NSW STATE EMERGENCY SERVICE

Bellingen LGA

Local Flood Emergency Sub Plan

FloodSafe

BELLINGEN SHIRE COUNCIL FLOOD EMERGENCY SUB PLAN

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

Volume 1 of the Bellingen Shire Council Flood Emergency Sub Plan

Endorsed by the Belligen Shire Council Local Emergency Management Committee

Endorsed Date: 18 January 2023

AUTHORISATION

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

Authorised

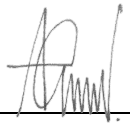
Signature: 

NSW SES Local/Unit Commander

Print Name: Jeannie Veitch

Date: 11/1/2023

Endorsed

Signature: 

Chair, Local Emergency Management Committee

Print Name: Ashley Greenwood

Date: 18/01/2023

VERSION HISTORY

Version Number	Description	Date
1.0	Bellingen Shire Flood Emergency Sub Plan	March 2013

AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to:

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NSW State Emergency Service
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Amendments in the list below have been entered in this plan.

Amendment Number	Description	Updated by	Date
1.1	Reference to Council owned Dams taken out of Appendix "B".	T Ware	10.1.2023

DISTRIBUTION LIST

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

CONTENTS

BELLINGEN SHIRE COUNCIL FLOOD EMERGENCY SUB PLAN 1
AUTHORISATION 2
VERSION HISTORY 3
AMENDMENT LIST 3
DISTRIBUTION LIST 3
CONTENTS 4
1 OUTLINE AND SCOPE 6
1.1 Purpose 6
1.2 Authority 6
1.3 Activation 6
1.4 Scope 6
1.5 Goals 7
1.6 KEY PRINCIPLES 7
1.7 Roles and Responsibilities 7
1.8 Plan Maintenance and Review 8
1.9 Supplementary Documents 8
2 OVERVIEW OF NSW FLOOD HAZARD AND RISK 8
2.1 The Flood Threat 8
3 PREVENTION/ MITIGATION 8
3.1 Introduction 8
3.2 Land Use Planning 9
3.3 Floodplain Risk Management 9
4 PREPARATION 9
4.1 Introduction 9
4.2 Flood Emergency Planning 9
4.3 Flood Intelligence Systems 10
4.4 Development of Warning Systems 10
4.5 Briefing, training and exercising 11
4.6 Community Resilience to Flooding 11
5 RESPONSE 12
5.1 Introduction 12
5.2 Incident Management Arrangements 12

5.3 Use of Information and Collection of Intelligence 13
5.4 Provision of Information and Warnings to the Community 14
5.5 Protection of Property 15
5.6 Road and Traffic Control 15
5.7 Protection of Essential Services 16
5.8 Evacuation 16
5.9 Evacuee Management And Welfare 18
5.10 Flood Rescue 19
5.11 Resupply 19
5.12 Return 20
5.13 End of Response Operations 21
5.14 Post Impact Actions 21
6 RECOVERY OPERATIONS 22
6.1 Introduction 22
6.2 NSW SES Recovery Role 22
7 ABBREVIATIONS 23
8 GLOSSARY 23
9 APPENDIX A – MAP OF BELLINGEN SHIRE COUNCIL AREA 24
10 APPENDIX B – ROLES AND RESPONSIBILITIES 25
11 APPENDIX C – COMMUNITY SPECIFIC ROLES AND RESPONSIBILITIES 31

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 Bellingen Shire Council Local Government Area (LGA).

1.2 AUTHORITY

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

1.2.2 This plan is a sub plan to the Bellingen Shire Council Local Emergency Management Plan (EMPLAN) and is endorsed by the Belligen Shire Council 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 Bellingen Shire Council 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 Bellingen Shire Council LGA. The Bellingen Shire Council LGA and its principal towns, villages, rivers and creeks are shown in Appendix A.

1.4.2 The Council area is in the NSW SES Northern Zone and for emergency management purposes, is part of the North Coast Emergency Management Region.

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

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

1.4.5 The arrangements for dealing with episodes of coastal erosion by severe weather, are described in the NSW State Storm Sub Plan.

1.4.6 The arrangements for the emergency management of tsunami are dealt with in the NSW State Tsunami Emergency Sub Plan.

1.4.7 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 Bellingen Shire Council are detailed within this plan, Appendix B and Appendix C.

1.7.3 Any agency with agreed responsibilities in this plan that are temporarily 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 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 Bellingen Shire Council LGA. This is outlined in Volume 2 – Hazard and Risk in Bellingen Shire Council.

3 PREVENTION/ MITIGATION

3.1 INTRODUCTION

3.1.1 The Floodplain Development Manual outlines the NSW Government's Flood Prone Land Policy which details the framework for managing flood prone land in New South Wales. Incorporation of floodplain risk management into land use

planning is one of the key means to limit the exposure to flood risks to our communities and help build long term resilience to future flood events.

3.2 LAND USE PLANNING

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

Actions:

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

b. NSW SES will provide responses to land use planning proposal referrals that have or will create significant flood risk to life and/or property due to flooding.

3.3 FLOODPLAIN RISK MANAGEMENT

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

Actions:

a. NSW SES will provide coordinated and consistent emergency management advice to councils and other agencies in relation to the management of land that is subject to flooding or coastal inundation.

b. NSW SES will provide advice, support, technical resources and training for NSW SES representatives to contribute effectively on local Floodplain Management Committees.

4 PREPARATION

4.1 INTRODUCTION

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

4.2 FLOOD EMERGENCY PLANNING

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

Actions:

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

b. Review plans as per Section 1.8.

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

4.3 FLOOD INTELLIGENCE SYSTEMS

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

Actions:

a. Gather and assess flood information for the full range of flood types and severities.

b. Collect, collate, and assess information on the characteristics of communities at risk and the potential effects of flooding on communities at risk.

c. Share flood intelligence information with supporting agencies.

4.4 DEVELOPMENT OF WARNING SYSTEMS

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

Actions:

a. All levels of government work in partnership to develop and maintain flood warning infrastructure.

b. NSW SES maintains a list of the requirements for flood warnings for flood gauges in NSW (including flood classifications, warning times required and key statistics) and can be found in the supplementary document to the NSW State Flood Plan (see Section 1.9). Gauges of relevance within the Bellingen Shire Council LGA are also listed in Volume 3 of this plan.

c. NSW SES will recommend new warning services and changes to warning alert levels for gauges to the NSW and ACT Flood Warning Consultative Committee.

d. The State Government, in partnership with Local Government, is responsible for developing and maintaining flash flood warning systems for local catchments where required.

e. NSW SES maintains a dedicated dam failure hotline and procedures to ensure priority dissemination of dam failure warnings.

f. NSW SES develops and maintains warning and flood information products by:

- Utilising flood intelligence data.
- Developing warning and flood information products.
- Continuously reviewing warning and flood information products.
- Consulting with affected communities, key stakeholders, Dam Safety NSW and the NSW and ACT Flood Warning Consultative Committee, and maintains Operational Readiness.

- Participating in the development of public information and warning systems.

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

4.5 BRIEFING, TRAINING AND EXERCISING

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

Actions:

a. NSW SES will consult stakeholders throughout the development of plans.

b. NSW SES will inform stakeholders of content changes after revisions.

c. NSW SES will ensure their facilities and resources are maintained and operationally ready.

d. NSW SES will train personnel for their expected flood operation roles.

e. NSW SES will regularly brief stakeholders on the exercise arrangements contained in the NSW Flood Emergency Sub Plan.

4.6 COMMUNITY RESILIENCE TO FLOODING

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

Actions:

a. Ensure ongoing recruitment and training of a diverse range of volunteers.

b. Ensure pre-planning to facilitate the management of spontaneous volunteers and community members during a flood.

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

Actions:

a. Partner 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. 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 of warnings for flash flood; or

d. On receipt of a dam failure alert; or

e. When other evidence leads to an expectation of flooding.

5.2 INCIDENT MANAGEMENT ARRANGEMENTS

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

Actions:

a. NSW SES uses the Australasian Inter-service Incident Management System (AIIMS) to manage the flood response.

b. Control of flood response will be at the lowest effective level and may be scaled to suit the incident.

c. The NSW SES State Controller (or delegate) will appoint Incident Controllers and establish Incident Control Centres (see NSW SES facilities on map in Appendix A).

d. The NSW SES Incident Controller, in consultation with participating supporting emergency services and functional areas will determine the appropriate breakdown of an Area of Operations into Divisions and/or Sectors in accordance with the principles of AIIMS.

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

Actions:

a. NSW SES will operate Incident Control Centre(s) as required.

b. The NSW SES Incident Control Centre(s) will:

- Control resources from NSW SES and coordinate resources of supporting emergency services and functional areas.
- Manage Request for Assistance (RFA) tasking and ensure they are actioned in a timely manner.
- Undertake response planning and determine future resourcing requirements.

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

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

Actions:

a. Supporting emergency services and functional areas should provide Liaison Officers to NSW SES Incident Control Centre(s) and/or Emergency Operation Centres as required.

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

c. Where possible Emergency Operation Centres to be co-located with NSW SES Incident Control Centres for Flood Emergency Response.

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

Actions:

a. The NSW SES Incident Controller will notify agencies of potential access issues between locations, for the consideration of pre-deploying of resources.

b. NSW SES may request resources and logistics support directly from a supporting emergency service or functional area.

c. Wherever possible, supporting organisations are to provide their own logistic support in consultation with NSW SES where appropriate.

d. The NSW SES Incident Controller will control air support operations and may utilise supporting agencies in the management of aircraft.

5.3 USE OF INFORMATION AND COLLECTION OF INTELLIGENCE

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

Actions:

a. Information relating to the consequences of flooding, response strategies, situational awareness and operational updates will be distributed by NSW SES to supporting emergency services and functional areas listed under this Plan.

b. All supporting emergency services , functional areas and Council will accurately record and report information relevant to their activities and any real time flood information (including road closure information) to the NSW SES Incident Controller. This may be in the form of a combined Emergency Operations Centre (EOC) report, or direct from agencies where an EOC has not been established.

c. NSW SES may establish and operate a Joint Intelligence Unit to coordinate the collection, collation, interpretation, mapping, actioning and dissemination of information.

d. Reconnaissance, mapping, damage assessments, intelligence validation and post flood evaluation will be coordinated by NSW SES. This may occur post impact and continue into the recovery phase.

e. NSW SES may request Engineering to assist with the gathering of flood intelligence including (not limited to) maximum flood extents, peak flood heights, recording major flood damage at key high velocity locations and preparation of After-Flood Report.

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

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

5.4 PROVISION OF INFORMATION AND WARNINGS TO THE COMMUNITY

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

Actions:

a. The Bureau issues public weather and flood warning products before and during a flood. These may include:

- Severe Thunderstorm Warnings – Detailed - issued for all capital cities and surrounding areas when individual severe thunderstorms are within range of the capital city radars.
- Severe Thunderstorm Warnings - Broad-based - issued for the entire Australian State or territories affected highlighting broad areas where severe storms may occur within the next 3 hours.
- Severe Weather Warnings with reference to heavy rainfall and/or storm surge.
- Flood Watches.
- Flood Warnings.

b. NSW SES Incident Controllers will issue the following NSW SES Flood Warnings aligning to the Australian Warning System:

- Advice.
- Watch And Act.
- Emergency Warning.

c. NSW SES liaises with the Bureau to discuss the development of flood warnings as required.

d. NSW SES provides alerts and deliver flood information to affected communities using a combination of public information.

e. NSW SES may request supporting agencies redistribute NSW SES alerts and information, including through the provision of doorknocking teams.

f. Road closure information will be provided to the community through the following agencies/methods:

- Local Government Council websites.
- Transport for NSW 'Live Traffic' website: https://www.livetraffic.com/ or 'Transport InfoLine': 131 500. VMS messaging on roadways may also be used to advise motorists.

g. The Public Information and Inquiry Centre will be established by NSW Police Force where required to provide information regarding evacuees and emergency information. Contact details will be broadcast once the centre is established.

h. The Disaster Welfare Assistance Line will be established by Disaster Welfare Services where required to provide information on welfare services and assistance. Assistance line contact details will be broadcast once Disaster Welfare Services commence.

5.5 PROTECTION OF PROPERTY

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

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

a. The protection of properties including critical infrastructure through flood protection systems (e.g. sandbagging) to minimise entry of water into buildings.

b. The raising or moving of household furniture and commercial stock/equipment.

5.6 ROAD AND TRAFFIC CONTROL

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

Actions:

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

b. Energy and Utility Services Functional Area is to coordinate the assessment and restoration of essential energy and utility services (not including telecommunications).

c. Telecommunications Services Functional Area is to coordinate the assessment and restoration of telecommunications and the Public Safety Network.

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

b. Welfare Services Functional Area will manage evacuation centres for affected residents and travellers in accordance with Welfare Services Functional Area Supporting Plan.

c. Schools Administration (Government and Private) will manage the safety of students directly affected by flooding and will work with NSW SES in the temporary closure of schools and will coordinate with NSW SES, Transport and Welfare Services in the management of school evacuees.

d. Disaster Victim Registration will be controlled and coordinated by NSW Police Force with the assistance of NSW SES and the Welfare Services Functional Area.

e. NSW SES will provide details of all residents assisted in evacuations to the Welfare Services Functional Area as early as possible.

f. Where the expected remaining number of evacuees and the duration of evacuation is assessed to be beyond the capability and capacity of the established evacuation centre arrangements the SEOCON may establish Major Evacuation Centres or Mass Care facilities.

g. The decision to establish Major Evacuation Centres or Mass Care Facilities will be made by NSW SES and SEOCON in consultation with members of the State Emergency Management Committee.

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

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

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

Actions:

a. Agriculture and Animal Services Functional Area will coordinate the welfare of livestock, pets, companion animals and wildlife including support to primary producers, animal holding establishments and community members.

b. Agriculture and Animal Services Functional Area role will coordinate the evacuation, emergency care of animals and assessment, humane destruction and disposal of affected animals, and supply of emergency fodder, water and aerial support where necessary.

5.10 FLOOD RESCUE

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

Actions:

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

b. Flood rescue operations will be conducted in accordance with the State Rescue Board NSW State Rescue Policy which sets out the framework, governance, responsibilities and requirements for the management and conduct of flood rescue in NSW.

c. NSW SES may request other supporting emergency services to undertake flood rescues on behalf of NSW SES. Agencies must be authorised/accredited to undertake flood rescue operations in accordance with State Rescue Board requirements, as prescribed by NSW SES. Supporting emergency services must supply information regarding rescues performed to NSW SES. Notification arrangements with NSW Police Force are outlined in the State Rescue Board NSW State Rescue Policy; and

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 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 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 Welfare Services Functional Area for assistance.

5.12 RETURN

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

Actions:

a. The NSW SES Incident Controller will determine when it is safe to progressively return in consultation with the relevant Emergency Operations Controller and supporting agencies considering the ongoing risk to public safety.

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

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

c. The NSW SES Incident Controller will issue an Advice Warning advising 'Reduced Threat: Return with Caution' when the immediate danger to life and property has passed for areas.

d. NSW SES will facilitate the return of evacuees to their homes.

5.13 END OF RESPONSE OPERATIONS

5.13.1 **Strategy**: Conclude response operations.

Actions:

a. Response operations will conclude when:

- There is a reduced likelihood of additional flooding within the Area of Operation and flood waters have receded.
- All requests for assistance related to the flood have been completed.
- The need for warning and evacuation no longer exist.
- There is no further likelihood of rescuing people.
- Resupply is no longer required (resupply operations may occur concurrently with the recovery phase).
- Response to fire and hazardous material incidents have concluded (not including subsequent clean-up of contaminated sites).
- 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 Bellingen 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 Resilience NSW 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 Bellingen Shire Council Council(s) on post flood data collection analysis including review of flood intelligence where necessary.

6 RECOVERY OPERATIONS

6.1 INTRODUCTION

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

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

6.2 NSW SES RECOVERY ROLE

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

6.2.2 **Actions**:

a. NSW SES will provide representation to Recovery Committees as required and may have an ongoing role in the Recovery phase.

b. NSW SES roles on Recovery Committees may include providing information about any continuing response, guidance on mitigation strategies and general advice and assistance to the committee as a subject matter specialist and/ or expert.

c. NSW SES will provide information to Resilience NSW to support applications to Treasury for Natural Disaster Relief and Recovery Arrangements.

d. 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 Resilience NSW.

7 ABBREVIATIONS

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

8 GLOSSARY

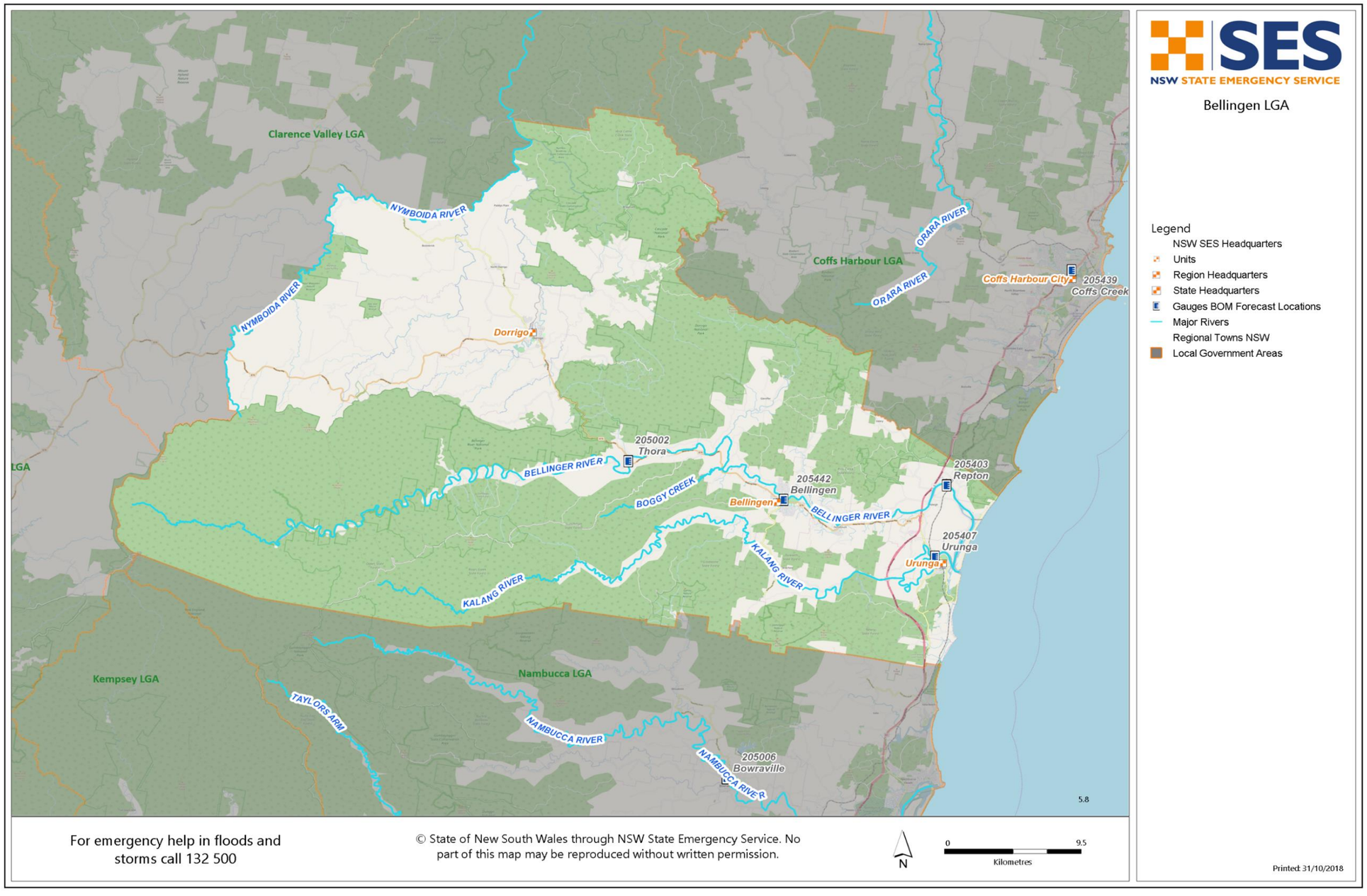
Common emergency service terminology can be found within the Australian Disaster Resilience Glossary.

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 Bellingen 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 Emergency Sub 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 (Bureau) are outlined in the NSW State Flood Plan.
Bellingen Shire Council	**Preparedness** • 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 Development Manual. • Provide levee studies, flood studies and floodplain management studies to NSW SES. • Coordinate the development of warning services for catchments prone to flash flooding (small catchments), where appropriate. • 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. **Response** • Subject to the availability of council resources, assist NSW SES with flood operations including: – 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.

AGENCY	RESPONSIBILITIES
	– Warning and/or evacuation of residents and other people in flood liable areas. – Provision of back-up radio communications. – Resupply of isolated properties. – Technical advice on the impacts of flooding. – Close and reopen council roads (and other roads nominated by agreement with Transport for NSW) and advise NSW SES, NSW Police Force and people who contact the council for road information. – Assist NSW SES to provide filled sandbags and filling facilities to residents and business in areas which flooding is expected. • Assist with making facilities available for domestic pets and companion animals of evacuees during evacuations. • Operate flash flood warning systems. • 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. **Recovery** • 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)	• 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.

AGENCY	RESPONSIBILITIES
	• Ensure that owners and occupiers of movable dwellings are aware that if they are expecting to be absent for extended periods, they should: – Provide the manager of the caravan park with a contact address and telephone number in case of an emergency. – Leave any movable dwelling in a condition allowing it to be relocated in an emergency (i.e.: should ensure that the wheels, axles and draw bar of the caravans are not removed and are maintained in proper working order). • Ensure that occupiers are informed of Flood Information. At this time, occupiers should be advised to: – Ensure that they have spare batteries for their radios. – Listen to a local radio station for updated flood information. – 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	• When notified of possible flooding or isolation, childcare centres and preschools should. – 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	The roles and responsibilities for Energy and Utilities Services are outlined in the Energy and Utility Services Supporting Plan (EUSPLAN).

