundation by Bland Shire council personnel. The levee around the grain storage may require further sandbagging for protection.
Evacuation and/or Isolation Triggers	Up to 27 houses and 3 commercial premises in Ungarie may require evacuation during an event approaching the 2012 flood level (2.55 metres on the Mackrell Street bridge gauge). During this event access to Ungarie was cut for several days.
Evacuation Triggers	Evacuation will be considered when: <ul style="list-style-type: none"> ▪ Information from “Merrigreen” is received in relation to the amount of water in the creek (24hrs lead time). ▪ Information from “Gleneen” is received in relation to the height of water/bricks on their verandah (8hrs lead time). ▪ Information from “Hometurn” in relation to the water along the Cootamundra-Lake Cargelligo railway line (3hrs lead time).
Sequencing of evacuation	Elderly and informed will be evacuated as a first priority.
Evacuation Routes	Wollongough street, Ungarie street, Muriel street, Caroon Street to Lake Cargelligo/West Wyalong Road.
Evacuation Route Closure	Wollongough Street is closed to all traffic at 1.5 metre (which can be influenced by localised rainfall).
Method of Evacuation	Self-evacuation is historical the predominant means of evacuation, using private vehicles, to family and friends.
Evacuation Centre/Assembly Point	Ungarie Town Hall – Wollongough Street, Ungarie
Large scale evacuations	Large scale evacuations are unlikely in Ungarie
Rescue	The Southern side of the creek along Eugalo street can become a flood hotspot therefore Level 3 Flood Rescue technicians will be placed in Ungarie until the threat subsides.
Resupply	At Ungarie, in a flood extent exceeding 2.55 metres (which can be varied depending on flood conditions and local rainfall), the village may become isolated for up to 5 days. Along the reaches of the creek and tributaries within the Bland Shire, it is expected that individual rural properties may also require resupply.
	Table 2, in Volume 2 provides information about isolated communities in the Bland Shire area and potential periods of isolation. <ul style="list-style-type: none"> • A flowchart illustrating the Resupply process is shown in Volume 1 of the Local Flood Plan, Attachment 1.

Aircraft Management	<p><i>Helicopter Landing Points:</i></p> <p>Suitable landing points are located at:</p> <ul style="list-style-type: none"> ▪ Ungarie sports oval (showground) (-33.6368, 146.9804) ▪ Crn of Ungarie and Bathurst street (-33.6489, 146.9739)
	<p><i>Airports:</i></p> <ul style="list-style-type: none"> ▪ West Wyalong Airport is located 43 Kms SE of Ungarie (-33.93762°S, 147.19194°E)
Other	The Ungarie Show is held early September each year as well as a number of significant sporting events throughout the year.

2.2. UNGARIE SECTOR/COMMUNITY MAP