AGENCY	RESPONSIBILITIES
	Roles and responsibilities in addition to the Supporting Plan are: • Assist NSW SES with identification of infrastructure at risk of flood damage where resources are available. • Facilitate local utility service distribution providers (electricity, gas, water, wastewater) to: – Provide advice to 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 with regard to electrical hazards during flooding and coastal erosion/inundation, and to the availability or otherwise of the electricity supply. – Clear or make safe any hazard caused by power lines or electricity distribution equipment. – Reconnect customers' electrical / gas / water / wastewater installations, when certified safe to do so and as conditions allow. – Assist 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)	• Monitor flood operations. • If requested, coordinate support for the NSW SES Incident Controller.
Local Emergency Management Officer (LEMO)	• If requested by the NSW SES Incident Controller, advise appropriate agencies and officers of the start of response operations.
Manly Hydraulics Laboratory (MHL)	The roles and responsibilities for Manly Hydraulic Laboratory are outlined in the NSW State Flood Plan.

AGENCY	RESPONSIBILITIES
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.
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 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**.**
Resilience NSW	The roles and responsibilities for Resilience NSW are outlined in the 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.

AGENCY	RESPONSIBILITIES
Transport for NSW	• Transport for NSW coordinates information on road conditions for emergency services access. • Transport for NSW coordinates the management of the road network across all modes of transport. • Transport for NSW in conjunction will assist 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	**Preparedness** • Understand the potential risk and impact of flooding. • Prepare homes and property to reduce the impact of flooding. • Understand warnings and other triggers for action and the safest actions to take in a flood. • Households, institutions and businesses develop plans to manage flood risks, sharing and practicing this with family, friends, employees and neighbours. • Have an emergency kit. • Be involved in local emergency planning processes. **Recovery** • Assist with community clean-up if required and able to do so. • Participate in After Action Reviews if required.

NSW STATE EMERGENCY SERVICE

HAZARD AND RISK IN BELLINGEN SHIRE

Volume 2 of the Bellingen Shire Flood Emergency Sub Plan

Last Update: December 2024

FloodSafe

AUTHORISATION

The Hazard and Risk in Bellingen 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

Signature 

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Date: 2nd December 2024

Approved

Signature: 

NSW SES North Eastern Deputy Zone

Print Name *Commander* Scott McLennan

Date: 2nd December 2024

Date Tabled at LEMC 3rd December 2024

CONTENTS

VERSION LIST **5**

AMENDMENT LIST **5**

1 THE FLOOD AND COASTAL EROSION THREAT **6**

1.1 Overview 6

1.2 Landforms and River Systems 6

1.3 Weather Systems and Flooding 7

1.4 Characteristics of Flooding 8

1.5 Flood History 11

1.6 Flood Mitigation Systems 13

1.7 Extreme Flooding 13

1.8 Coastal Erosion 13

2 EFFECTS ON THE COMMUNITY **15**

2.1 Community Profile 15

SPECIFIC RISK AREAS - FLOOD 17

2.2 Dorrigo Sector 18

2.3 Bellingen Sector 20

2.4 North Bellingen Sector 25

2.5 Repton Sector 29

2.6 Urunga Sector 33

SPECIFIC RISK AREAS – COASTAL EROSION 37

2.7 Bellingen Shire 37

ROAD CLOSURES AND ISOLATED COMMUNITIES 38

2.8 Road Closures 38

2.9 Summary of isolated communities and properties 40

ANNEX 1: BELLINGER RIVER BASIN SCHEMATIC **42**

ANNEX 2: FACILITIES AT RISK OF FLOODING AND/OR ISOLATION **43**

MAP 1: BELLINGER RIVERBASIN **46**

MAP 2: NORTH BELLINGEN TOWN MAP **47**

MAP 3: BELLINGEN TOWN MAP **48**

MAP 4: REPTON AND RALEIGH TOWN MAP **49**

MAP 5: URUNGA TOWN MAP **50**

MAP 6: DORRIGO TOWN MAP **51**

3 REFERENCES 52

LIST OF TABLES

Table 1: Indicative Flow Travel Time for the Bellinger and Kalang Rivers 10

Table 2: Design flood heights for the Bellinger and Kalang Rivers (in metres) (1). 10

Table 3: Flood History for the Bellinger between 1870 and 2022 12

Table 4: Census of Housing and Population data (2021) (3) 15

Table 5: Number of residential and commercial properties inundated in design flood events 17

Table 6: Estimated number of properties inundated above floor level and over ground in Bellingen Sector related to the Bellingen gauge (205442/59126) 22

Table 7: Estimated number of properties inundated above floor level and over ground in North Bellingen Sector related to the Bellingen gauge (205442/59126) 26

Table 8: Estimated number of properties inundated above floor level and over ground in Repton Sector related to the Repton gauge (205413/559024) 31

Table 9: Estimated number of properties inundated above floor level and over ground in Urunga Sector related to the Urunga gauge (205407/559011) 35

Table 10: Roads liable to flooding in Bellingen LGA. 38

Table 11: Potential Periods of Isolation for communities in the Bellingen LGA during a Major flood. 41

VERSION LIST

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

Description	Date
Bellingen Shire Flood Emergency Sub Plan	Feb 2022
Bellingen Shire LFP (Update)	Nov 2015
Bellingen Shire LFP	Mar 2013
Bellingen Shire Local Flood Plan	2005

AMENDMENT LIST

Suggestions for amendments to this Volume should be forwarded to:

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

Amendment Number	Description	Updated by	Date

Document Issue: Version 3-02052016

1 THE FLOOD AND COASTAL EROSION THREAT

1.1 OVERVIEW

a. The Bellingen Shire Council area consists primarily of the Bellinger River catchment and a small part of the Nymboida River catchment. These areas are shown on Map 1.

b. The Bellinger and Kalang Rivers join and discharge into the Pacific Ocean near Urunga. The total catchment area of both rivers is 1110 km2. The catchment area of the Kalang River upstream of its junction with the Bellinger River is approximately 340 km2.

c. The headwaters of the catchments are located in the Dorrigo Plateau escarpment and are characterised by steep topography. Annual rainfall averages within the catchment are among some of the highest in New South Wales. The steep terrain results in an orographic effect that enhances rainfall.

d. The lower reaches are characterised by broad floodplains and farmland. Flooding in the lower reaches of the estuary is influenced by elevated ocean levels. Residential development within the catchments generally consists of small settlements. Major centres exist at Bellingen and Urunga. Small settlements include Raleigh, Newry Island, Repton, Mylestom, Fernmount, and Yellow Rock.

1.2 LANDFORMS AND RIVER SYSTEMS

Bellinger River Valley

a. The Bellinger River valley comprises the catchment areas of the North and South Arms of the Bellinger River, which are referred to as the Bellinger and Kalang Rivers respectively (Map 2). The total catchment area, to the mouth at Urunga, is 1,110 km². About two thirds of this is drained by the North Arm, and the catchment to the town of Bellingen covers 650 square kilometres. The catchment area of the Kalang River upstream of the Bellinger River junction is approximately 340 square kilometres (1).

b. The two arms rise in the forested and extremely rugged New England Plateau into which they have cut deep and precipitous gorges. The northern boundary, separating the Bellinger from the Clarence River valley, is formed by the high and well defined southern perimeter of the Dorrigo Plateau at elevations of 300 to 1,400 metres. The southern boundary, with the Nambucca Valley, is formed by an elevated spur of the New England Plateau extending to Mount Yarrahapinni only seven kilometres from the coast, with elevations generally up to 900 metres. Along the western boundary the highest peaks (Point Lookout and Mount Darkie) exceed 1,500 metres (2). Above

Tarkeeth on the Kalang River and Bellingen on the Bellinger River the areas of alluvial flats are limited to the width of the valley floors adjacent to the main channels (3).

c. Downstream from Bellingen and Tarkeeth the two main arms enter the main floodplain areas, flowing generally in an easterly direction to converge at Urunga and exit through the sandy coastline to the Pacific Ocean. Throughout the lower floodplain, ground levels generally slope away from the river banks with low lying swamps at the base of the adjacent hills (3).

d. The main tributaries of the Bellinger River (North Arm) are Rosewood River, Long, Woods, Dardanelles, Bishops, Never Never, Hydes, Scraggy, Diehappy and Boggy creeks. The Kalang River is fed by Roses, Middle Camp, Cooks, Moodys, Spicketts and Picket Hill creeks. Of these, only the Never Never and Hydes Creek valleys have any significant development of alluvial flats (3).

e. Tidal influence extends approximately 22 kilometres upstream on both arms to Bellingen on the Bellinger River and to Brierfield on the Kalang River.

1.3 WEATHER SYSTEMS AND FLOODING

a. Most locations in the Bellinger River valley receive an annual average rainfall of about 1400 millimetres, with the Dorrigo Plateau receiving 1750 millimetres. Most flooding in the Bellingen Shire Council area results from low pressure cells. Amongst these are (3):

   i. Degraded ex-tropical cyclones, migrating southwards and becoming deep low-pressure systems. These systems occur in the mid-late summer months and in autumn, bringing very heavy falls over wide areas and over periods of up to two days when they lie off or over the coast. Falls of 250 millimetres or more in 24 hours are not uncommon under these circumstances, and Dorrigo has recorded 809 millimetres in a 24-hour period under the influence of such a system.

   ii. East Coast low-pressure systems can occur throughout the year, but are most common between the summer and winter months. They travel slowly along the coast, creating heavy rain over the coastal strip and nearby upland country. They also can bring very heavy falls over periods of up to two days.

   iii. Monsoonal low pressure systems moving across the Great Dividing Range from Northern Australia, usually during summer and autumn months. These systems are indicated on weather maps as elongated low- pressure throughs stretching from the Northern Territory to the south coast.

b. In addition, high-intensity, short-duration convective thunderstorms, which occur during the summer months, may briefly cause local flooding, flooding on minor creeks and the surcharging of urban drainage systems. Such flooding is `flash'

flooding occurring with little or no warning and having no significant impact on water levels on the Bellinger and Kalang rivers. Storms of this nature could however result in the flooding of Cemetery Creek threatening properties in Bellingen (3).

c. The historical record shows that while flooding can occur in any month of the year, more floods have occurred on the Bellinger River in February than in any other month, with similar numbers of events occurring in the other months of the flood season. This season runs from January to July. Only about ten percent of the recorded floods have occurred in the August-December period (3).

1.4 CHARACTERISTICS OF FLOODING

a. Up to 42 square kilometres of land is thought likely to be inundated in the 1% Annual Exceedence Probability (AEP) event. The more frequent, low-level floods inundate only the swampy areas on the floodplain, with overtopping of natural levees occurring in the 5- 10% AEP events. As is common on the shorter, steeper coastal rivers in NSW, warning times are typically short and flows are often dangerously fast. Water levels can rise rapidly in all creeks and rivers (3).

b. The Raleigh area generally to the north of the Raleigh Bridge (Giinagay Way) on the eastern side of the river. The 1% AEP flood level is approx. 4.3 metres AHD with ground levels as low as 1.5 metres AHD. Access to high land is up to 800 metres by road along Giinagay Way. The land is high hazard floodway (Bellingen Shire Council, 2003).

c. Central Drainage Line, North Bellingen is a high hazard floodway in relatively minor flood events. The Central Drainage line describes a small catchment in North Bellingen that captures overland flow paths from Tamarind Drive, Sunset Ridge Drive, Kenny Close and Elliot Close. Floodwaters flow behind properties to the west of Lyon Street towards Wheatley Street and Hammond Street. While there is a 1.2 m diameter pipe under Wheatley Street, it is overtopped in a 1% AEP event to a depth of 0.42 m. Significant ponding occurs on the property behind the pipe (1). The most severe flooding in North Bellingen comes from riverine flooding, rather than local catchment flooding, which results in flood depths of up to 2.5 m at properties on Black Street in the 1% AEP event. Depths greater than 2 m occur on properties along Hammond Road and Dowle Street. In the PMF, a flow path develops between the Bellinger River and the Central Drainage Line, isolating properties between Hobson Close and the Bellinger River (1).

d. East Bellingen is a high hazard floodway in relatively minor flood events. Access is cut in the early stages of a flood. As for North Bellingen rescuers would be at risk if occupants were not evacuated prior to the area becoming isolated (Bellingen Shire Council, 2003).

e. Cemetery Creek is a floodway from local runoff that runs through Bellingen. There is limited warning time available due to the small catchment and there is no formal warning system. It is characterised by short duration flooding, particularly in the headwaters and in the central parts of Bellingen. It drains to the South East and connects with the Bellinger River. Anecdotally, residents have commented on Cemetery Creek flooding being the major cause of inundation of properties through Bellingen during the 1974 flood, due to elevated river levels (4).

   When Cemetery Creek overtops its banks it can cause significant inundation of low lying areas to the south of Waterfall Way, particularly between Ford and Prince Streets (4).

f. In frequest events flood behavour in the Urunga Urban area is largely dominated by overland flow while in larger events the longer duration river dominated events generate higher flood levels, except in areas with steep topography such as Lourdes Avenue, and South Street. Riverine levels can restrict the drainage of overland flow. Flood waters pool behind the North Coast railway embankment to depths of 1.7 m within the reserve. There is one 1.2 m diameter circular culvert under the railway embankment, which struggles to convey water beneath the embankment, particularly with elevated downstream levels. Similar flood behaviour is experienced in the 5%, 1% and 0.2% AEP flood events. In the 1% AEP flood event, flood depths in the order of 1 m occur in Pilot Street and at the intersection of Newry St East and Bonville Street. In the PMF event, as the flood approaches the peak, the railway embankment is overtopped with flood waters flowing in a south westerly direction (1).

g. In addition to creek and riverine flooding, raised sea levels as a result of storm surge conditions or highest astronomical tides could cause flooding of low-lying areas along the coast and impede drainage from the rivers. The result would be a prolongation of flooding and a raising of flood levels, especially along the lower reaches of the Bellinger and Kalang rivers. At Coffs Harbour, to the north of the council area, it has been estimated that in a 5% AEP storm event, sea levels could rise to 2.2 metres AHD while in a 1% event they could rise to 2.6 metres AHD. Similar values would apply to the coast off the Bellingen Shire Council area (Bellingen Shire Council, 2003). In addition to raised sea levels, fluvial deposits in the lower estuary can affect the flood behaviour (Bellingen Shire Council, 2010).

h. The rate of rise of flood waters in the lower valley is affected by the cycle of tides and by tidal abnormalities produced by storm action out to sea. Apart from the exception of severe floods it is anticipated that peak flood heights in this area will coincide with the peaking of tides (3).

i. Rates of river rise at Bellingen can be high. In 1974 and 1977 the river rose above the 6.0 metres level by 0.3 and 0.4 metres per hour respectively. In bigger floods the rate

is likely to be even greater, perhaps to about 0.8 metres per hour in the 1% event. These rises imply relatively short warning times (3).

j. Peak flood heights on the lower river (below Repton) occur about 6-8 hours after the peak at Bellingen (3). Travel times are summarised in table 1.

Table 1: Indicative Flow Travel Time for the Bellinger and Kalang Rivers

Locations	Travel Time
Thora (205002/59121) – Bellingen (205442/59126) (Bellinger River)	1.5-3 hours
Gleniffer (205014/559044) – Bellingen (205442/59126) (Bellinger River)	1-4 hours
Bellingen (205442/59126) – Repton (205403/559024) (Bellinger River)	3-4 hours
Koorowi Scotchman (205440/559008) – Newry Island (205458/559020) (Kalang River)	1 hour
Newry Island (205458/559020) – Urunga (205407/559011)	**No flow time**

Design Flood Peaks

k. Design flood heights for gauges on the Bellingen and Kalang Rivers are presented in Table 2.

l. The Probable Maximum Flood (PMF) has been estimated to reach 16.74 metres at Bellingen, 9.00 metres at Repton, 8.87 metres U/S Newry Island and 8.32 metres at Urunga. Flooding of this magnitude would result in the inundation of approximately 1062 properties (5).

m. Rainfall in the order of 300 millimetres in 48 hours are 20% AEP events, exceeding 370 millimetres in 48 hours are 10% AEP, around 450 millimetres is 5% AEP and over 600 millimetres is the 1% AEP (5).

Table 2: Design flood heights for the Bellinger and Kalang Rivers (in metres) (1).

Frequency	Bellingen Bridge (205442)	Urunga (205407)	Repton (205403)	Newry Island (205458)
20% AEP	7.89	1.72	2.48	2.14
5% AEP	9.39	2.03	3.58	2.93
1% AEP	11.08	3.45	4.66	4.07
0.2% AEP	11.99	4.51	5.44	4.92
PMF	16.74	8.32	9.0	8.87

1.5 FLOOD HISTORY

a. Flooding has been a significant problem in the council area since European settlement began in the 1840s, with serious floods on the Bellinger in 1864, 1870, 1875, 1876, 1887, 1890 and 1894. These events damaged roads and caused severe erosion and the shoaling of the river mouth. In the 20th century the first serious flood was in 1919, and frequent high-level flooding occurred during the 1930s and 1940s (3).

b. Table 3 records the floods known to have reached or exceeded the present-day moderate flood level of 6.7 metre at Bellingen. About 46 floods of this severity - roughly one every three years, on average - have been recorded. At least 40 additional floods reaching the 5.0 metre level have occurred since 1921, along with a number of lesser freshes. It appears that flooding of some degree occurs, on average, about once or twice per year, with local ponding in the backswamps. The `major flood' threshold of 8.2 metres is reached about once every six or seven years; very roughly, this equates to the overtopping of the river's natural levees. This historical pattern is very uneven, however, six floods between 1957 and mid-1977 exceeded the 8.2 metre level, but only one did so between mid-1977 and 1997 (a period in which drought conditions were common). Similarly the period between 1870 and 1894 was one in which there were several serious floods, whereas no floods reached 8.2 metres between 1894 and 1933 (3).

c. Three floods have been recorded above major in recent years at the Repton gauge (205403/559024) in March 2001, May 2009 and February 2013 (with respective peaks of 3.24, 2.89 and 3.17 metres).

Table 3: Flood History for the Bellinger between 1870 and 2022

Date	Height (metres)	Date	Height (metres)
06 April 1962	6.7	02 May 2015	7.95
05 July 1973	6.7	06 March 1919	7.95
14 March 1976	6.7	15 December 2020	7.96
08 March 2001	6.7	10 March 2001	8
02 April 1988	6.7	02 April 1989	8
17 February 1959	6.7	11 March 1956	8.05
24 February 2022	6.71	20 October 2004	8.1
18 March 2017	6.89	08 May 1963	8.2
26 January 2012	6.9	17 February 2009	8.2
06 April 1962	6.9	10 February 1956	8.2
28 February 2022	6.91	05 July 1933	8.25
19 January 1928	6.95	02 February 1893	8.25
21 June 1976	7	01 January 1887	8.25
16 May 1977	7	22 May 2009	8.4
14 July 1954	7	03 January 1938	8.45
09 May 1980	7	01 February 1890	8.45
10 July 1962	7.2	29 March 2022	8.45
06 November 2009	7.2	09 March 2001	8.5
11 November 1959	7.25	18 May 1977	8.5
23 May 2009	7.3	07 April 1962	8.5
24 January 2012	7.3	31 March 2009	8.6
12 February 1937	7.35	10 March 2001	8.6
26 August 1949	7.35	24 April 1989	8.6
11 June 1945	7.35	09 March 2001	8.7
26 December 1943	7.35	04 March 1894	8.75
18 February 1893	7.35	13 June 1967	8.8
03 June 1893	7.35	22 February 2013	9
26 January 2012	7.5	01 March 1890	9.05
30 January 1967	7.55	04 January 1959	9.15
03 March 2006	7.6	10 March 1974	9.3
09 July 1985	7.6	01 July 1876	9.65
14 June 2011	7.8	21 February 1954	9.85
08 March 1964	7.8	05 March 1946	9.85
31 March 2009	7.9	24 June 1950	10.5
01 February 2001	7.9	01 February 1875	10.95
28 October 1972	7.9	01 November 1870	11.5

1.6 FLOOD MITIGATION SYSTEMS

a. Only limited flood mitigation works have been carried out in the valleys of the Bellinger and Kalang rivers. Rock and earthfill works have been used to prevent bank erosion in various areas including Repton, Mylestom and the Bellingen Island Reserve, and farmers have undertaken minor drainage works to hasten drainage after floods. Some road raising has been carried out and a number of houses on the floodplain have also been raised (3).

b. There is a small levee protecting the Golf Club, which may overtop from approximately 8.39 metres. Overtopping of the levee will cause inundation of the club (3).

c. Bellingen Shire Council has installed 4 flood cameras, which monitor flood levels at low level bridges in the Bellinger and Kalang River Catchments. The camera locations are:

   i. Lavenders Bridge - Bridge Street, Bellingen,

   ii. Lean's Bridge - Darkwood Road, Thora,

   iii. Moodys Bridge - Kalang Road, Kalang and

   iv. Spicketts Bridge - Bowraville Road, Brierfield.

1.7 EXTREME FLOODING

a. Severe floods reach peak levels much higher than those reached in previous events, and usually rise more rapidly and have faster-flowing and more dangerous flood waters. In all areas, urban and rural, the impact of flooding in the PMF is much more severe than in the 1% event. The approximate number of dwellings inundated by the PMF approaches 1062 (6). Some of the extra houses affected in floods more severe than the 1% AEP flood will probably be affected in flooding only slightly more severe than in the 1% AEP event (5).

1.8 COASTAL EROSION

a. Areas identified as being at high or extreme immediate risk from beach erosion include:

   i. Schnapper Beach Road

   ii. Hungry Head Road

   iii. Hungry Head Watch Tower

   iv. Dalhousie Creek and Urunga SLSC Beach access

   v. North Hungry Head Beach 4WD access

vi. North Beach (Holiday Park, 4WD and SLSC) access (Salients, 2023).

b. Areas identified as being at immediate risk from coastal inundation are:

i. Urunga Dalhousie Creek North Coast Railway (Extreme immediate inundation risk) (7).

c. Cliff instability refers to a variety of geotechnical processes on coastal cliffs and bluffs, including rock fall, slumps and landslides. These events may occur without warning. A cliff instability hazard assessment has not been completed for the Bellingen coastline at this time (7).

2 EFFECTS ON THE COMMUNITY

2.1 COMMUNITY PROFILE

Table 4: Census of Housing and Population data (2021) (4)

Census Description	Bellingen LGA	Bellingen	Thora	Urunga	Dorrigo
Total Persons	13,252	3,923	311	3,185	1,214
Aged 0-4 yrs	542	183	10	138	55
Aged 5-14 yrs	1,672	643	49	304	118
Aged 65 + yrs	3,559	613	74	1,074	423
Of Indigenous Origin	539	168	13	155	67
Who do not speak English well	275	93	11	48	24
Have a need for assistance (profound/severe disability)	830	234	13	230	95
Living alone (Total)	1,505	428	24	435	211
Living alone (Aged 65+)	824	240	12	267	128
Residing in caravans, cabins or houseboats or improvised dwellings	149	15	0	64	9
Occupied Private Dwellings (Households)	5,185	1,469	109	1,341	545
No Motor Vehicle	180	51	0	76	36
Caravan, cabin, houseboat or improvised dwell	87	8	0	36	7
Rented via State or Housing Authority	78	19	0	53	9
Rented via Housing Co-Op or Community Church Group	31	20	0	6	0
No Internet Connection	1,224	319	unk	341	190
Unoccupied Private Dwellings	633	101	19	130	77
Average persons per occup dwelling	2.3	2.4	2.7	2.2	2.0
Average vehicles per occup dwelling	1.9	1.8	2.2	1.8	1.7

Census Description	Raleigh	Repton	Mylestom	Kalang	Brierfield	Fernmount
Total Persons	**681**	**667**	336	280	322	444
Aged 0-4 yrs	23	18	5	9	10	21
Aged 5-14 yrs	69	99	28	29	48	57
Aged 65 + yrs	175	137	94	60	48	85
Of Indigenous Origin	36	17	10	12	15	19
Who do not speak English well	16	11	0	15	6	5
Have a need for assistance (profound/severe disability)	79	30	34	8	7	16
Living alone (Total)	37	55	42	30	14	20
Living alone (Aged 65+)	12	23	19	8	12	8
Residing in caravans, cabins or houseboats or improvised dwellings	5	13	31	7	0	0
Occupied Private Dwellings (Households)	**212**	**260**	139	114	108	150
No Motor Vehicle	0	0	8	0	3	0
Caravan, cabin, houseboat or improvised dwell	3	9	18	0	0	0
Rented via State or Housing Authority	0	0	0	0	0	0
Rented via Housing Co-Op or Community Church Group	0	0	0	0	0	0
No Internet Connection	unk	unk	198	unk	unk	unk
Unoccupied Private Dwellings	**39**	**16**	52	28	5	8
Average persons per occup dwelling	**2.6**	**2.5**	2.2	2.3	2.9	2.7
Average vehicles per occup dwelling	**2.3**	**2.3**	1.8	2	2.3	2.3

SPECIFIC RISK AREAS - FLOOD

Bellinger River Valley

a. Floods in the Bellinger and Kalang River valleys have significant impacts on farm activities and on low-lying of Bellingen, Repton, Newry Island, Urunga, Raleigh, Mylestom, Bellinger Keys and Yellow Rock. Roads are prone to closure during and following times of flooding, causing isolation of rural properties and towns and often resulting in damage to road surfaces as well as a need for resupply. In total, about 293 properties and five caravan parks would be inundated or isolated by a 1% AEP flood (11.08 metres at Bellingen Town gauge) (1) (6). In the summer holiday period, large numbers of caravan park occupants may need to be evacuated and their vans removed.

b. The following table indicates the number of residential and commercial buildings inundated above floor level in floods of different AEP. The figures relate to the area from Bellingen to the coast on the Bellinger River and below Spickett Hill Creek on the Kalang River (6) (Bellingen Shire Council, 2003).

Table 5: Number of residential and commercial properties inundated in design flood events

Location	5%		1%		PMF	
	Res	Com	Res	Com	Res	Com
North Bellingen	11	7	56	11	107	15
Bellingen	12	1	27	5	123	44
Fernmount	0	unk	5	unk	13	unk
Raleigh	8	1	25	5	37	7
Yellow Rock (Rural)	8	0	10	0	10	0
Valery	1	0	4	0	5	0
Mylestom	1	2	1	2	179	11
Yellow Rock (Residential)	1	0	28	10	94	11
Newry Island (Residential)	0	0	55	0	84	0
Newry Island (Rural-Resid)	2	0	6	0	36	0
Urunga	11	0	38	1	161	1
Bellinger Keys	0	0	12	0	149	0
Kalang Rural **	0	0	0	0	0	0
Total buildings above floor	**55**	**11**	**267**	**34**	**998**	**89**

Note all commercial property statistics are from Bellingen Shire Council 2003

** Kalang Rural data is from Bellingen Shire Council 2003

* Valey data is from Bellingen Shire Council 2003

2.2 DORRIGO SECTOR

2.2.1 Community Overview

a. A full community overview for this sector can be found in Table 4.

b. Dorrigo Sector includes the suburbs of Dorrigo Mountain, Dorrigo, North Dorrigo, Deervale, Fernbrook, Beilsdown Hills, Tallwood Bridge and Cascade.

c. Dorrigo is located in the highlands to the north west of the Local Government Area (LGA). The town is dissected by the Bielsdown River. The population of Dorrigo is 1214 (4).

d. Approximately 35% of the population is aged 65 or older. The average number of persons per dwelling is 2, with 8% of the population requiring assistance, 3% of the population with no motor vehicle and 31% with no internet (4).

2.2.2 Characteristics of flooding

a. The area is at risk of flash flooding Bielsdown River, Gally Gully, Little Murray, Nymboida River, Rocky Creek and Little Falls Creek.

b. Access difficulties on roads around the town can be caused from both flooding and landslips.

2.2.3 Flood Behaviour

a. The catchments at the confluence of the Bielsdown River and the tributary are:

   i. Bielsdown River: 32.2 sq kilometres

   ii. Un-named Tributary: 1.27 sq kilometres

b. The catchment of the un-named tributary is characterised by its steepness and the steepness of the areas contributing to the tributary.

c. Bridges over Bielsdown Creek within Dorrigo can be cut within a 1% AEP flood (3).

d. Dorrigo is susceptible to being cut into two, at the Waterfall Way bridge at Bielsdown River (8)

2.2.4 Classification of Floodplain

a. Rising Road Access to a High Flood Island on the east, and Rising Road Access to the west of the River.

2.2.5 Inundation

a. Local flooding of the recreation ground and picnic/barbecue area does occur, but no property loss has been incurred in the past (3).

b. Properties (approximately 6 residential and 2 commercial) may be at risk in Bean Street, Mahogany Street, Whisky Creek Road, Bielsdown Street and Ash Street (8)

2.2.6 Isolation

a. Dorrigo (East, including the CBD) can become isolated when the bridge in town closes and Waterfall Way closes. The western side of town can still maintain access to Armidale (8)

b. Isolation may affect access for emergency services located in East Dorrigo from accessing west Dorrigo.

c. Localised isolations are likely along Tyringam Road with road closures over waterways including, Little Murray River and the Nymboida River.

2.2.7 Flood Mitigation Systems

a. There are no identified flood mitigation systems.

2.2.8 Dams

a. There are no identified prescribed dams.

2.2.9 At Risk Facilities

a. No schools or childcare centres are at risk of flooding.

b. Dorrigo High School and Dorrigo Public School may become isolated if the Bielsdown Bridge closes.

c. No facilities are at known risk of flooding and/or isolation.

d. The following utilities and infrastructure are at risk of flooding:

   i. Sewerage Treatment Works is susceptible to inundation within a 1% AEP flood.

   ii. Mt Moonbill telecommunications tower (near Moombil) can become isolated.

   iii. Dorrigo Emergency Helipad is within the 1% AEP.

e. Caravan Parks are listed in Volume 3, Chapter 4 of this Flood Emergency Sub Plan (SES Caravan Park Arrangements).

2.2.10 Other Considerations

a. In large flood events there are limited telecommunications available in the rural areas due to the terrain (3).

b. There are a number of alternative communities within the area.

2.3 BELLINGEN SECTOR

2.3.1 Community Overview

a. A full community overview for this sector can be found in Table 4.

b. Bellinger Sector includes the suburbs of Bellingen (South of the Bellinger River), Thora, Darkwood, Kalang, Brierfield and Fernmount.

c. Bellingen, with a population of approximately 3923 including North Bellingen and East Bellingen (4) is the main urban centre on the North Arm of the Bellinger River. Approximately 16% of the population is aged 65 or older.

d. The average number of persons per dwelling in Bellingen is 2.4, with 6% of the population requiring assistance, 1% of the population with no motor vehicle and 11% of the population living alone (4).

e. Bellingen consists of approximately 4% indigenous persons, and less than 2% of persons not speaking English well (4).

f. Darkwood and Thora are located to the west of Bellingen. The area is bounded by Bellinger River and Dorrigo National Parks.

g. Thora has a population of 311 (4), with approximately 24% aged 65 or older.

h. Darkwood has a population of 237 (4), with approximately 22% aged 65 or older.

i. Fernmount has a population of 444 in 166 rural dwellings. Approximately 19% of the population is 65 or older (4).

j. Kalang has a population of 280 in 151 rural dwellings. Approximately 21% of the population is 65 or older (4).

k. Brierfield has a population of 322 people in 118 rural dwellings. Approximately 15% of the population is 65 or older (4).

2.3.2 Characteristics of Flooding

a. Rates of river rise at Bellingen can be high. The rate of rise of flood waters in the lower valley is affected by the cycle of tides and by tidal abnormalities produced by storm action out to sea (3).

b. Flooding on the Bellinger and Kalang Rivers is generated by long duration storm events. The low lying floodplain downstream of Bellingen is subject to flood depths typically greater than 2 metres, and long inundation times. (1)

c. The Kalang River floodplain is narrow compared to the Bellinger floodplain. The floodplain is particularly confined upstream of the Pacific Highway. The floodplain broadens downstream of the Pacific Highway Bridge. High velocity flows particularly

in rare events, divert from the main channel around Newry Island, forming a flow path over the island to join back up with the Kalang River upstream of Urunga. (1)

d. Once the banks are overtopped on the Bellinger River, velocities in the 1% AEP can exceed 4m/s. (1)

e. Overbank velocities on the Kalang River are typically less than 2.5 m/s. (1)

2.3.3 Flood Behaviour

a. A large tributary of the Bellinger River (Rosewood River) is fed by the rainfall on the Dorrigo escarpment to Dome Mountain. This is un-monitored and enters the Bellinger River below the Thora gauge (205002/59121).

b. Cemetery Creek runs through Bellingen. It is characterised by short duration flooding, particularly in the headwaters and in the central parts of Bellingen. It drains to the South East and connects with the Bellinger River. Anecdotally, residents have commented on Cemetery Creek flooding being the major cause of inundation of properties through Bellingen during the 1974 flood, due to elevated river levels.

When Cemetery Creek overtops its banks it can cause significant inundation of low lying areas to the south of Waterfall Way, particularly between Ford and Prince Streets. (1) There is limited warning time available due to the small catchment size (3)

c. South Arm Road, Brierfield runs between Brierfield and the Pacific Highway and closes in many places, particularly at bridges and at low sections along the Kalang River bank. Alternative access is available in many locations via four wheel drive tracks to Bellingen and Fernmount (3).

d. Spicketts Creek and Woods Creek are below the Kooroowi gauge and upstream the U/S Newry Island Gauge. These tributaries influence flooding at Newry Island.

2.3.4 Classification of Floodplain

a. Bellingen may be dissected into two high flood islands, however only the western section has substantial public facilities.

b. Rural areas along the Kalang can be classified as Overland Escape Route

c. Darkwood and Thora can be considered High Flood Islands

2.3.5 Inundation

a. Farmland in the east of Bellingen is the first to be affected, becoming inundated from 3.7 metres on the Bellingen gauge (205442/59126).

b. The residential and commercial areas which can be affected by flooding are:

i. **East Bellingen:** From 7 metres, significant inundation and isolation starts to occur. At around 9.6m, 3 houses and 10 commercial properties become

flooded in Deopel, Mill and Cahill Streets (Butter Factory); this increases by 2 shops and 11 houses inundated in a PMF (9).

ii. **Bellingen:** Connell Park, the Golf Course and up to 7 residential and 3 commercial premises may become inundated in Ford, Mary, Hyde, Church, Prince, Bowra, South, Rawson, Park and Watson Streets and Connell Place (Bellingen CBD) from around 9.6 metres (Bellingen gauge (205442/59126)). Property inundation in the area generally occurs as a result of the backing up of floodwaters into Cemetery Creek. During a 1% AEP (11.08 metres at Bellingen gauge (205442/59126)) flood considerable amounts of property can suffer inundation in and around the town, including sixteen industrial premises and up to about 34 dwellings. Up to 138 properties may become inundated in a PMF.

c. There are no known properties at risk of inundation in Darkwood and Thora.

d. A small number of farmhouses can be inundated in larger events. These are in the areas downstream of Bellingen (3).

Table 6: Estimated number of properties inundated above floor level and over ground in Bellingen Sector related to the Bellingen gauge (205442/59126)

Bellingen Gauge (205442/59126) Height (m)	No. Properties with Over floor Flooding	No. Properties with Over-ground Flooding
5Y – 20%	9	22
20Y – 5%	13	44
100Y – 1%	34	68
500Y – 0.2%	56	80
PMF	138	160

2.3.6 Isolation

a. Access to and from Bellingen at Camerons Corner on Waterfall Way to the Pacific Highway is cut in relatively minor floods (from 6.2 metres on the Bellingen gauge (205442/59126)). Bellingen, North Bellingen and East Bellingen can become isolated. In March 2001 isolation last for 3 to 4 days (3).

b. The town is cut in two when Lavenders Bridge connecting Bellingen and North Bellingen is submerged. This occurs around 4.8 metres on the Bellingen gauge (205442/59126), roughly once every two years on average, and before the `moderate flood' threshold is reached. In high-level flooding the closure can last for four or five days and cause the isolation of North Bellingen for that time (3).

c. Other Road closures include:

i. Waterfall Way from Dorrigo to Bellingen

ii. Fernmount Flats, Waterfall Way (between Fernmount and the coast and Bellingen) cuts the town from the Highway and Fernmount. There is severe inundation between East Bellingen and the Pacific Highway.

d. Residents in the Kalang and Darkwood Road rural areas can become isolated when low-level bridges are flooded. Previously the area has been isolated for between two days to two weeks (3).

e. On the Bellinger River, floods reaching a height of 3 metres at the Thora gauge (205002/59121) close Hobarts Bridge. Most other bridges upstream of Thora are closed at a gauge height of 3.5 metres and are all closed at about 4 metres (3).

f. A number of bridges are susceptible to flooding between 3 metres and 3.3 metres on the Kooroowi gauge, isolating approximately 400 people along the Kalang Road. This includes Moody's Bridge (which has been raised by 1 metre since the 2001 event), Duffy's Bridge, Spicketts Creek Bridge and Reids Culvert (Bellingen Shire Council, 2006).

2.3.7 Flood Mitigation Systems

a. There is a small levee protecting the Golf Club, which may overtop from approximately 8.39 metres. Overtopping of the levee will cause inundation of the club impacting airconditioners (3).

b. There are no identified flood mitigation systems in Thora, Darkwood or the Kalang.

2.3.8 Dams

a. There are no identified prescribed dams.

2.3.9 At Risk Facilities

a. The facilities that are at risk of flooding and/or isolation within the Bellingen LGA including schools, childcare centres, hospitals, aged and infirm, infrastructure and caravan parks are shown in Annex 2.

b. The following utilities and infrastructure are at risk of flooding in Bellingen:

i. Police, Ambulance and Fire Station may be inundated within a 1% AEP flood (11.08 metres at Bellingen gauge (205442/59126)).

ii. A number of sewerage treatment plants and pump stations are at risk of flooding in a 1% AEP flood (11.08 metres).

c. Power supplies and telephones can be cut for days to weeks in and around Thora and Darkwood (3). Mobile phone coverage is now available in the area.

d. The area has 11 critical bridges that cause isolation in Thora and Darkwood at various heights through flooding on the Bellinger River. They are located at the following distances from Waterfall Way Road - Leans Bridge(1.1km) closes at 3.66metres on

the (Thora Gauge (205002/59121) GR205002) - Joyces Bridge(4km) closes at 3.5m on the (Thora Gauge (205002/59121) GR205002), - Hobarts Bridge closes at 3.00m (7km) on the (Thora Gauge (205002/59121) GR205002), - Die Happy Bridge(10km), - Tysons Bridge(13.1km), - Guess Bridge(13.9km), - Richardsons Bridge(14.8km), - The Pains bridge(16km), - Cleavers Bridge(17.1km), - Darkwood Bridge(19km), - Justins Bridge(21km).

e. Caravan Parks are listed in Volume 3, Chapter 4 of this Flood Emergency Sub Plan (SES Caravan Park Arrangements).

2.3.10 Other Considerations

a. In large flood events there are limited telecommunications available in the rural areas due to the terrain.

b. Spicketts Rainfall Gauge provides extra intelligence on Flash Flood Events. Less important during Riverine Flood events with forecasts coming from Kalang River at Kooroowi (Scotchman) Gauge.

c. There are a number of alternative communities within the area.

d. There is a camping ground above the PMF, but may not be able to get out (isolated) (3).

e. During COVID there was an influx of new residents who may not have the experience with the frequent flooding and isolation experienced in the area.

f. Special events held throughout the year are listed on the Bellingen Council website and Chapter 2, Volume 3 of this Flood Emergency Sub Plan (SES Response Arrangements).

g. There are two peak seasons with potential for a 10% population increase associated with tourism:

   i. Christmas holidays December –January.

   ii. Easter long weekend.

2.4 NORTH BELLINGEN SECTOR

2.4.1 Community Overview

a. A full community overview for this sector can be found in Table 4.

b. North Bellingen sector includes those areas north of the Bellinger River and includes the suburbs of Glennifer, part of Bellingen, Never Never, Hydes Creek and the rural areas of Raleigh and is bounded by Tuckers Nob State Forest to the north.

c. Approximately half of Bellingen's population is located North Bellingen, equating to approximately 1800 people.

d. Bellingen, with a population of approximately 3923 including North Bellingen and East Bellingen (4) is the main urban centre on the North Arm of the Bellinger River. Approximately 16% of the population is aged 65 or older.

e. The average number of persons per dwelling in Bellingen is 2.4, with 6% of the population requiring assistance, 1% of the population with no motor vehicle and 11% of the population living alone (4).

f. Bellingen consists of approximately 4% indigenous persons, and less than 2% of persons not speaking English well (4).

2.4.2 Characteristics of Flooding

a. Bellinger River is generally fast to rise and there is limited warning time available due to the small catchment size. Bellingen can also experience localised inundation as a result of flooding of Cemetery Creek. Flooding in this catchment is caused by localised run-off (3). In the 1% AEP flood, Hammond and Dowle Streets would experience high-velocity flows (3).

b. Hydes Creek joins the Bellinger River below the Bellingen gauge (205442/59126), and upstream of the Repton gauge (205403/559024) (near the Caravan Park).

c. Floodwaters backup the creek to the west of Lyon Street causing inundation of low lying properties upstream of Wheatley Street in relatively small flood events.

d. The most severe flooding in North Bellingen comes from riverine flooding, rather than local catchment flooding, which results in flood depths of up to 2.5 m at properties on Black Street in the 1% AEP event. Depths greater than 2 m occur on properties along Hammond Road and Dowle Street. In the PMF, a flow path develops between the Bellinger River and the Central Drainage Line, isolating properties between Hobson Close and the Bellinger River. (1)

2.4.3 Flood Behaviour

a. A large tributary of the Bellinger River (Rosewood River) is fed by the rainfall on the Dorrigo escarpment to Dome Mountain. This is un-monitored and enters the Bellinger River below the Thora gauge (205002/59121).

b. Buffer Creek joins the Never Never River below the Gleniffer gauge. Stony Creek feeds into the Never Never also below the gauge. These creeks are ungauged and have a large catchment area.

c. Cemetery Creek is a floodway from local runoff that runs through Bellingen. There is limited warning time available due to the small catchment and there is no formal warning system. It is characterised by short duration flooding, particularly in the headwaters and in the central parts of Bellingen. It drains to the South East and connects with the Bellinger River. Anecdotally, residents have commented on Cemetery Creek flooding being the major cause of inundation of properties through Bellingen during the 1974 flood, due to elevated river levels (4).

When Cemetery Creek overtops its banks it can cause significant inundation of low lying areas to the south of Waterfall Way, particularly between Ford and Prince Streets (4).

2.4.4 Classification of Floodplain

a. High Flood Island from Bellingen may be dissected into two high flood islands.

2.4.5 Inundation

a. The showground may start to inundate from 8 metres. Low-lying areas south of Wheatley Street and east of Hammond Street, including Black Street and Dowle Street from 8.6-8.7 metres at Bellingen gauge (205442/59126), including overfloor flooding of 10 houses and 7 commercial premises (3).

Table 7: Estimated number of properties inundated above floor level and over ground in North Bellingen Sector related to the Bellingen gauge (205442/59126)

Bellingen Gauge (205442/59126) Height (m)	No. Properties with Over floor Flooding	No. Properties with Over-ground Flooding
5Y – 20%	11	31
20Y – 5%	17	61
100Y – 1%	56	78
500Y – 0.2%	69	80
PMF	107	116

2.4.6 Isolation

a. The town is cut in two when Lavanders Bridge connecting Bellingen and North Bellingen is submerged around 4.9 metres on the Bellingen gauge (205442/59126)

(5). This occurs roughly once every two years on average, and before the `moderate flood' threshold is reached. In high-level flooding the closure can last for four or five days and cause the isolation of North Bellingen for that time (3).

b. North Bank Road access is only available in the early stages of a flood event, depending on where the rain has fallen and the height of the flood water at the Bellingen Bridge. It closes at Slarkes Bridge around 5.2 metres. Hydes Creek Road provides alternative access for North Bellingen and properties along the northern side of the Bellinger River when the Bellinger Bridge is cut (Bellingen Shire Council, 2003).

c. Other Road closures include:

   i. Valery Road

   ii. Hydes Creek Road (Kethels Bridge) to Coffs Harbour – no alternative route, isolating North Bellingen

   iii. Summervilles Road – Isolates Summervilles Road residents (approximately 100)

   iv. Buffer Creek Road – isolates 20 people

   v. Gordonville Road and Adams Lane - isolates 100 people

2.4.7 Flood Mitigation Systems

a. There are no identified flood mitigation systems.

2.4.8 Dams

a. There are no identified prescribed dams.

2.4.9 At Risk Facilities

a. The facilities that are at risk of flooding and/or isolation within the Bellingen LGA including schools, childcare centres, hospitals, aged and infirm, infrastructure and caravan parks are shown in Annex 2.

b. The following utilities and infrastructure are at risk of flooding:

   i. The Bellingen Showground. In the 2013 event Bellingen Showground was inundated at 8.7m.

   ii. The primary Sewerage Ponds and RFS in Wheatley Street are above the PMF.

c. Caravan Parks are listed in Volume 3, Chapter 4 of this Flood Emergency Sub Plan (SES Caravan Park Arrangements).

2.4.10 Other Considerations

a. There are a number of holiday villas in the Gleniffer area that may become isolated, most of them are transient population.

b. The area is also a popular remote camping destination.

c. The evacuation of Bellingen Showground if in use.

2.5 REPTON SECTOR

2.5.1 Community Overview

a. A full community overview for this sector can be found in Table 4.

b. Raleigh Sector includes the suburns of Raleigh, Myelston and urban areas of Raleigh.

c. Raleigh is located on either side of the Bellinger River, and either side of the Pacific Highway. The population of Raleigh is approximately 681. The average number of motor vehicles per dwelling is 2.3, and the average number of people per household is 2.6. Approximately 26% of the population is aged 65 or older (4).

d. Approximately 5% of the Raleigh population is indigenous, and less than 3% of the population does not have proficiency in English (4).

e. Repton is located on the northern bank of the Bellinger River, to the east of the Pacific Highway. It is bounded to the north by the Bongil Bongil National Park and Bundageree Creek. It has a population of 667, with approximately 20% of the population aged 65 or older (4). The average number of persons per household is 2.5, and average number of vehicles per dwelling is 2.3 (4).

f. Approximately 2.5% of the population of Repton is Indigenous and less than 2% of the population does not have proficiency in English (4).

g. Mylestom, population of 336 (4), is located on the northern bank of the Bellinger River on the coast. Approximately 28% of the population is aged 65 or older. The average number of persons per dwelling is 2.2, with 10% of the population requiring assistance and 2.4% of the population with no motor vehicle (4).

h. Approximately 3% of the Mylestom population is Indigenous and no person have identified that they lack proficiency in English (4).

i. Rural areas of Yellow Rock are included in this sector and are primarily influenced by the Bellinger River system. Yellow Rock Road runs parallel along the Bellinger River and consists of a small population in rural properties.

2.5.2 Characteristics of Flooding

a. During a major flood the railway line is expected to be over-topped and velocities anticipated to increase.

b. Flooding occurs from the Kalang and Bellinger River, connected by Back Creek. Water flows from the Bellinger to the Kalang through Back Creek, which may cause flooding even if there is no flooding in Kalang. Both rivers are generally fast to rise (10). Flooding occurs from the Kalang River and Back Creek. Waters can become backed up as it is immediately upstream of the confluence with Urunga Lagoon, Kalang

River, Bellinger River and Back Creek. Flow is influenced by tidal fluctuations and as it is located close to the river entrance to the Pacific Ocean (10).

2.5.3 Flood Behaviour

a. Flooding occurs from the Bellinger River as it cuts across the bend through the town of Repton, creating a relatively wide floodplain. Several tributaries run through the town of Repton to swampy areas. To the north of the river is Manarm Creek and Manarm overflow, which joins the river to the north of the town of Repton. Flooding generally occurs within 6 hours of rainfall occurring. Flow is influenced by tidal fluctuations as it is located close to the river entrance to the Pacific Ocean.

b. A breakout of the Mylestom spit which may cause a lowering of the flood level (Bellingen Council, 2003). The spit is very narrow, and may be overtopped in large floods and storm surge as occurred in 1950 (opposite Back Creek).

2.5.4 Classification of Floodplain

a. Raleigh (east) is a Low Flood Island and Repton is a High Flood Island.

b. High flood island in major floods. Low trapped perimeter above the 1% AEP flood (4.66 metres Repton gauge (205403/559024)).

c. Yellow Rock Rural areas are a low flood island.

2.5.5 Inundation

a. Over-floor flooding of one house in Keevers Drive, Raleigh occurs from around 3 metres on the Repton gauge (205403/559024).

b. Seven houses on Mylestom Drive would be inundated in a 4.57 metre at Repton gauge (205403/559024) flood near Bellinger River Tourist Park, railway line and Repton School (3).

c. About 21 houses and five commercial premises (including the Norco Milk Products factory) in Raleigh can flooded around 4.8 metres at Repton gauge (205403/559024) (or 11.42m at Bellingen gauge (205442/59126)), including the school, church, winery and hall.

d. The PMF would inundate the whole of Mylestom, affecting 179 residences (6).

e. Farmland in Yellow Rock starts to inundate around 2.5 metres on the Bellingen gauge (205442/59126) (1).

f. Eight properties start to flood around 2.03 metres on the Urunga gauge (205407/559011), including a group of holiday rentals and houses on Yellow Rock Road (6). One would be flooded over-floor from 2.40 metres. Due to the long evacuation distances and the low-lying topography of the area, consideration must

be given to evacuating this area early in a flood event. Rural properties along Yellow Rock Road are also prone to flooding (5).

Table 8: Estimated number of properties inundated above floor level and over ground in Repton Sector related to the Repton gauge (205413/559024)

Repton Gauge (205413/559024) Height (m)	No. Properties with Over floor Flooding	No. Properties with Over-ground Flooding
5Y – 20%	3	14
20Y – 5%	21	42
100Y – 1%	44	56
500Y – 0.2%	68	84
PMF	248	250

2.5.6 Isolation

a. Queen Street is cut even in frequent low level floods, isolating most properties in Raleigh (east).

b. Mylestom and Repton become isolated when Keevers Drive (2.5 metres, note this is a minor flood on the Repton gauge (205403/559024)) and Mylestom Drive become cut (3.17 metres on the Repton gauge (205403/559024), note this is a major flood). Inundation will already be occurring.

c. No facilities for evacuees are available in Yellow Rock. Evacuations to Urunga must be completed before Giinagay Way between Yellow Rock and Urunga (Kalang Bridge) is closed from approximately 2.0 -2.4 metres. Yellow Rock is isolated when this route is flooded and Yellow Rock Road is closed around 2.89 metres on the Urunga gauge (205407/559011), preventing alternative access between Yellow Rock and Repton (5) (3).

2.5.7 Flood Mitigation Systems

a. Around Yellow Rock there are automatic flood gates help to control the flow of water in certain circumstances and preventing salt water from travelling upstream into the farm land.

2.5.8 Dams

a. There are no identified prescribed dams.

2.5.9 At Risk Facilities

a. The facilities that are at risk of flooding and/or isolation within the Bellingen LGA including schools, childcare centres, hospitals, aged and infirm, infrastructure and caravan parks are shown in Annex 2.

b. A telephone Exchange located at 5 Old Ferry Rd, Raleigh is within the 1% AEP Flood mapping.

c. Caravan Parks are listed in Volume 3, Chapter 4 of this Flood Emergency Sub Plan (SES Caravan Park Arrangements).

2.5.10 Other Considerations

a. The area is comprised of rural properties and oyster farms. Cattle and squatters are occasionally located on Marshall Island on the Bellinger River.

b. Yellow Rock has a peak season with potential for a 50% population increase during School holidays.

2.6 URUNGA SECTOR

2.6.1 Community Overview

a. A full community overview for this sector can be found in Table 4.

b. Urunga Sector includes the suburbs of Urunga, Bellinger Keys and Newry Island

c. Newry island is located to the west of Urunga and East of the Pacific Highway, formed by branches of the Kalang River. It is comprised of approximately 127 properties (11).

d. Newry Island is a part of the Urunga Census, where approximately 34% of the Urunga population is aged 65 or older. The average number of persons per dwelling is 2.2, with 7.2% of the population requiring assistance, 2.3% of the population with no motor vehicle and 27% with no internet (4).

e. Newry Island is a part of the Urunga Census, where there is approximately 4.8% indigenous persons, and less than 2% of persons not speaking English well (4).

f. Urunga, with a population of approximately 3185 (4), is located on the southern bank of Kalang River, near its entrance to the Pacific Ocean.

g. Approximately 34% of the Urunga population is aged 65 or older. The average number of persons per dwelling is 2.2, with 7.2% of the population requiring assistance, 2.3% of the population with no motor vehicle and 27% with no internet (4).

h. Bellinger Keys is adjacent to the Kalang River south of Urunga, as a new estate near the “Honey Place”.

i. Bellinger Keys is included in the Urunga census details, where approximately 34% of the Urunga population is aged 65 or older. The average number of persons per dwelling is 2.2, with 7.2% of the population requiring assistance, 2.3% of the population with no motor vehicle and 27% with no internet (4).

2.6.2 Characteristics of Flooding

a. The Kalang River is generally fast to rise. Newry Island is formed by two branches of the Kalang separating and re-joining. Advanced warning of riverine flooding may be available from the Kooroowi Scotchman gauge.

b. As Urunga is adjacent to the river mouth it is affected by abnormal ocean water levels brought about by low-pressure systems located off the coast. This is especially so for areas downstream of the railway line (3).

c. Localised flooding can occur in Urunga during heavy rainfall over the town. This occurs when the river is flooded above the drainage flood gates preventing water form leaving through the storm water system. This typically sees water pond

upstream of the Morgo Street road embankment in a low point at the intersection of Newry Street and Bonville Street between the Ambulance Station and the Bowling Club. Pilot Street and Lourdes Avenue may start to flood as a consequence of storm water and local rainfall (3).

d. The Kalang River is generally fast to rise. Waters can become backed up as it is immediately upstream of the confluence with Urunga Lagoon, Kalang River, Bellinger River and Back Creek. Flow is influenced by tidal fluctuations and sedimentation at the river mouth (restricting flow) as it is located close to the river entrance to the Pacific Ocean.

2.6.3 Flood Behaviour

a. In frequest events flood behavour in the Urunga Urban area is largely dominated by overland flow while in larger events the longer duration river dominated events generate higher flood levels, except in areas with steep topography such as Lourdes Avenue, and South Street. Riverine levels can restrict the drainage of overland flow. Flood waters pool behind the North Coast railway embankment to depths of 1.7 m within the reserve. There is one 1.2 m diameter circular culvert under the railway embankment, which struggles to convey water beneath the embankment, particularly with elevated downstream levels. Similar flood behaviour is experienced in the 5%, 1% and 0.2% AEP flood events. In the 1% AEP flood event, flood depths in the order of 1 m occur in Pilot Street and at the intersection of Newry St East and Bonville Street. In the PMF event, as the flood approaches the peak, the railway embankment is overtopped with flood waters flowing in a south westerly direction (1).

2.6.4 Classification of Floodplain

a. Low Flood Island in the residential areas from 3.58 metres on the U/S Newry Island gauge and the rural areas may become a low flood island from 2.18 metres.

b. Bellinger Keys and the area around Panorama Parade to the west of the town become Low Flood Islands.

2.6.5 Inundation

a. Flooding of one house on Newry Island can occur from 2.4 metres on the Urunga gauge (205407/559011) or 2.9 metres on the U/S Newry Island gauge (9).

b. Most of the land on Newry island is considered to be flood liable, and over 55 houses could be flooded over floor around 3.45 metres Urunga gauge (205407/559011) (1%). Flooding of up to 84 houses may occur in a PMF (6).

c. In major flood events six villas, two houses, the Fire and Ambulance Stations and 16 garages would be flooded between Newry Street and Bonville Street (3). The

commercial area including the Uniting Church may become flooded, Bonville Street (from 3.25 metres and storm water).

d. Over floor flooding (approx. 4 properties) may commence in Atherton Street and Morgo Street, Urunga from 1.7 – 2.03 metres.

e. Approximately 38 dwellings in Urunga become flooded above floor around 3.45 metres (1%AEP) and 161 in a PMF (8.32 metres) (6).

f. Approximately 12 properties in the Bellinger Keys area on the southern side of Urunga (near The Honey Place), Melaleuca Place, Roasedale Drive, Burrawong Parade and Myall Court start to inundate from approximately 3.45 metres on the Urunga gauge (205407/559011) (6).

g. Significant over-floor flooding commencing between 2.40 to 2.95 metres on the Urunga gauge (205407/559011). The worst affected areas would be residences in Marina Crescent, Vernon Crescent and Yellow Rock Road and commercial properties along Giinagay Way, with 17 dwellings inundated above floor from 2.89 metres on the Urunga gauge (205407/559011) (5).

h. About 30 dwellings and 10 commercial (in Marina Crescent and Old Punt Road) properties would experience over-floor inundation from 3.25 metres (Urunga gauge (205407/559011)).

i. The Urunga Waters Caravan Park is flood prone and is affected in floods lower than the 2.96 metres on Urunga gauge (205407/559011) (1) (6). The Urunga Heads Caravan Park also requires monitoring during flood and storm surge events.

Table 9: Estimated number of properties inundated above floor level and over ground in Urunga Sector related to the Urunga gauge (205407/559011)

Urunga Gauge (205407/559011) Height (m)	No. Properties with Over floor Flooding	No. Properties with Over-ground Flooding
5Y – 20%	9	54
20Y – 5%	12	68
100Y – 1%	160	355
500Y – 0.2%	396	468
PMF	570	583

2.6.6 Isolation

a. From (2.6 metres U/S Newry Island gauge; or 2.5 metres on the Urunga gauge (205407/559011)) Newry Island becomes isolated when Newry Island Drive becomes flooded.

b. Giinagay Way to the North of Urunga (to Coffs Harbour) is susceptible to flooding from 2.4 metres near Newry Island Bridge, however access and egress is still available to the south.

c. Properties on Hungry Head Road (approximately 3), between Hungry Head and Urunga, may become isolated from waters cutting the road at a number of locations from Urunga Lagoon. The dwellings are not known to be inundated within a PMF.

d. The closure of Panorama Parade around 2.8 metres on the Newry Island (U/S) gauge isolates approximately 20 dwellings on Panorama Parade and Allison Place (5).

2.6.7 Flood Mitigation Systems

a. There are no identified flood mitigation systems.

2.6.8 Dams

a. There are no identified prescribed dams.

2.6.9 At Risk Facilities

a. The facilities that are at risk of flooding and/or isolation within the Bellingen LGA including schools, childcare centres, hospitals, aged and infirm, infrastructure and caravan parks are shown in Annex 2.

b. Pump stations serving single dwellings on Newry Island are at risk of flooding.

c. The following utilities and infrastructure are at risk of flooding:

   i. The Ambulance Station, Newry Street (from 3.25 metres and storm water)

   ii. Fire Station, Bonville Street (from 3.25 metres and storm water)

   iii. A number of sewerage treatment plants and pump stations are at risk of flooding from 3.25 metres Urunga gauge (205407/559011).

d. Caravan Parks are listed in Volume 3, Chapter 4 of this Flood Emergency Sub Plan (SES Caravan Park Arrangements).

2.6.10 Other Considerations

a. Newry Island is only serviced by a one lane bridge. Buses are not utilised on the bridge.

b. Urunga has a peak season with potential for a 50% population increase in School holidays.

c. There is only one access route into Bellinger Keys, onto Giinagay Way.

d. There can be storm water flooding from a man-made lake in the centre of the Bellinger Keys Estate, depending on the drainage condition.

SPECIFIC RISK AREAS – COASTAL EROSION

Coffs Coastal Forecast Distruct

2.7 BELLINGEN SHIRE

a. Areas identified as being at high or extreme immediate risk from beach erosion include:

   i. Schnapper Beach Road

   ii. Hungry Head Road

   iii. Hungry Head Watch Tower

   iv. Dalhousie Creek and Urunga SLSC Beach access

   v. North Hungry Head Beach 4WD access

   vi. North Beach (Holiday Park, 4WD and SLSC) access (7).

b. Areas identified as being at immediate risk from coastal inundation are:

   i. Urunga Dalhousie Creek North Coast Railway (Extreme immediate inundation risk) (7).

c. Cliff instability refers to a variety of geotechnical processes on coastal cliffs and bluffs, including rock fall, slumps and landslides. These events may occur without warning. A cliff instability hazard assessment has not been completed for the Bellingen coastline at this time (7).

ROAD CLOSURES AND ISOLATED COMMUNITIES

2.8 ROAD CLOSURES

a. Table 10 lists roads liable to flooding in the Bellngen LGA.

Table 10: Roads liable to flooding in Bellingen LGA.

Road	Closure location	Consequence of closure	Alternate Route	Indicative gauge height
Bellingen Sector				
Waterfall Way	Camerons Corner – approximately 500m west of Short Cut Road	Isolates Bellingen to the east	None	6.27m on the Bellingen gauge (205442/59126)
Waterfall Way	Waterfall Way X Cemetery Creek (Near the Butterfactory)	Isolates Bellingen to the East and Bellingen rural to Bellingen	None	7.0m on the Bellingen gauge (205442/59126)
Waterfall Way	Between Bellingen and Thora	Isolates Bellingen	None	From 6.3m on the Bellingen gauge (205442/59126)
Darkwood Road Thora	Hobarts Bridge	Isolates residents in Darkwood	None	3.0m on the Thora gauge (205002/59121)
North Bellingen				
Hammond Street at Lavenders Bridge	Lavenders Bridge	Cuts access between north and south Bellingen	For North Bellingen alternate access is available north via Hydes Creek Rd.	4.8m on the Bellingen gauge (205442/59126)
North Bank Road	Slarkes Bridge	Loaclised isolations on North Bank Road	East until Taylors bridge closes at 5.52m on the Bellingen gauge (205442/59126)	5.2m on the Bellingen gauge (205442/59126)
Repton Sector				
Yellow Rock Road to Giinagay way	Various locations	Isolations from 2.4m and overfloor flooding from 3.1m	South to Yellow Rock up to 2.8m	2.4m Urunga Gauge (205407/559011)
Yellow Rock Road Southern end at Yellow Rock	Low lying araes	Isolation and progressive inundation if heights increase	None	2.8m Urunga Gauge (205407/559011)

Keevers Drive	Specific location to be identified and height needs to be verified.	Progressive isolations	North and south on Keevers Lane until 3.5m Repton gauge (205403/559024)	2.5m Repton gauge (205403/559024)
Keevers Drive (Old Pacific Highway)	Specific location to be identified	Progressive isolations	None	3.5m Repton gauge (205403/559024)
Urunga Sector				
Panorama Parade	Approx 150 from the Allison Street, Panorama Parade intersection	Isolation of approximately 20 homes in Panorama Parade and Allison Streets.	None	2.8m on the Newry Island gauge (205458/559020)
Newry Island Drive	Newry Island Drive near the bridge	Isolation of approximately 133 properties on Newry Island. Over floor flooding commences from 2.4m	None	2.6m Newry Island gauge (205458/559020) and 2.5m Urunga gauge (205407/559011)
Giinagay way	Approximately 750m south of the Newry Island drive intersection and Giinagay Way.	Evacuation route closure for Newry Island and Yellow Rock Road towards Urungu	Possible options northbound on the M1.	2.4m Urunga gauge (205407/559011)
Marina Crescent	Specific location to be identified	Isolation of residences in Marina Crescent.	None	1.7m Urunga gauge (205407/559011)
Bellingen Street and Crescent Close	Specific location to be identified	Isolation of residences in Bellingen Street and Crescent Close. Overfloor flooding may commence from 2m – 2.4m	None	1.8m Urunga gauge (205407/559011)
Fitzroy Street, Urunga	Various locations	Evacuation may be impacted by local stormwater in this area.	Possible localised alternatives.	Stormwater pooling
South Arm Road Brierfield	Various locations in low points and bridges along the Kalang River	Isolations commence on South Arm Road	Alternate routes may be available via 4WD tracks	1.93m Newry Island gauge (205458/559020)

2.9 SUMMARY OF ISOLATED COMMUNITIES AND PROPERTIES

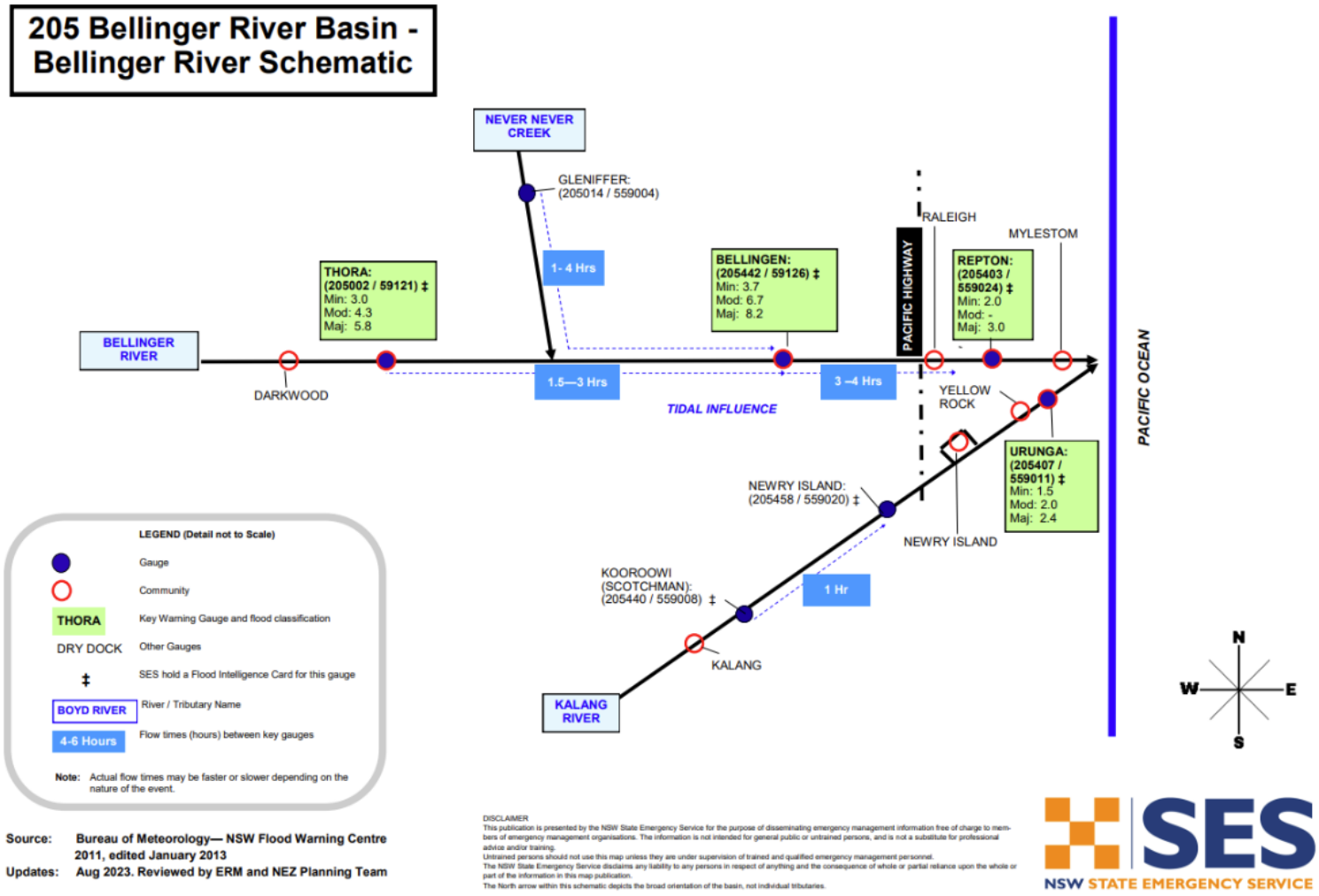
a. Table 11 lists communities liable to isolation and potential periods of isolation. Information presented here is based on [describe source of info – historical, design events etc.] and does not reflect the duration of isolation expected in larger and extreme events.

Table 11: Potential Periods of Isolation for communities in the Bellingen LGA during a Major flood.

Town / Area (River Basin)	Population	Flood Affect Classification	Approximate period isolation	Days								NOTES
				1	2	3	4	5	6	7	8	
Thora/ Darkwood	535	High flood island	3 – 6 days									Resupply likely to be required after 5 days
Bellingen	3657	High flood islands	2-4 days									Only the western High Flood Island has substantial public facilities
Kalang	372	Overland refuge	1-4 days									Rural areas
Dorrigo	1523	High flood island	3-6 days									Only the East, including the CBD
Gleniffer	50	High flood island	3-6 days									Rural areas
Mylestom and Repton	971	Low trapped perimeter above the 1% AEP	1-2 days									Isolated in relative minor events

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

ANNEX 1: BELLINGER RIVER BASIN SCHEMATIC



Source: Bureau of Meteorology— NSW Flood Warning Centre 2011, edited January 2013
Updates: Aug 2023. Reviewed by ERM and NEZ Planning Team

NSW STATE EMERGENCY SERVICE

ANNEX 2: FACILITIES AT RISK OF FLOODING AND/OR ISOLATION

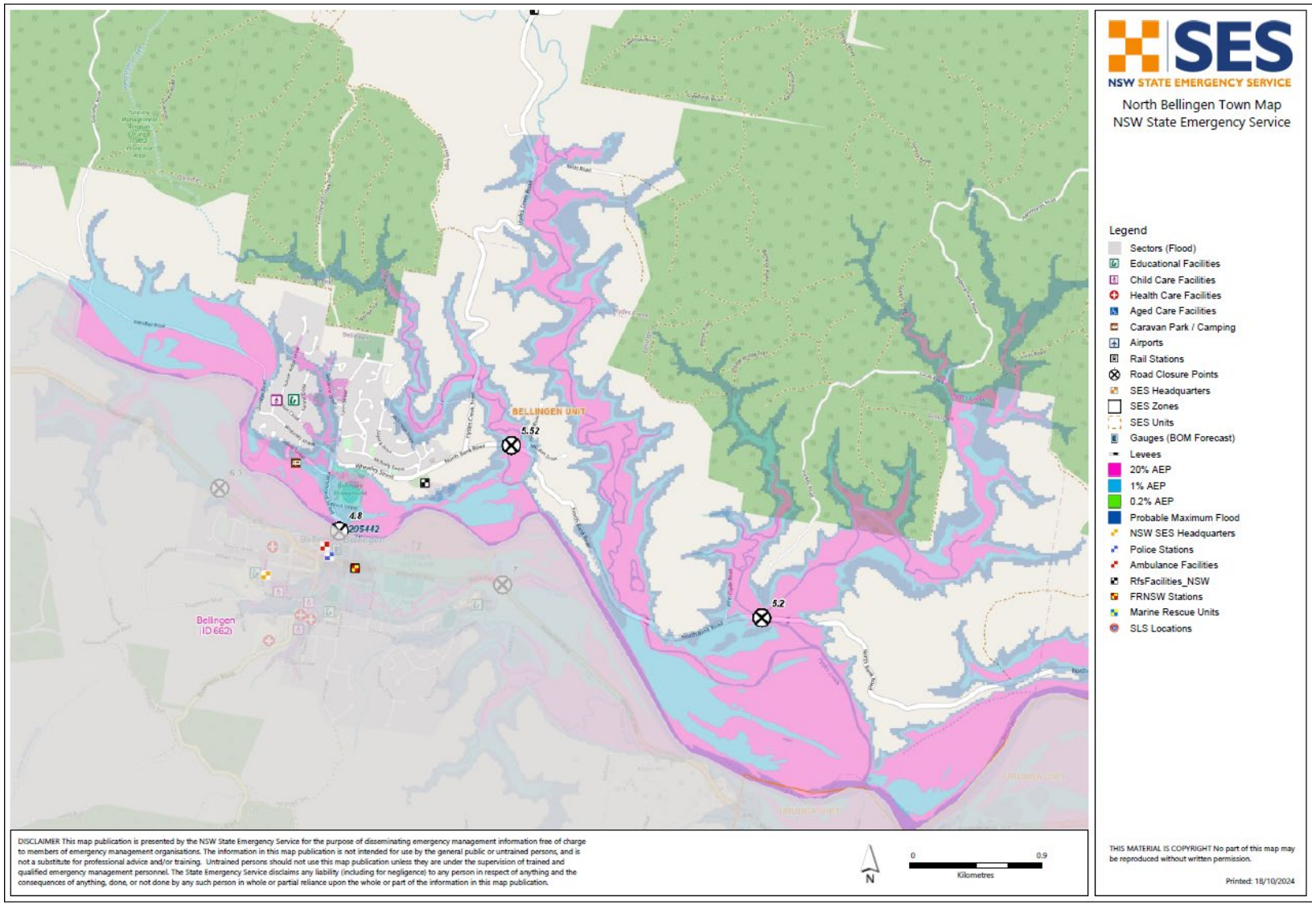
Facility Name	Street	Population	Comment
Schools			
Bellingen Public School (Primary)	William Street Bellingen NSW 2454	378	Not Flood Prone
Chrysalis Steiner School (Primary)	703 Darkwood Road Bellingen NSW 2454	192	Isolated when Hobarts Bridge closes at 3m
Chrysalis Steiner School (Primary)	1 Elliott Close Bellingen NSW 2454	-	Located on a high flood island in North Bellingen. Lavenders bridge closes from 4.5m, North Bank Road Closes at 5.2m, and various other road closures are likely from a 20% AEP event.
St Mary's Primary School	14 Park Street Bellingen NSW 2454	123	Partially inundated in a PMF
Dorrigo Public School	Hickory Street Dorrigo NSW 2453	105	Not flood prone
Mt St John's School	11 Karabin Street Dorrigo NSW 2453	58	Not flood prone
Raleigh Public School	12 North Street Raleigh NSW 2454	29	Road closures may occur from 2.5m with inundation of the site in a 1% AEP event (4.57m on the Repton gauge (205403/559024))
Repton Public School	River Street Repton NSW 2454	70	High flood island from a 2.5m (Repton gauge (205403/559024)) when Mylestom Drive becomes inundated. Evac options maybe possible to the north.
Orama Public School	1098 Darkwood Road Thora NSW 2454	27	Isolated when Hobarts Bridge closes at 3m
Urunga Public School	Bonville Street Urunga NSW 2455	205	High flood island during a PMF
Bellingen High School	1125 Waterfall Way Bellingen NSW 2454	571	High flood island during a PMF
Dorrigo High School	Waterfall Way Dorrigo NSW 2453	144	Not flood prone
Cascade Environmental Education Centre	00 Briggsvale Road Cascade NSW 2453	42 bunks +	Not flood prone
Child Care Centres			
Bellingen Burrow Long Day Care Centre	11 Bowra Street Bellingen NSW 2454	28	High Flood island from a 20% AEP

Bellingen Family Day Care	1 Elliott Close Bellingen NSW 2454		Located on a high flood island in North Bellingen. Lavenders bridge closes from 4.5m, North Bank Road Closes at 5.2m, and various other road closures are likely from a 20% AEP event.
Bellingen Preschool Inc.	28 Church Street Bellingen NSW 2454	29	Likely to be inundated during a PMF event
Dawn Song Childrens Centre	1 Elliott Close Bellingen NSW 2454	20	Located on a high flood island in North Bellingen. Lavenders bridge closes from 4.5m, North Bank Road Closes at 5.2m, and various other road closures are likely from a 20% AEP event.
Dorrigo Preschool Incorp.	6 Cedar Street, Dorrigo NSW 2453	30	Not flood prone
Kalang Preschool (Outreach of Orama Preschool Inc)	1860 Kalang Road Kalang NSW 2454	20	Likely to be isolated early in events. Kalang Road closes at Moody's Bridge from 3.7m (Kooroowi (Scotchman) gauge)
OAC Bellingen Out of School Hours Care	St Mary's Catholic School, Park Street Bellingen NSW 2454	24	Likely to be partially inundated during a PMF
OAC Urunga Out of School Hours Care	Urunga Public School, Bonville Street Urunga NSW 2455	20	Becomes a high flood island during a PMF
Orama Pre-School Inc	1098 Darkwood Road Thora NSW 2454	42	Isolated when Hobarts Bridge closes at 3m
Stepping Stones Preschool & Childcare	12 Hillside Drive Urunga NSW 2455	29	Likely to be inundated during a PMF event
Urunga Community Preschool Incorp.	Minerva Lane Urunga NSW 2455		Likely to be inundated in a PMF
Facilities for the aged and/or infirm			
RFBI Bellingen Masonic Village	38 Watson Street Bellingen NSW 2454	54	Not flood prone
RFBI Bellingen Masonic Retirement Village – Oakman Gardens	5-9 Robert Street Lane Bellingen NSW 2454	16 x 2-bedroom units	Not flood prone
RFBI Raleigh Urunga Masonic Village	191 Old Pacific Highway Raleigh NSW 2454	58	Not flood prone
Utilities and infrastructure			
Bellinger River District Hospital	43 Church Street Bellingen NSW 2454	36 Beds	Not flood prone

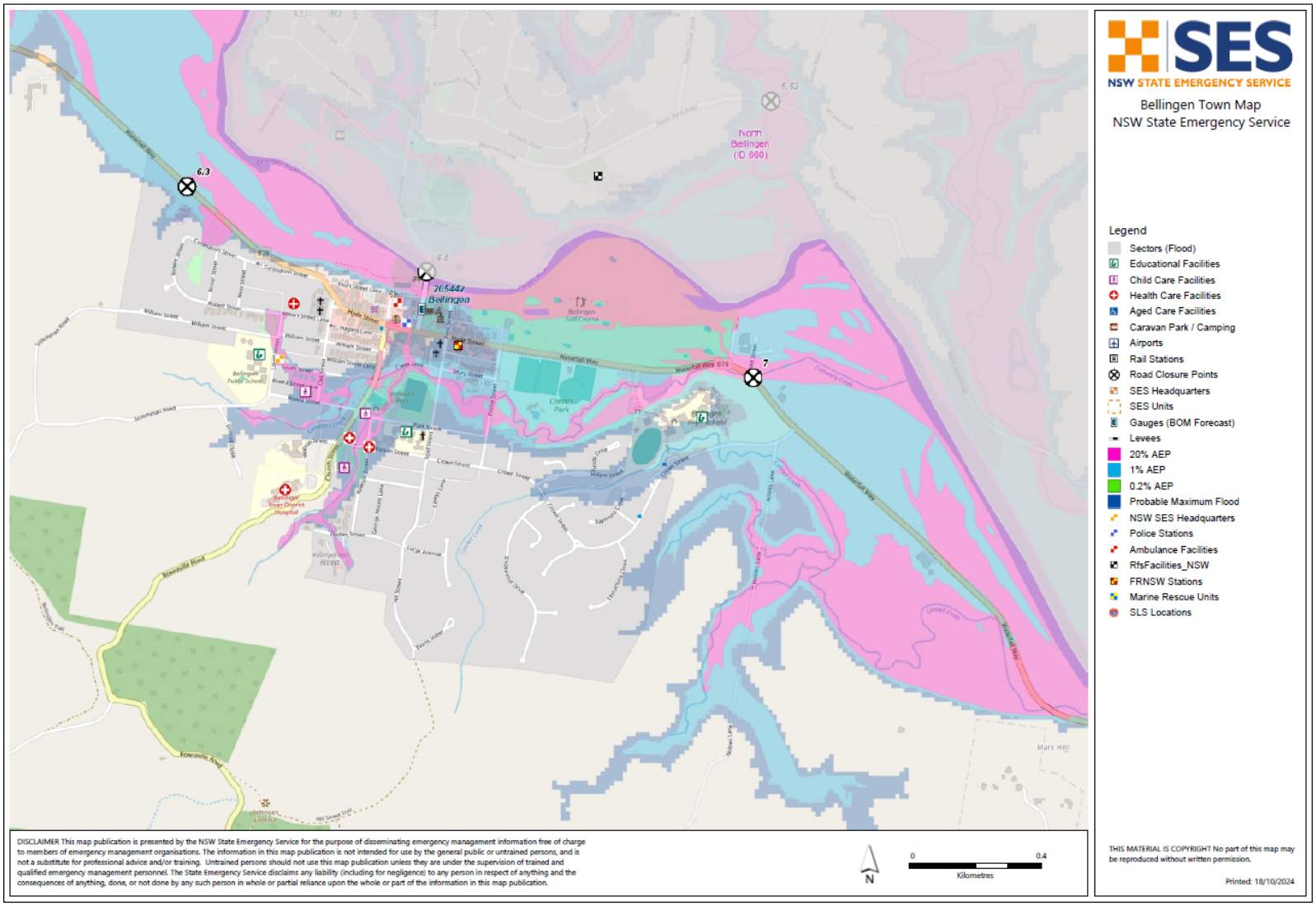
Dorrigo Health Campus	14 Beech Street Dorrigo NSW 2453	27 Beds	Not flood prone
Camping Ground / Caravan Parks			
Reflections Mylestom – Holiday Park	30 Beach Parade Myleston	82 Camping sites 52 cabins	Likely to be inundated in a PMF
Bellinger River Tourist Park	96 Mylestom Drive, Repton	54 camping sites 6 cabins	Can become inundated from 6m on the Bellingen gauge (205442/59126)
Bellingen Showground	Black Street Bellingen	25 sites	Inundation may commence from 8.1m
Reflections Urunga Holiday Park	2 Morgo Street, Urunga	90 camping sites 30 cabins	Likely to become inundated in the lower areas from 20% AEP and totally inundated by a PMF
Urunga Waters Tourist Park	4437 Giinagau Way Urunga	Approx 47 semi permanaent sites/cabins	By 2.96m (Urunga Gauge 205407/559011) the park experiences overground flooding. Evacuation required by 2.4m.
Brigalow Caravan Park (May not be open)	Giinagay Way, Urunga	unknown	Inundation commences from 3.0m

MAP 1: BELLINGER RIVERBASIN

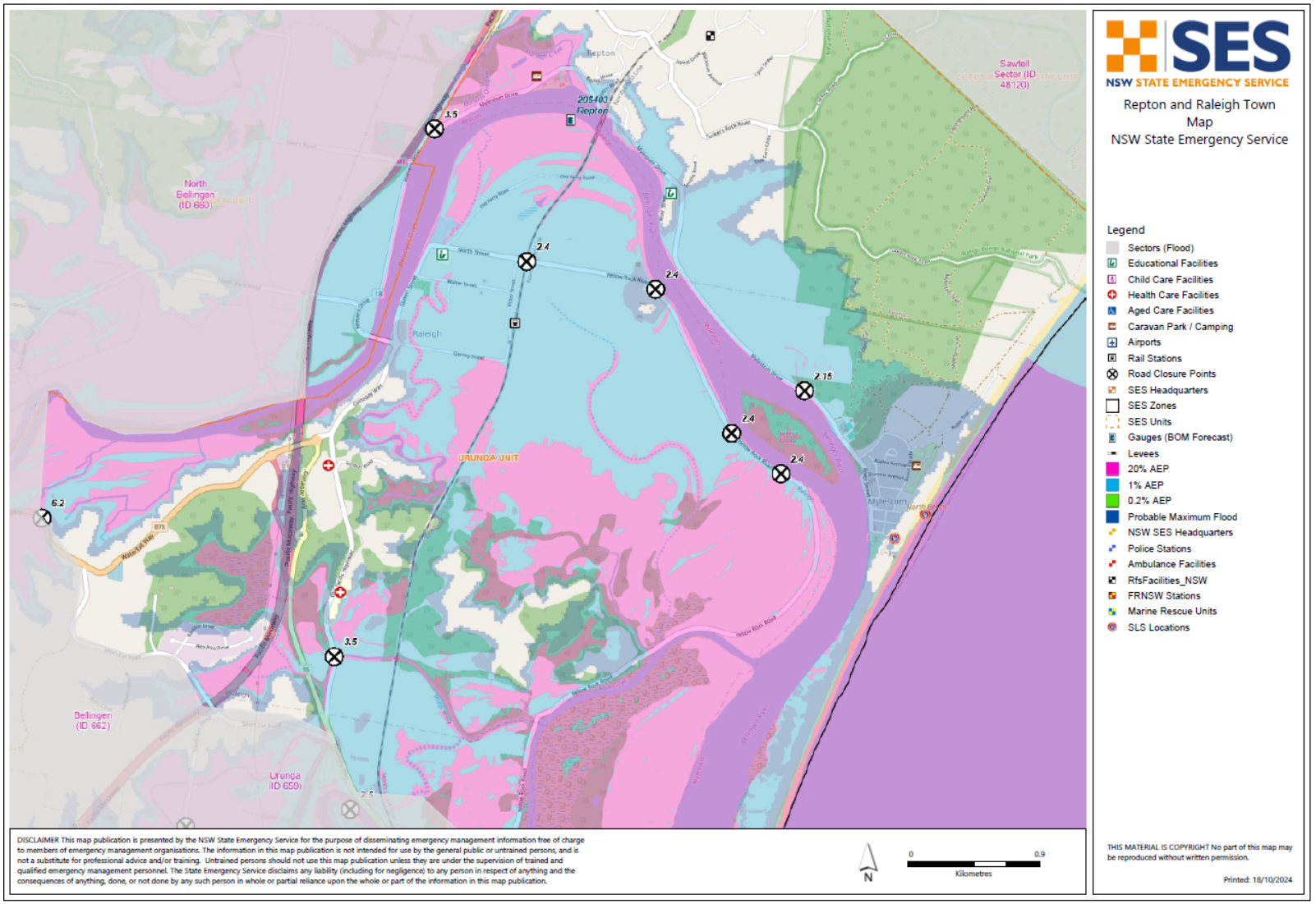
MAP 2: NORTH BELLINGEN TOWN MAP



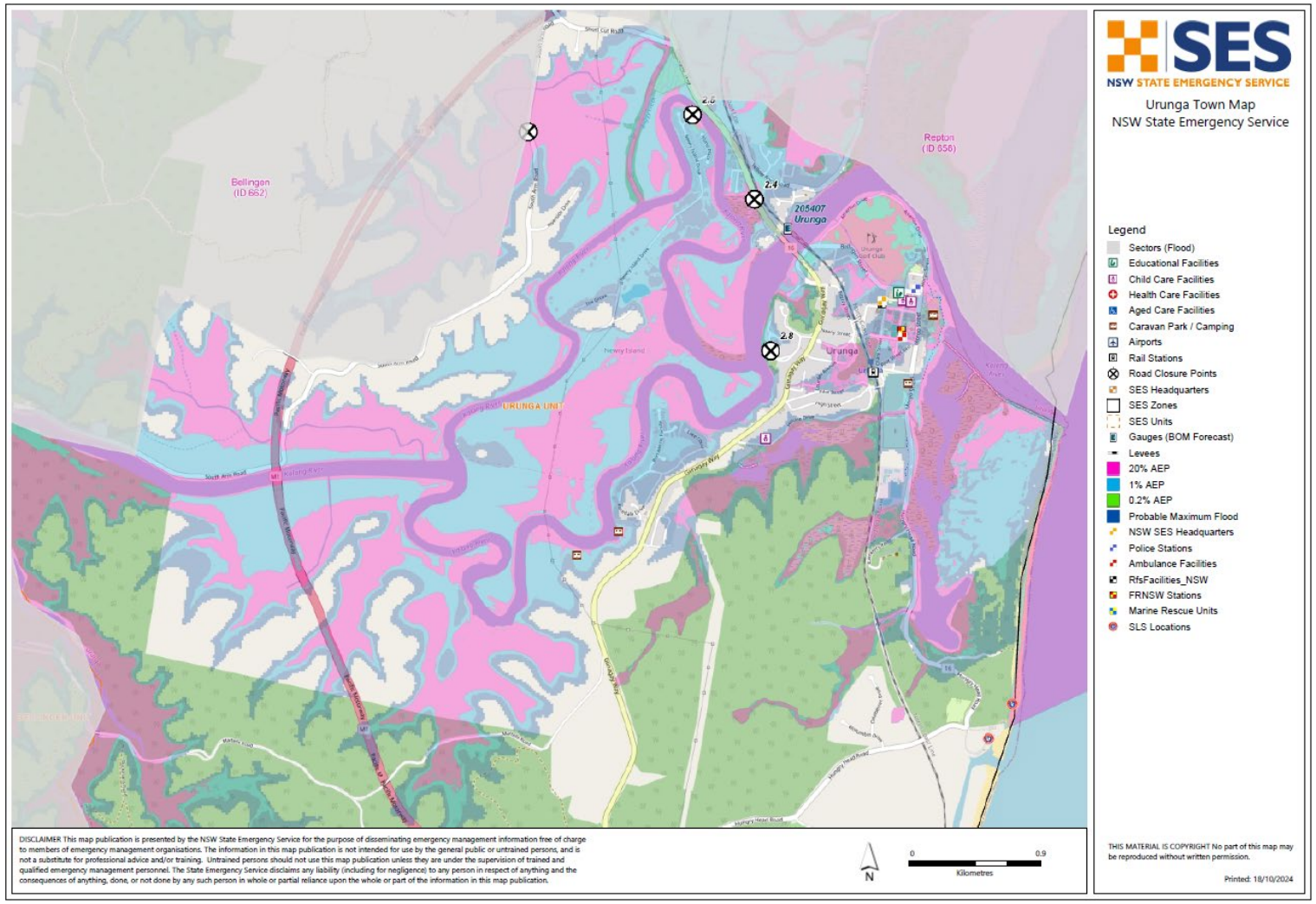
MAP 3: BELLINGEN TOWN MAP



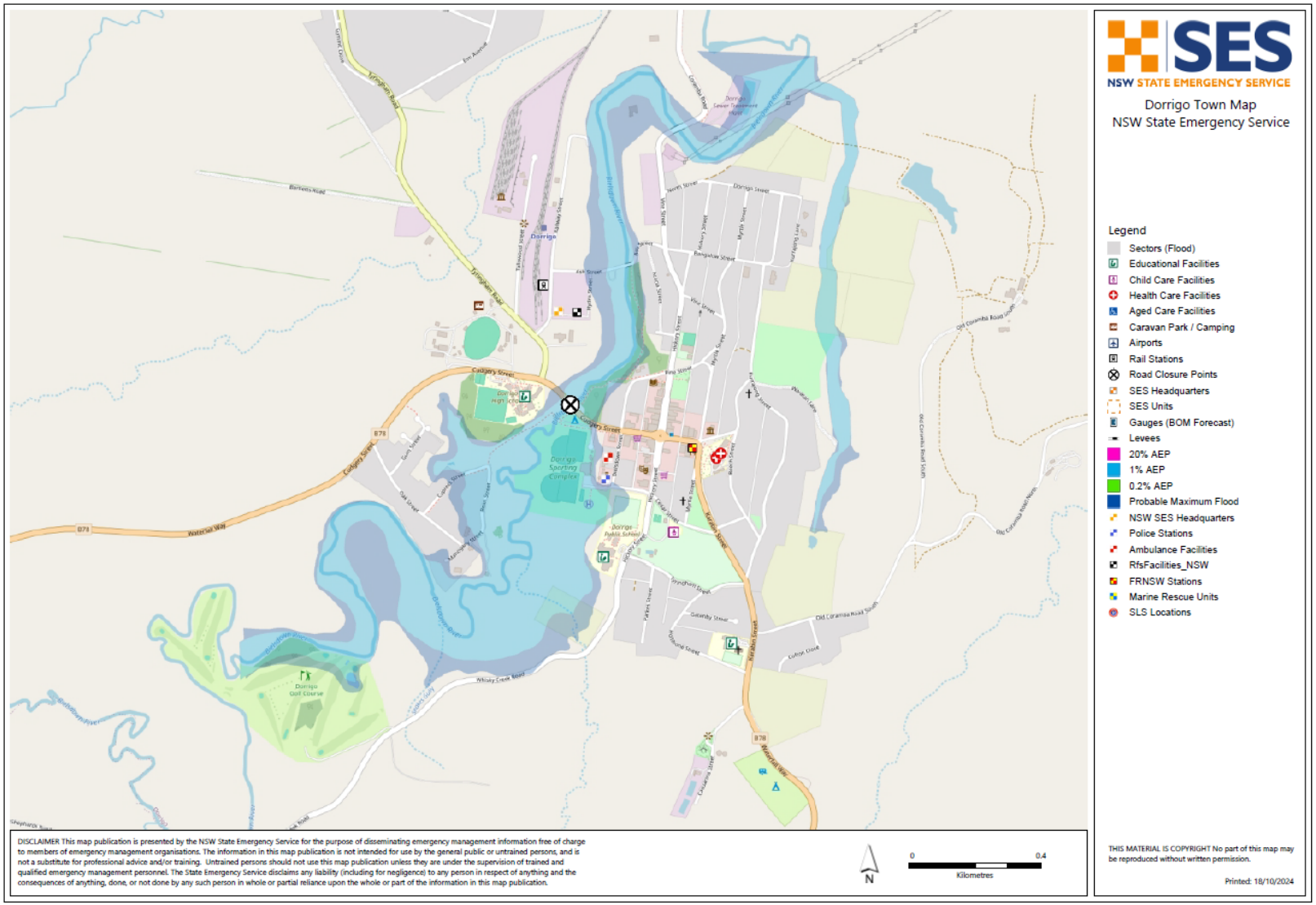
MAP 4: REPTON AND RALEIGH TOWN MAP



MAP 5: URUNGA TOWN MAP



MAP 6: DORRIGO TOWN MAP



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BELLINGEN: FLOOD WARNING SYSTEMS AND ARRANGEMENTS

Chapter 1 of Volume 3 (NSW SES Response Arrangements for Bellingen) of the Bellingen Flood Emergency Sub Plan

Last Update: December 2024

CONTENTS

CONTENTS 1

LIST OF TABLES 1

1. GAUGES MONITORED BY THE NSW SES BELLINGEN LOCAL HEADQUARTERS 2

2. DISSEMINATION OPTIONS FOR NSW SES FLOOD INFORMATION AND WARNING PRODUCTS 4

LIST OF TABLES

TABLE 1: GAUGES MONITORED BY THE NSW SES BELLINGEN LOCAL HEADQUARTERS 2

1. GAUGES MONITORED BY THE NSW SES BELLINGEN LOCAL HEADQUARTERS

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

Gauge Name	Type	AWRC No.	Bureau Gauge No.	Stream	Flood level classification in metres			Special reading arrangements	Owner
					MIN	MOD	MAJ		
Thora *†‡	Automatic	205002	59121	Bellinger River	3.0	4.3	5.8		Bellingen Shire Council NSW DCCEEW
Bellingen *†‡	Automatic	205442	59126	Bellinger River	3.7	6.7	8.2		Bellingen Shire Council NSW DCCEEW
Repton *†‡	Automatic	205403	559024	Bellinger River	2.0	N/A	3.0		Bellingen Shire Council NSW DCCEEW
Urunga *†‡	Automatic	205407	559011	Kalang River	1.5	2.0	2.4		Bellingen Shire Council NSW DCCEEW
Gleniffer †	Automatic	205014	559004	Never Never Creek					Bellingen Shire Council
Never Never @ Old Crossing	Automatic	205019		Never Never Creek					Water NSW
Fosters	Automatic	205016	559047	Bellingen River					WaterNSW
Kooroowi (Scotchman) †‡	Automatic	205440	559008	Kalang River					Bellingen Shire Council NSW DCCEEW
Newry Island †	Automatic	205458	559020	Kalang River					Bellingen Shire Council

									NSW DCCEEW
Bellingen PWD	Automatic	205437		Bellingen River					
Dorrigo No. 2 & 3	Automatic	204017	559025	Bielsdown Creek					

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

As the combat agency for flood, storm and tsunami NSW SES has a statutory responsibly to issue warnings and public information to affected communities (NSW SES Act s 8). Warnings include advice about options and likely impacts of an event. The Incident Controller is accountable for preparing and disseminating accurate warning products during an incident.

2.1 DISSEMINATION OF WARNINGS:

NSW SES disseminates warnings through the following platforms: (Please note that this is not an exhaustive list and not all the following may be used during any or all events)

- NSW SES Website
    - www.ses.nsw.gov.au
- HazardWatch
    - HazardWatch is currently online at www.hazardwatch.gov.au .
    - Warnings are automatically updated/removed as managed through this platform.
- Hazards Near Me NSW App
- Doorknocking
- Emergency Alert
- Social Media
    - The following are some social media accounts:
        - Facebook (@NSWSES)
        - Facebook (@Northern Rivers NSW SES)
        - Facebook (@Clarence Valley NSW SES)
        - Facebook (Local community pages, Local business pages)
        - Twitter (@NSWSES
        - Instagram (@NSWSES)
- Community Meetings

Television Stations:

Station	Location
ABC TV (Channel 2, 20 & 21)	Northern NSW
ABC NEWS, (Channel 24)	Northern NSW
NBN (Channel 8, 81)	Northern NSW
SBS (Channel 3)	Northern NSW
WIN/10 (Channel 5)	Northern NSW
Seven West (Channel 6, 61)	Northern NSW
Sky News (Channel 53)	Northern NSW

Radio Stations:

Station	Location	Frequency	Modulation
ABC Radio	Coffs Coast	684 Kempsey 92.3 FM	
ABC Radio	North Coast	738 AM 94.5 FM	
2HC	Coffs Harbour	639 AM	
2HC	Coffs Harbour	100.5 FM	
2CSF	Coffs Harbour	105.5 FM	
2HC Super Network	Coffs Harbour	100.5 FM	
2HC Super Network	Coffs Harbour	101 FM	
hit105.5 Coffs Coast	Coffs Harbour	105.5 FM	
2CFS Triple M Coffs Coast	Coffs Harbour	106 FM	
Freedom FM 94.1	Coffs Harbour	94.1 FM	
CHY FM	Coffs Harbour	104 FM	CHY FM
2AIR	Coffs Harbour	108 FM	2AIR-FM

Digital/On-Line Services:

- Streaming Services
- Podcasts
- YouTube Channels

Other Agencies:

Stakeholders include:

- Chamber of Commerce
- Business Owners
- NFP's
- NDIS and Community Care Providers
- Aged Care Providers
- Emergency Services
- Schools and Child Care
- Clarence Valley Council
- NSW Health
- Media Outlets
- Others where appropriate

BELLINGEN SHIRE: NSW SES LOCALITY RESPONSE ARRANGEMENTS

Chapter 2 of Volume 3 (NSW SES Response Arrangements for Bellingen Shire) of the Bellingen Shire Flood Emergency Sub Plan

Last Update: December 2024

AUTHORISATION

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

Approved

NSW SES North Eastern Zone Coordinator Planning

Date: 2nd December 2024

Approved

NSW SES North Eastern Zone Commander

Print Name: Commander Scott McLennan

Date: 2nd December 2024

Tabled at LEMC

Date: 3rd December 2024

Document Issue: V3.2-07042014

CONTENTS

AUTHORISATION **1**

CONTENTS **2**

LIST OF TABLES **2**

SECTOR OVERVIEW **3**

1. BELLINGEN SECTOR **4**

1.1. BELLINGEN Response Arrangements 4

1.2. BELLINGEN Sector/Community Map 11

1.3. Evacuation planning 12

2. NORTH BELLINGEN SECTOR **14**

2.1. NORTH BELLINGEN Response Arrangements 14

2.2. NORTH BELLINGEN Sector/Community Map 19

2.3. Evacuation planning 20

3. DORRIGO SECTOR **22**

3.1. DORRIGO Response Arrangements 22

3.2. DORRIGO Sector/Community Map 27

3.3. Evacuation planning 28

4. URUNGA SECTOR **29**

4.1. URUNGA Response Arrangements 29

4.2. URUNGA Sector/Community Map 35

4.3. Evacuation planning 36

5. REPTON SECTOR **37**

5.1. REPTON Response Arrangements 37

5.2. REPTON Sector/Community Map 42

5.3. Evacuation planning 43

LIST OF TABLES

TABLE 1: OVERVIEW OF SECTORS IN THE BELLINGEN SHIRE LGA. **3**

SECTOR OVERVIEW

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

These Sectors provide further detail of the planned response strategies within Communities in the Bellingen Shire LGA.

Sector Name	Community	Sector Basis	Total properties	Properties potentially at risk
Bellingen	Bellingen, East Bellingen, Thora, Darkwood	High flood island	1,151	Inundation: 138 (only refers to Bellingen township)
North Bellingen	North Bellingen, Gleniffer, Never Never, Promise Land, North Bank Road	High flood island	1,139	Inundation: 107 (Only refers to North Bellingen township)
Dorrigo	Dorrigo, North Dorrigo, Tyringham, Deer Vale, Fernbrook, Hernani, Megan, Cascade, Ebor	East of Bielsdown River: Rising road access, high flood island. West of Bielsdown River: Rising road access	1,332	Inundation: 8 (From 2012 modelling)
Urunga	Urunga, Newry Island, Bellinger Keys, Kalang	**Urunga:** Rising road access. **Yellow Rock:** Low flood island. **Bellinger Keys:** Rising road access. **Panorama Parade:** Area becomes "low flood islands". **Newry Island in the residential areas** from a 2% (3.59m on Newry Island Gauge 205458): Low flood island. **Rural areas** may become a "low flood island" from 2.18m. **Kalang:** Overland refuge.	1,409	Inundation: 524
Repton	Repton, Mylestom, Raleigh	**Repton**: High flood island. **Mylestom and Repton** are "low trapped perimeter" above 1% AEP. **Raleigh (east):** Low flood island.	605	Inundation: 238

1. BELLINGEN SECTOR

1.1. BELLINGEN RESPONSE ARRANGEMENTS

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

Sector Description

Bellingen is the main urban centre on the North Arm of the Bellinger River.

This sector covers Bellingen, East Bellingen, Thora and surrounding rural areas.

Darkwood and Thora are located to the west of Bellingen. The area is bounded by Bellinger River and Dorrigo National Parks.

Hazard

- Riverine Flooding – High (Extreme)
- Flash Flooding - Medium
- Storm - High

Flood Affect Classification

Polygon ID	Polygon Name	Gauge Name	Gauge Number	Gauge Height	Flood Emergency Response Classification of Community	Population Estimate	Dwelling Estimate	Vehicle Estimate	Warning Time	Evacuation Time
48515	Bellingen South	Bellingen	205442	6.5	High Flood Island	932	398	716	2.18	4.19
48516	Kalang basin	Kooroowi (Scotchman)	205440	3	Low Flood Island	6	3	5	1.01	3.01
48518	Bellingen West	Bellingen	205442	6.5	Rising Road Access	764	347	625	2.03	4.04
48519	Kalang East	Kooroowi (Scotchman)	205440	3	Low Flood Island	132	49	88	1.15	3.15
48919	Thora West	Thora	205002	3	High Trapped Perimeter	9	6	11	1.02	3.02
48920	Thora	Thora	205002	3.66	Low Trapped Perimeter	43	19	34	1.06	3.06
48921	Bellingen	Bellingen	205442	10	Rising Road Access	441	199	358	1.59	3.60
48922	Fernmount	Bellingen	205442	7	Overland Escape Route	184	74	133	1.22	3.22
112013	West of South Arm Road	Urunga	205407	2.4	Overland Escape Route	81	31	56	1.09	3.09
302	East Bellingen Butter Factory	Bellingen	205442	7	Low Flood Island	10	7	12.6	1.02	3.02

At risk properties	138 (Only Bellingen Township included)	**Total number of properties within Sector/Community**	1,151

Sector Control

The Incident Controller will nominate a Sector Commander to control evacuations in this Sector. The NSW SES will conduct evacuations in this sector with assistance from NSW Police, Fire and Rescue NSW, and NSW Rural Fire Service (RFS) volunteers.

Key Warning Gauge Name

Name	AWRC No.	Min (m)	Mod (m)	Maj (m)
Bellingen	205442	3.70	6.70	8.20
Thora	205002	3.00	4.30	5.80
Kooroowi (Scotchman)	205440	n/a	n/a	n/a

General Strategy

- Evacuation of at-risk population.
- Self-evacuation to friends/family outside of the impact area.
- Establishment of an evacuation centre at the **Bellingen Memorial Hall.**

Key Risks / Consequences	▪ Loss of life from floodwater drownings ▪ Significant urban flooding ▪ Extensive road closures and disruption to road networks ▪ Infrastructure damage, including roads, bridges and culverts ▪ Power outages ▪ Sewerage system failure ▪ Water supply disruption ▪ Loss of life from high velocity floodwater ▪ Overland flows causing isolation, inundations and road closures ▪ Damaging winds and intense rainfall causing roof and tree damage
Information and Warnings	▪ Flood Watch ▪ Flood Warning ▪ AWS Advice ▪ AWS Watch & Act ▪ AWS Emergency Warning ▪ Sequenced door knocking of evacuation sub sectors ▪ Media announcements (including social media) ▪ Emergency Alert (SMS, Landlines) ▪ Standard Emergency Warning Signal (SEWS) ▪ Hazards Near Me App
	The unit may conduct doorknocking in areas prior to an emergency warning being issued.
	The Bellingen NSW Unit has an established telephone list for high-risk properties.
Property Protection	***Specific property protection measures:*** ▪ Monitoring rising flood waters. ▪ Relocation of livestock where resources are available. ▪ Relocation of farm machinery and valuable goods where resources are available. ▪ Control of surface water through sandbagging measures. ▪ Assist in the lifting of furniture to residents in need where resources are available. ▪ Monitoring integrity of dwellings surrounded by flood waters
	Protection of essential infrastructure: ▪ A number of sewerage treatment plants and pump stations are at risk of flooding in a 1% AEP flood (11.08 metres). ▪ Power supplies and telephones can be cut for days to weeks in and around Thora and Darkwood (2). Mobile phone coverage is now available in the area but maybe unreliable in inclement weather. ▪ The area has 11 critical bridges that cause isolation in Thora and Darkwood at various heights through flooding on the Bellinger River. They are located at the following distances from Waterfall Way Road - Leans Bridge(1.1km) closes at 3.66m on the (Thora Gauge (205002/59121) GR205002) - Joyces Bridge(4km) closes at 3.5m on the (Thora Gauge (205002/59121) GR205002), - Hobarts Bridge closes at 3.00m (7km) on the (Thora Gauge (205002/59121) GR205002), - Die Happy Bridge(10km), - Tysons Bridge(13.1km), - Guess Bridge(13.9km), - Richardsons Bridge(14.8km), - The Pains

	bridge(16km), - Cleavers Bridge(17.1km), - Darkwood Bridge(19km), - Justins Bridge(21km). ▪ **Telecommunications** – Mt Moombill telecommunications tower (near Moombil) can become isolated at Wildcattle Creek.
	Levees – There is a small levee protecting the Golf Club, which may overtop from approximately 8.39 metres (Bellingen gauge 205442). Overtopping of the levee will cause inundation of the club impacting air conditioners. Lavenders Bridge, Moodys Bridge and Spicketts Bridge all have water level sensors that trigger a first alarm when the river levels rise to 300mm below the road deck so Council work crews can install **CAUTION** signage to alert road users. A second alarm is also triggered when river levels rise to the road deck so Council work crews can erect **ROAD CLOSED** signage. Leans Bridge also has a water level sensor that triggers a first alarm when the river level rises to 300mm below the road deck and the onsite electronic flood signage is automatically updated to **CAUTION** status at the first alarm and **ROAD CLOSED** status at the second alarm, which is triggered when river level rises to the road deck.
Evacuation and/or Isolation Triggers	Evacuation may be considered due to: • Inundation of property • Closure of main evacuation routes • Failure of essential services
Evacuation Triggers	The key evacuation triggers based on Bureau of Meteorology flood height predictions at the **Thora Gauge** (205002). **1. Prediction to reach and/or exceed 3.0m –** Hobart Bridge closes, isolating all residents upstream of this bridge including Orama Public School (34 students) and Chrysalis School For Rudolf Steiner Education. **2. Prediction to reach and/or exceed 3.66m –** Leans bridge closes which is 1.1km along Darkwood Road. This closure isolates approx. 500 residents west of Thora along Darkwood Road The key evacuation triggers based on Bureau of Meteorology flood height predictions at the **Bellingen Gauge** (205442). **Farmland downstream of Bellingen starts to be affected from 3.7m. This should be incorporated into any advice level warning that is provided under a flood watch or warning.** **1. Prediction to reach and/or exceed 6.50m -** East Bellingen requires evacuation of properties in Doepel and Cahill Streets by 7m (Bellingen gauge 205442). From this height residents and businesses need to lift products/furniture and prepare to evacuate if heights are predicted to reach or exceed 7.0m Bellingen gauge 205442. The area consists of 10 commercial and 3 residential properties (13 properties). Low lying farmland downstream along Waterfall Way east and west of Bellingen may become progressively isolated from this height. **2. Prediction to reach and/or exceed 7.00m –** Significant inundation begins from this height in East Bellingen around the Butterfactory. Localised flooding may impact access from this height. Rural properties downstream of Bellingen. Waterfall Way may close on Cemetery Creek Bellingen from this height closing the evacuation route to Bellingen and isolating residents.

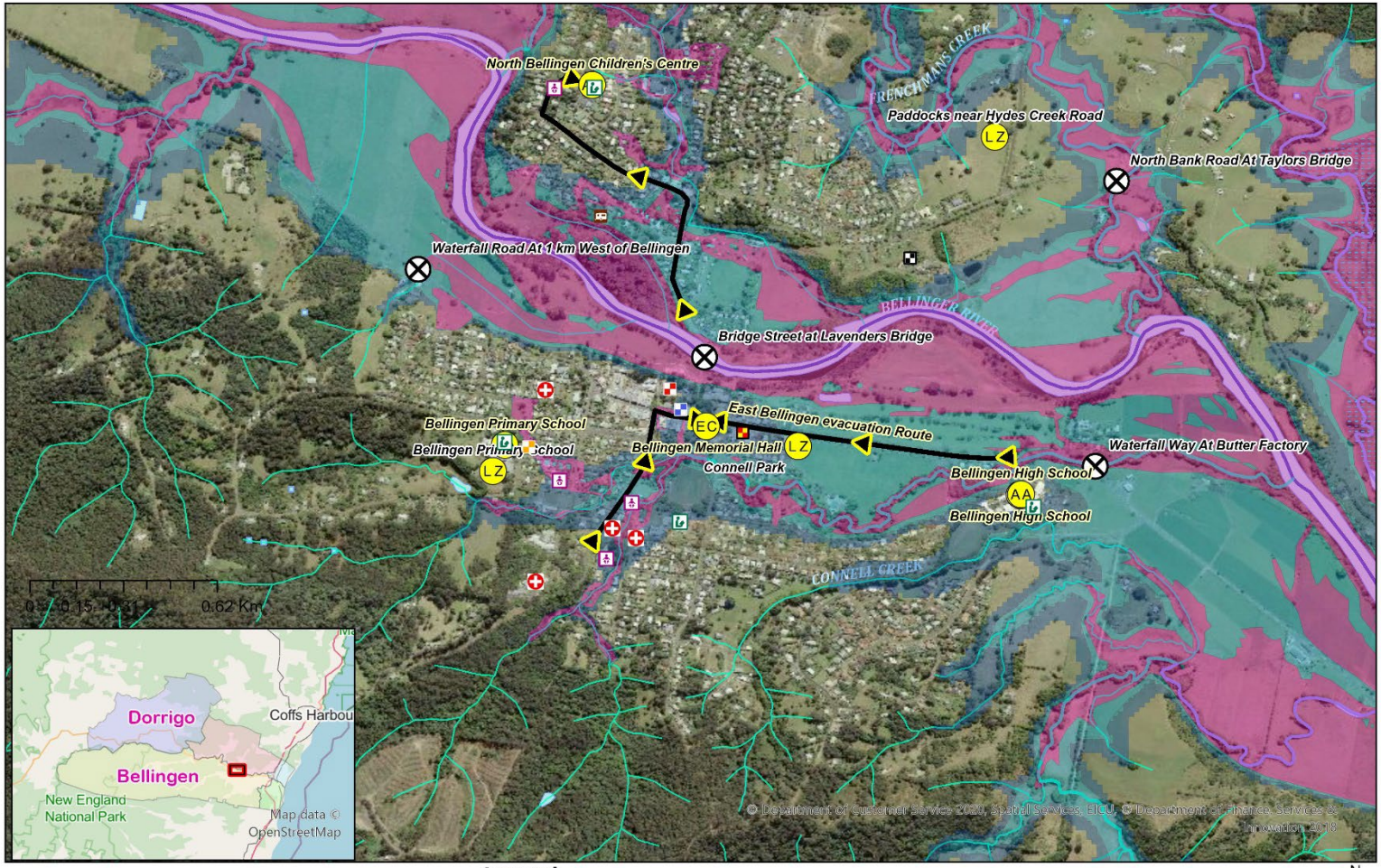
	3. Prediction to reach and/or exceed 9.50m - From this height low lying areas around Ford, Prince, Mary, Hyde, Church, Bowra, South, Rawson, Park and Watson Streets and Connell Place may start to experience flooding. **5. Prediction to reach and/or exceed 11.08m –** An event of a 1% AEP magnitude (now 11.08). Further over floor flooding affecting an additional 34 properties will occur. PMF equates to a 16.74m event where a total of 138 properties may be affected The key evacuation triggers based on Bureau of Meteorology flood height predictions at the **Kooroowi (Scotchman) Gauge (205440).** **1. Prediction to reach and/or exceed 3.0m -** A number of bridges are susceptible to flooding between 3 metres and 3.3 metres on the Kooroowi gauge (205440), isolating approximately 400 people along the Kalang Road. This includes Moody's Bridge (which has been raised by 1 metre since the 2001 event), Duffy's Bridge, Spicketts Creek Bridge and Reids Culvert.
Sequencing of evacuation and/or warnings	The key evacuation triggers based on Bureau of Meteorology flood height predictions at the **Thora Gauge** (205002). **1. Prediction to reach and/or exceed 3.0m -** Hobart Bridge closes, isolating all residents upstream of this bridge. Watch and Act Prepare to isolate messaging for GEMS ID 48919. **2. Prediction to reach and/or exceed 3.66m -** Leans bridge closes which is 1.1km along Darkwood Road. This closure isolates approx. 500 residents west of Thora along Darkwood Road. Consider Watch and Act Messaging for GEMS ID 48920. The key evacuation triggers based on Bureau of Meteorology flood height predictions at the **Bellingen Gauge** (205442). **1. Prediction to reach and/or exceed 6.20m -** Targeted Watch & Act Prepare to evacuate for Fernmount GEMS ID 48922 **2. Prediction to reach and/or exceed 6.50m -** Targeted Watch and Act Prepare to Evacuate for East Bellingen GEMS ID 302 if peak has not been reached. Targeted Watch & Act Prepare to isolate for Bellingen South GEMS ID 48515 and Bellingen West ID 48518 **3. Prediction to reach and/or exceed 7.00m -** Targeted Emergency Warning Evacuate before this predicted height for East Bellingen GEMS ID 302 and Fernmount GEMS ID 48922. **4. Prediction to reach and/or exceed 9.00m -** Targeted Watch and Act Prepare to Evacuate for Bellingen for low-lying areas GEMS ID 48921 including Ford, Prince, Mary, Hyde, Church, Bowra, South, Rawson, Park and Watson Streets and Connell Place. **5. Prediction to reach and/or exceed 10.00m -** Targeted Emergency Warning evacuate now/before for Bellingen GEMS ID 48921. **6. Prediction to reach and/or exceed 11.08m -** An event of a 1% AEP magnitude (now 11.08). Further over floor flooding affecting an additional 34 properties will occur. PMF equates to a 16.74m event where a total of 138 properties may be affected. Consider messaging for all subsectors as an Emergency Warning Move to Higher Ground.

	The key evacuation triggers based on Bureau of Meteorology flood height predictions at the **Kooroowi (Scotchman) Gauge (205440).** 1. **Prediction to reach and/or exceed 3.0m** - Consider a targeted watch and act Prepare to Isolate for low lying areas along the Kalang including GEMS ID's Kalang Basin 48516 and Kalang East 48519 The key evacuation triggers based on Bureau of Meteorology flood height predictions at the **Urunga Gauge (205407).** **1. Prediction to reach and/or exceed 2.4m** - Consider a targeted watch and act Prepare to Isolate for low lying areas west of South Arm Road GEMS ID's 112013.
Evacuation Routes	**Bellingen in relation to the sequencing of evacuations and warnings**: ▪ **For Prediction 3** - the areas of East Bellingen will be systematically evacuated west along Waterfall Way to Hyde Street to the Bellingen Memorial Halll. ▪ **For Prediction 5** - for areas around Bellingen evacuation will be along local roads to Hyde Street to Bellingen Memorial Halll. ▪ **For Prediction 6** - additional dwellings will be affected evacuation route will continue to be along local roads to Hyde Street to Bellingen Memorial Halll.
Evacuation Route Closure	Road closures affecting the sequenced evacuation of sectors: ▪ Darkwood Road Thora (3.0m Thora Gauge 205002) can close several low-level timber bridges over Bellinger River. ▪ Hammond Street at Lavenders Bridge (4.80m Bellingen Gauge 205442) ▪ Waterfall Way closes at Camerons Corner (6.20m Bellingen Gauge 205442) ▪ Waterfall Way between Bellingen and Thora closes (7.50m Bellingen Gauge 205442) ▪ Fernmount Flats, Waterfall Way (between Fernmount and the coast and Bellingen) – cuts the town from the Highway and Fernmount and inundates the Dairy ▪ Kalang Road at various bridges from 3m (Kooroowi gauge 205440) ▪ Local Roads in the vicinity of Cemetery Creek may close. ▪ South Arm Road towards Urunga (1.9 metres U/S Newry Island Gauge 205458) ▪ Bellingen-Bowraville Road
Method of Evacuation	Primarily self-evacuation by private transport before road closures. If time permits at-risk residents will be door knocked by NSW SES, RFS and other emergency personnel and advised on the evacuation details.
Evacuation Centre/Assembly Point	**People should be encouraged to stay with friends/ relatives outside the flood affected areas.** Where this is not possible an evacuation centre will be established at the Bellingen Memorial Hall. This facility is at risk of inundation during a PMF event. An alternate Assembly Area may be established at the Bellingen High School. An Assembly Area may be established in the Kalang catchment at the Kalang Community Hall at 1774 Kalang Road Kalang.

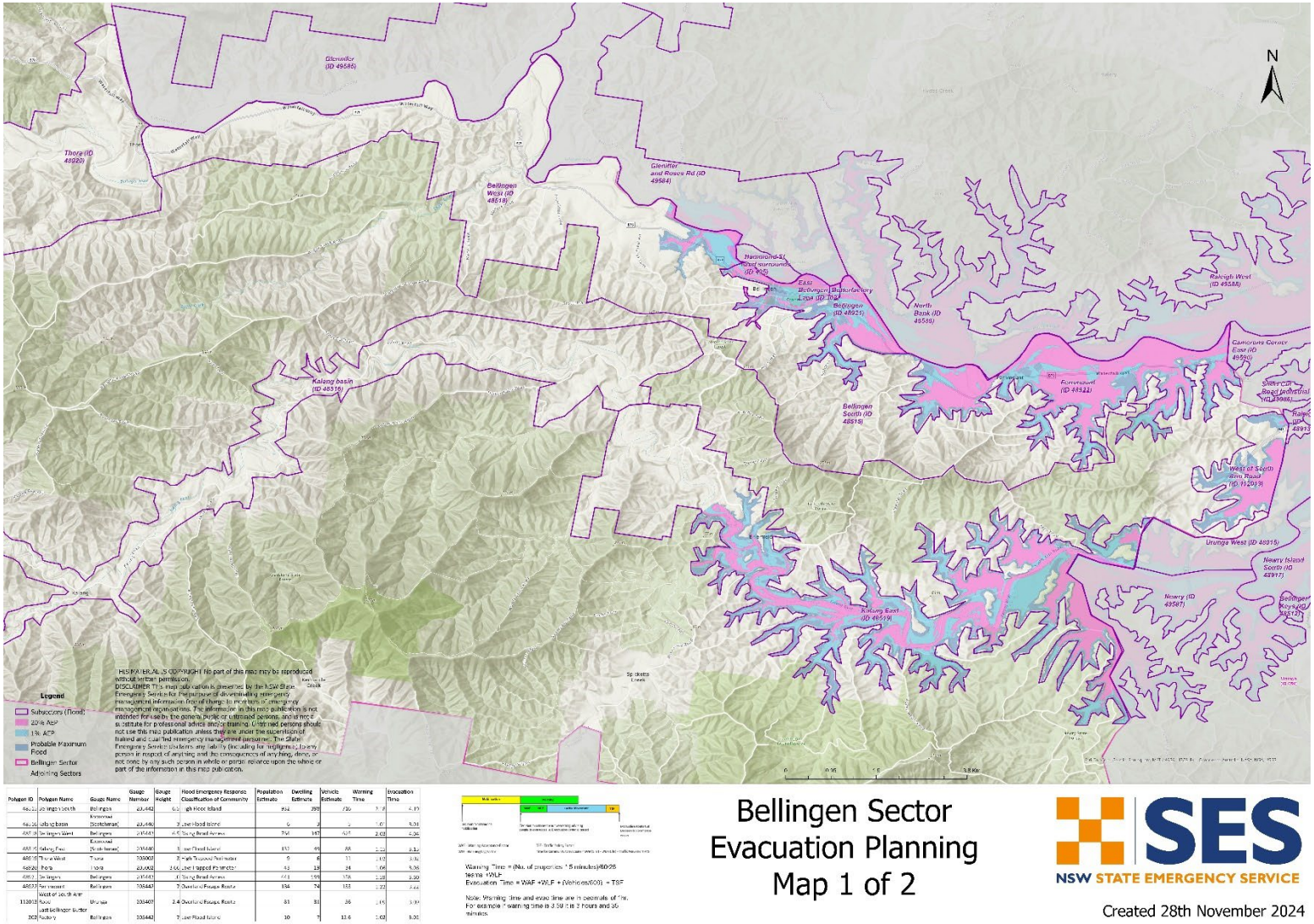
Large scale evacuations	When large-scale evacuations are likely, the NSW SES Incident Controller will liaise with the LEOCON and request support of the EOC as required. **Large scale evacuations would be unlikely in this sector but if required additional locations will be identified.**
Rescue	▪ The flood rescue management process adopted will be determined by the Incident Controller, based on the scale of the flood rescue operations. ▪ The Incident Controller may declare a flood rescue area of operations and establish a flood cell to assist with the management of flood rescues. ▪ All Flood Rescue Operations will be undertaken as per the State Rescue Policy.
	Emergency Access into the Kalang and Thora/Darkwood areas is best serviced by helicopter, weather permitting. Thora may also be accessed via Horseshoe Road which is strictly 4WD access and weather dependant.
Resupply	Thora and Darkwood will require resupply after approximately 3 days of isolation or upon request for assistance.
	Table 2, in Volume 2 provides information about isolated communities in the Bellingen Shire area and potential periods of isolation. If resupply is required, it will be coordinated as per the arrangements outlined in Volume 1 of this plan.
Aircraft Management	***Helicopter Landing Points:*** Possible Helicopter Landing Zones in this sector. Aviation plan will determine exact locations when required and should be field verified prior to approval. Helicopter Landing Zones; ▪ *Bellingen Park / Football Field (inundated approx. 6.2-6.5m Bellingen gauge 205442)* **(S 30° 29.298, E 152° 53.820)** ▪ *Bellingen Primary School* **(S 30° 27.236, E 152° 53.535)** ▪ *Connell Park Bellingen (inundated from 7.5m Bellingen gauge 205442)* **(S30° 27.199, E152° 54.062)** ▪ *Kalang Community Hall (power lines eastern side)* **(S30° 30.430, E152° 46.258)** ▪ *Darkwood (Darcy Brownings property, power lines to the south)* **(S30° 26.021, E152 40.505)**
	Airports: ▪ *Coffs Harbour Airport* **(S30 19.2, E 153 07.0)**

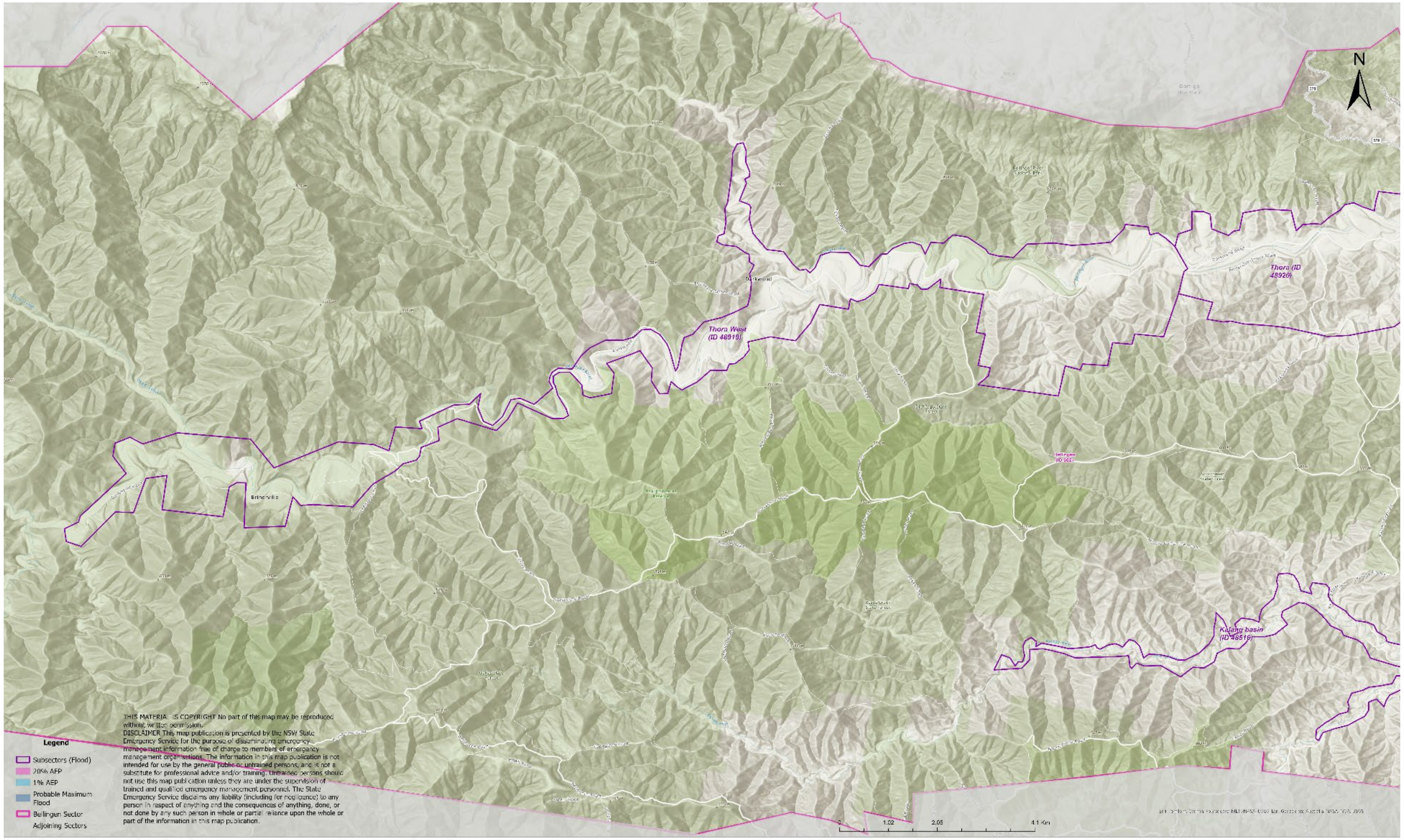
Other	Special considerations relating to evacuation: ▪ Closure of schools - coordinated through the Department of Education. ▪ The evacuation of domestic animals, horses and livestock to the appropriate facility to be managed by Department of Primary Industries and Local Land Services. ▪ Closure of licensed premises. All hotels and licensed clubs will be closed if required. ▪ Security. Police patrols to be established to maintain law and order after evacuation has occurred. ▪ Council has installed a network of 4 Bridge Flood Cameras across our Shire to provide our community with real-time information and warnings by monitoring river levels and flood impacts on local bridges. These can be accessed at: https://www.bellingen.nsw.gov.au/Services/Bridge-Flood-Camera-Network ▪ The NSW SES will use flood boats, aircraft, community contacts and other agencies to monitor the safety of individuals, where feasible. ▪ These arrangements will stay in place until the "Reduced Threat - Return with Caution" is provided by the NSW SES to residents to return to their premises.

1.2. BELLINGEN SECTOR/COMMUNITY MAP



1.3. EVACUATION PLANNING





Polygon ID	Polygon Name	Gauge Name	Gauge Number	Gauge Height	Flood Emergency Response Classification of Community	Population Estimate	Dwelling Estimate	Vehicle Estimate	Warning Time	Evacuation Time
48515	Bellingen South	Bellingen	205442	6.5	High Flood Island	932	393	716	2.18	4.19
48516	Kalang basin	Kooroow (Scotchman)	205440	3	Low Flood Island	6	3	5	1.01	3.01
48518	Bellingen West	Bellingen	205442	6.5	Rising Road Access	754	347	625	2.03	4.04
48519	Kalang East	Kooroow (Scotchman)	205440	3	Low Flood Island	132	49	88	1.15	3.15
48919	Thora West	Thora	205002	3	High Trapped Perimeter	9	6	11	1.02	3.02
48920	Thora	Thora	205002	3.66	Low Trapped Perimeter	43	19	34	1.05	3.06
48921	Bellingen	Bellingen	205442	10	Rising Road Access	441	199	358	1.59	3.60
48922	Fernmount	Bellingen	205442	7	Overland Escape Route	194	74	133	1.22	3.22
112013	West of South Arm Road	Urunga	205407	2.4	Overland Escape Route	81	31	56	1.09	3.09
302	East Bellinger Butter Factory	Bellingen	205442	7	Low Flood Island	10	7	12.6	1.02	3.02

Warning Time = (No. of properties * 5 minutes)/60/28 teams +WLF
Evacuation Time = WAF +WLF + (Vehicles/600) + TSF

Note: Warning time and evac time are in decimals of 1hr. For example if warning time is 3.59 it is 3 hours and 35 minutes

Bellingen Sector Evacuation Planning Map 2 of 2

NSW STATE EMERGENCY SERVICE

Created 28th November 2024

2. NORTH BELLINGEN SECTOR

2.1. NORTH BELLINGEN RESPONSE ARRANGEMENTS

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

Sector Description

Approximately half of Bellingen's population is located in North Bellingen, equating to approximately 2,586 people. The area is bounded by Tuckers Nob State Forest to the north.

This sector covers the areas of North Bellingen, Gleniffer, Never Never, Promise Land, North Bank Road and parts of Raleigh.

Hazard

- Riverine Flooding – High (Extreme)
- Flash Flooding – Medium and Extreme in Gleniffer
- Storm - High

Flood Affect Classification

Polygon ID	Polygon Name	Gauge Name	Gauge Number	Gauge Height	Flood Emergency Response Classification of Community	Population Estimate	Dwelling Estimate	Vehicle Estimate	Warning Time	Evacuation Time
435	Hammond St and surrounds	Bellingen	205442	8.1	Rising Road Access	287	127	229	1.38	3.38
49584	Gleniffer and Roses Rd	Bellingen	205440	7.5	Rising Road Access	1482	662	1192	2.97	4.99
49585	Glennifer	Bellingen	205442	7.5	Rising Road Access	255	123	221	1.37	3.37
49588	Raleigh West	Repton	205403	3.5	Low Flood Island	90	42	76	1.13	3.13
49589	North Bank	Bellingen	205442	5.2	Rising Road Access	226	86	155	1.26	3.26

At risk properties	107	**Total number of properties within Sector/Community**	1,139

Sector Control

The Incident Controller will nominate a Sector Commander to control evacuations in this Sector. The NSW SES will conduct evacuations in this sector with assistance from NSW Police, Fire and Rescue NSW, and NSW Rural Fire Service (RFS) volunteers.

Key Warning Gauge Name

Name	AWRC No.	Min (m)	Mod (m)	Maj (m)
Bellingen Bridge	205442	3.70	6.70	8.20
Gleniffer	205014	N/A	N/A	N/A

General Strategy

- Evacuation of at-risk population.
- Self-evacuation to friends/family outside of the impact area.

Key Risks / Consequences

- Loss of life from floodwater drownings
- Significant urban flooding
- Extensive road closures and disruption to road networks
- Infrastructure damage, including roads, bridges and culverts
- Power outages
- Sewerage system failure
- Water supply disruption
- Loss of life from high velocity floodwater
- Overland flows causing isolation, inundations and road closures
- Damaging winds and intense rainfall causing roof and tree damage

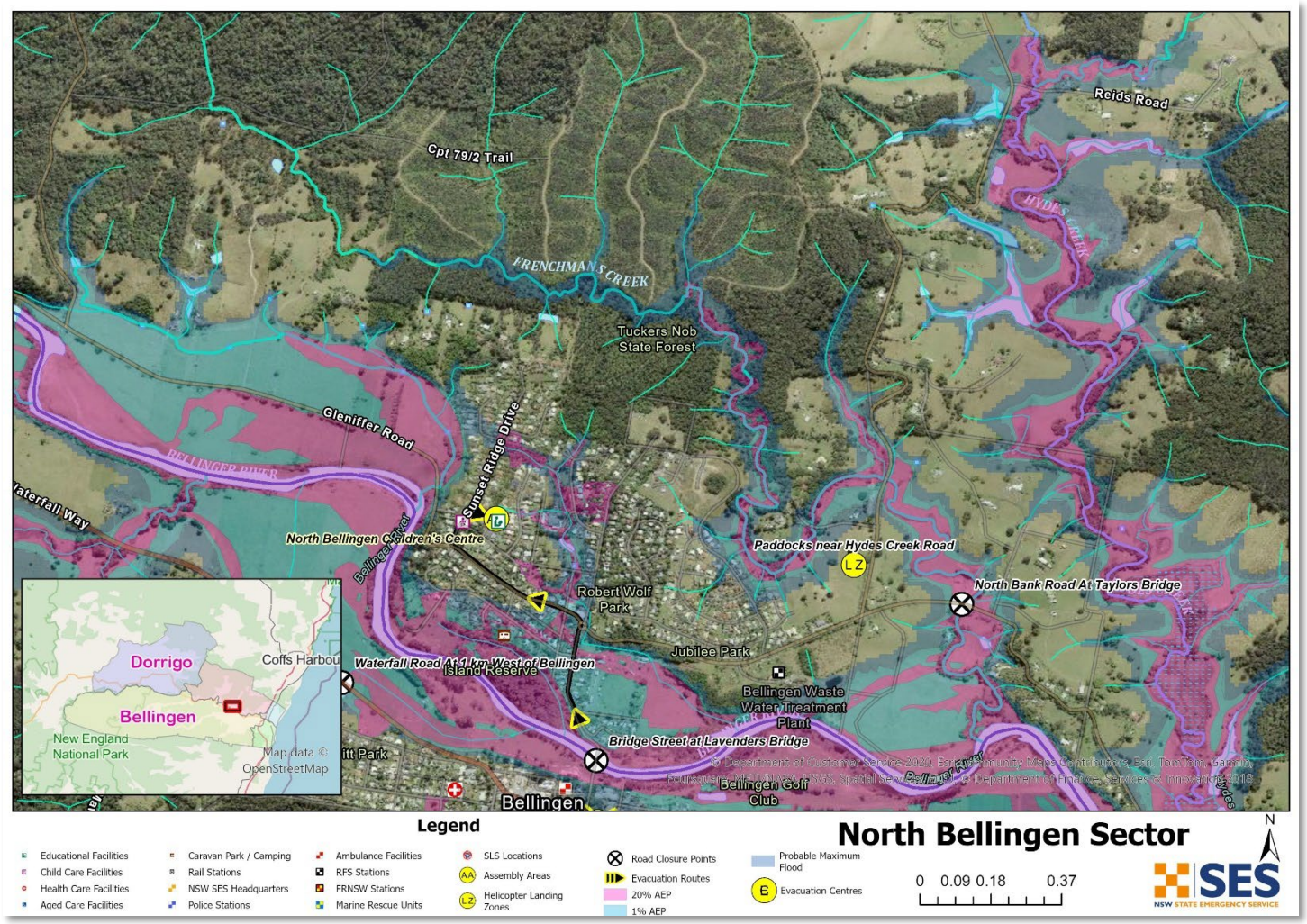
Information and Warnings	▪ Flood Watch ▪ Flood Warning ▪ AWS Advice ▪ AWS Watch & Act ▪ AWS Emergency Warning ▪ Sequenced door knocking of evacuation sub sectors ▪ Media announcements (including social media) ▪ Emergency Alert (SMS, Landlines) ▪ Standard Emergency Warning Signal (SEWS) ▪ Hazards Near Me App
	The Bellingen unit will conduct door knocking in flood prone areas of North Bellingen when resources permit.
	The Bellingen Unit has an established telephone list for high risk properties. These are all listed and described in the Flood Action Card.
Property Protection	***Specific property protection measures:*** ▪ Monitoring rising flood waters. ▪ Relocation of livestock where resources are available. ▪ Relocation of farm machinery and valuable goods where resources are available. ▪ Control of surface water through sandbagging measures. ▪ Assist in the lifting of furniture to residents in need where resources are available. ▪ Monitoring integrity of dwellings surrounded by flood waters.
Evacuation and/or Isolation Triggers	Evacuation may be considered due to: • Inundation of property • Closure of main evacuation routes • Failure of essential services
Evacuation Triggers	The key evacuation triggers based on Bureau of Meteorology flood height predictions at the **Bellingen Gauge** (205442). 1. **Prediction to reach and/or exceed 4.5 m –** Council commence Lavenders Bridge Closure from this height. This cuts off North Bellingen from Bellingen. 2. **Prediction to reach and/or exceed 5.2 m –** Slarkes Bridge closes on North Bank Road followed by Taylors Bridge at 5.52m isolating a number of rural properties on North Bank Road. 3. **Prediction to reach and/or exceed 8.1m –** Properties in North Bellingen begin to become threatened by floodwaters. low-lying properties in Wheatley, Black Hammond and Dowle streets. (70 residential, 15 commercial properties may be affected). Evacuation of Bellingen Showground may also be included depending on if an organised event is utilizing the facilities. 4. **Prediction to reach and/or exceed 11.08m (1% AEP)** – Progressive inundation may impact up to 56 residential properties at this height.

	The key evacuation triggers based on Bureau of Meteorology flood height predictions at the **Repton Gauge** (205403). 1. **Prediction to reach and/or exceed 3.5m** – Farmland in lower Bellingen around Raleigh may start to become inundated from this height.
Sequencing of evacuation and/or warnings	The key evacuation triggers based on Bureau of Meteorology flood height predictions at the **Bellingen Gauge** (205442). 1. **Prediction to reach and/or exceed 4.5 m –** Consider Watch and Act Prepare to Isolate Messaging for North Bank GEMS ID 49589, Hammond St and surrounds GEMS ID 435. 2. **Prediction to reach and/or exceed 7.5m –** Consider Watch and Act Prepare to evacuate Messaging for Hammond St and surrounds GEMS ID 435. Consider Watch and Act Prepare to Isolate for Gleniffer and Roses Rd GEMS ID 49584 and Glennifer GEMS ID 49585. 3. **Prediction to reach and/or exceed 8.10m** – Consider Emergency Warning prepare to evacuate or evacuate now for Hammond St and surrounds GEMS ID 435. The key evacuation triggers based on Bureau of Meteorology flood height predictions at the **Repton Gauge** (205403). 1. **Prediction to reach and/or exceed 3.5m** – Consider issuing a watch and act prepare to evacuate for Raleigh West GEMS ID 49588.
Evacuation Routes	▪ **For Prediction 3 in the sequencing of evacuations** - the areas of North Bellingen will be systematically evacuated north along Hammond Street to Wheatley Street to Sunset Ridge Drive then Elliot Close where there may be an Assembly Area set up at the North Bellingen Children's Centre.
Evacuation Route Closure	Road closures affecting the sequenced evacuation of sectors: ▪ Hammond Street at Lavenders Bridge (4.80m Bellingen Gauge 205442) ▪ North Bank Road (5.20m Bellingen Gauge 205442) ▪ Gleniffer Road – 1km from North Bellingen ▪ Gleniffer Road-Gordonville Road is occasionally cut at Gleniffer Crossroads and McFadyen's Bridge approaches (which crosses the Never Never River). ▪ Gleniffer Hall area. ▪ Hydes Creek Road
Method of Evacuation	Primarily self-evacuation by private transport before road closures. If time permits at-risk residents will be door knocked by NSW SES, RFS and other emergency personnel and advised on the evacuation details.
Evacuation Centre/Assembly Point	**People should be encouraged to stay with friends/ relatives outside the flood affected areas**. There is no flood free evacuation centre identified in North Bellingen. There is an Assembly Area identified at the North Bellingen Childrens Centre.

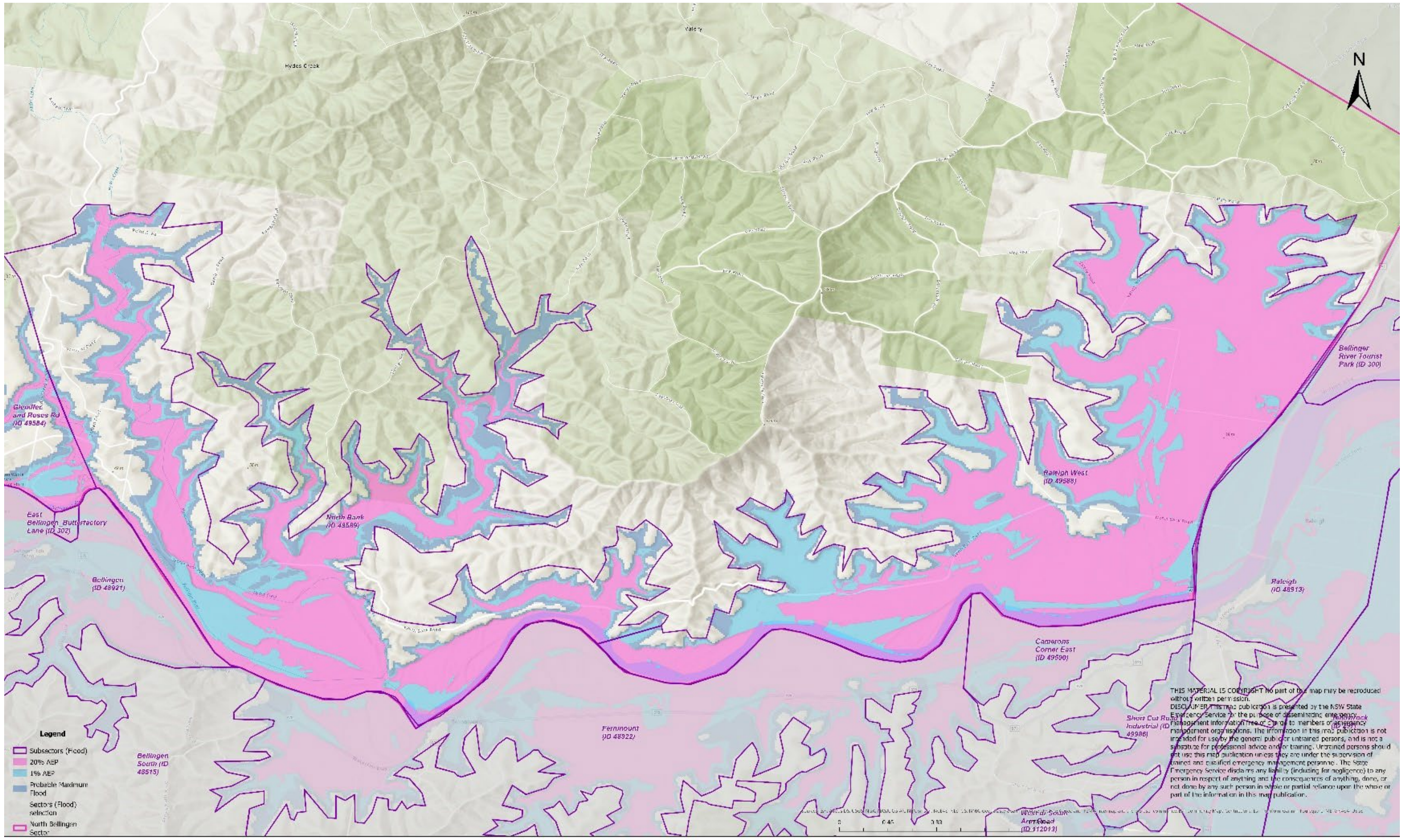
Large scale evacuations	When large-scale evacuations are likely, the NSW SES Incident Controller will liaise with the LEOCON and request support of the EOC as required. **Large scale evacuations would be unlikely in this sector but if required additional locations will be identified.**
Rescue	▪ The flood rescue management process adopted will be determined by the Incident Controller, based on the scale of the flood rescue operations. ▪ The Incident Controller may declare a flood rescue area of operations and establish a flood cell to assist with the management of flood rescues. ▪ All Flood Rescue Operations will be undertaken as per the State Rescue Policy.
Resupply	Contact the Bellingen Unit for information on isolation in the Gleniffer area and potential resupply needs.
	Table 2, in Volume 2 provides information about isolated communities in the Bellingen Shire area and potential periods of isolation. If resupply is required, it will be coordinated as per the arrangements outlined in Volume 1 of this plan.
Aircraft Management	***Helicopter Landing Points:*** **Possible** Helicopter Landing Zones in this sector. Aviation plan will determine exact locations when required and should be field verified prior to approval. Helicopter Landing Zones; ▪ Paddocks located adjacent to North Bellingen, Hydes Creek Road **(S30º 26.653, E152 54.459)** ▪ **NSW RFS North Bellingen Brigade Station** 113 Wheatley St, Bellingen NSW 2454.
	Airports: Aviation Base (if established); ▪ Coffs Harbour Airport **(S30 19.2, E 153 07.0)**
Other	Special considerations relating to the evacuation: ▪ Closure of schools - coordinated through the Department of Education. ▪ The evacuation of domestic animals, horses and livestock to the appropriate facility to be managed by Department of Primary Industries and Local Land Services. ▪ Closure of licensed premises. All hotels and licensed clubs will be closed if required. ▪ Security. Police patrols to be established to maintain law and order after evacuation has occurred. ▪ Council has installed a network of four Bridge Flood Cameras across our Shire to provide our community with real-time information and warnings by monitoring river levels and flood impacts on local bridges. These can be accessed at: https://www.bellingen.nsw.gov.au/Services/Bridge-Flood-Camera-Network ▪ The NSW SES will use flood boats, aircraft, community contacts and other agencies to monitor the safety of individuals, where feasible.

	▪ These arrangements will stay in place until the “Reduced Threat - Return with Caution” is provided by the NSW SES to residents to return to their premises.

2.2. NORTH BELLINGEN SECTOR/COMMUNITY MAP



2.3. EVACUATION PLANNING



Polygon ID	Polygon Name	Gauge Name	Gauge Number	Gauge Height	Flood Emergency Response Classification of Community	Population Estimate	Dwelling Estimate	Vehicle Estimate	Warning Time	Evacuation Time
435	Hammond St and surrounds	Bellingen	205442	8.1	Rising Road Access	287	127	229	1.38	3.38
49584	Gleniffer and Roses Rd	Bellingen	205440	7.5	Rising Road Access	1482	662	1192	2.97	4.99
49585	Glennifer	Bellingen	205442	7.5	Rising Road Access	255	123	221	1.37	3.37
49588	Raleigh West	Repton	205403	3.5	Low Flood Island	90	42	76	1.13	3.13
49589	North Bank	Bellingen	205442	5.2	Rising Road Access	226	86	155	1.26	3.26

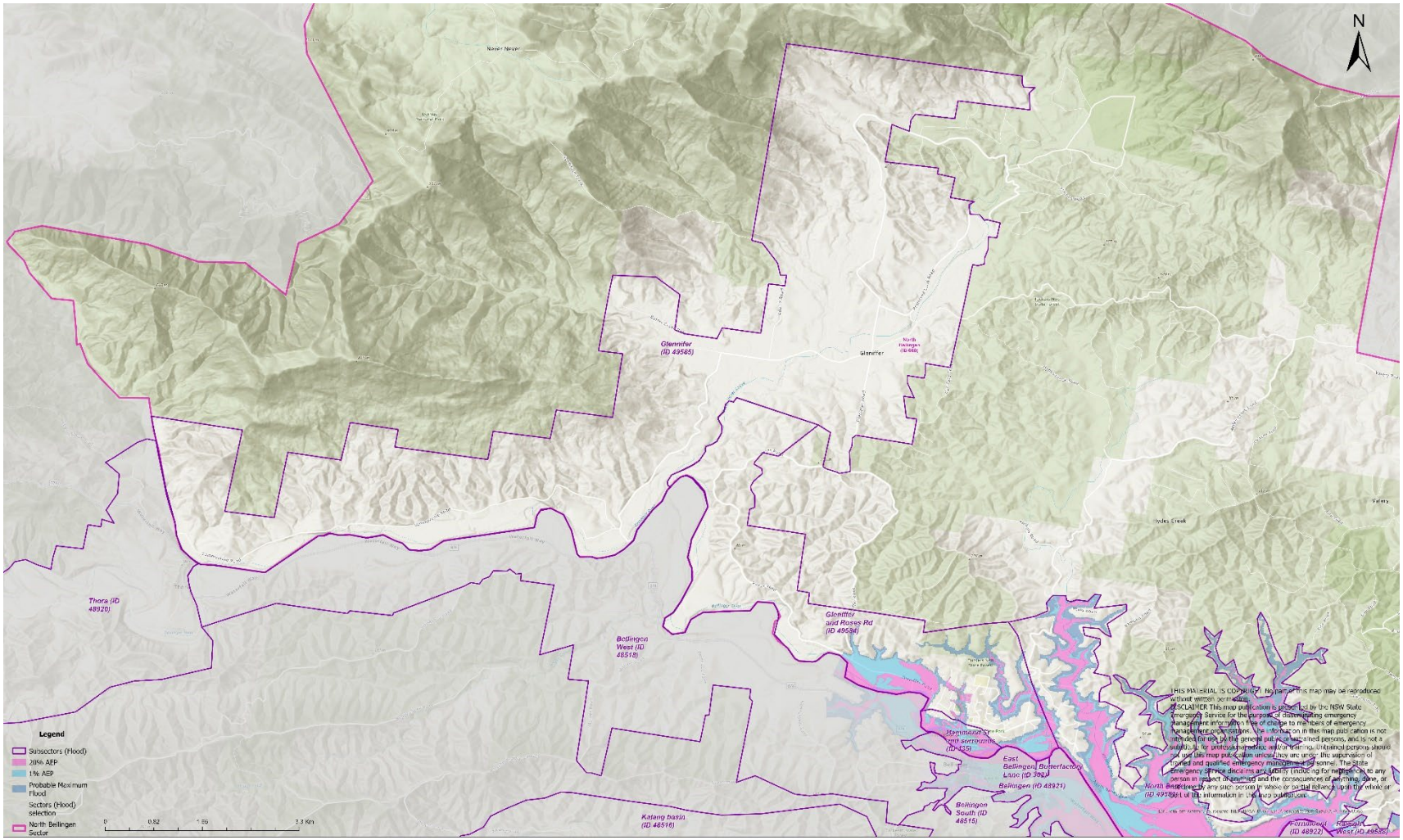
Warning Time = (No. of properties * 5 minutes)/60/28 teams +WLF
Evacuation Time = WAF +WLF + (Vehicles/600) + TSF

Note: Warning time and evac time are in decimals of 1hr. For example if warning time is 3.58 it is 3 hours and 35 minutes

North Bellingen Sector Evacuation Planning Map 1 of 2

NSW STATE EMERGENCY SERVICE

Created 28th November 2024



Polygon ID	Polygon Name	Gauge Name	Gauge Number	Gauge Height	Flood Emergency Response Classification of Community	Population Estimate	Dwelling Estimate	Vehicle Estimate	Warning Time	Evacuation Time
435	Hammond St and surrounds	Bellingen	205442	8.1	Rising Road Access	287	127	229	1.38	3.38
49584	Glenniffer and Roses Rd	Bellingen	205442	7.5	Rising Road Access	1482	662	1192	2.97	4.99
49585	Glenniffer	Bellingen	205442	7.5	Rising Road Access	255	123	221	1.37	3.37
49588	Raleigh West	Repton	205403	3.3	Low Flood Island	90	42	76	1.13	3.13
49589	North Bank	Bellingen	205442	5.7	Rising Road Access	226	86	155	1.26	3.26

Warning Time = (No. of properties * 6 minutes)/8028 teams +WLF
Evacuation Time = WAF +WLF + (Vehicles/600) + TSF

Note: Warning time and evac time are in decimals of 1hr. For example if warning time is 3.59 hr is 3 hours and 35 minutes

North Bellingen Sector Evacuation Planning Map 2 of 2

NSW STATE EMERGENCY SERVICE

Created 28th November 2024

3. DORRIGO SECTOR

3.1. DORRIGO RESPONSE ARRANGEMENTS

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

Sector Description

Dorrigo is located in the highlands to the north west of the Local Government Area (LGA). The town is dissected by the Bielsdown River.

This sector covers areas including Dorrigo, North Dorrigo, Tyringham, Deervale, Mountain Top, Dorrigo National Park, Fernbrook, Hernani, Megan, Cascade, Ebor.

Hazard

- Riverine Flooding – High (Extreme)
- Flash Flooding - Medium
- Storm - High

Flood Affect Classification

Polygon ID	Polygon Name	Flood Emergency Response Classification of Community	Population Estimate	Dwelling Estimate	Vehicle Estimate	Polygon ID	Warning Time	Evacuation Time
49185	Dorrigo East	High Flood Island	1037	570	1026	49185	2.70	4.71
49583	Dorrigo West	Rising Road Access	197	112	202	49583	1.33	3.34

At risk properties	8	**Total number of properties within Sector/Community**	1,332

Sector Control

The Incident Controller will nominate a Sector Commander to control evacuations in this Sector. The NSW SES will conduct evacuations in this sector with assistance from NSW Police, Fire and Rescue NSW, and NSW Rural Fire Service (RFS) volunteers.

Key Warning Gauge Name

Name	AWRC No.	Min (m)	Mod (m)	Maj (m)
Dorrigo No.2 & No.3	20417	N/A	N/A	N/A

General Strategy

- Evacuation of at-risk population.
- Self-evacuation to friends/family outside of the impact area.

Key Risks / Consequences

- Loss of life from floodwater drownings
- urban flooding
- Extensive road closures and disruption to road networks
- Infrastructure damage, including roads, bridges and culverts
- Power outages
- Sewerage system failure
- Water supply disruption
- Loss of life from high velocity floodwater
- Overland flows causing isolation, inundations and road closures
- Damaging winds and intense rainfall causing roof and tree damage

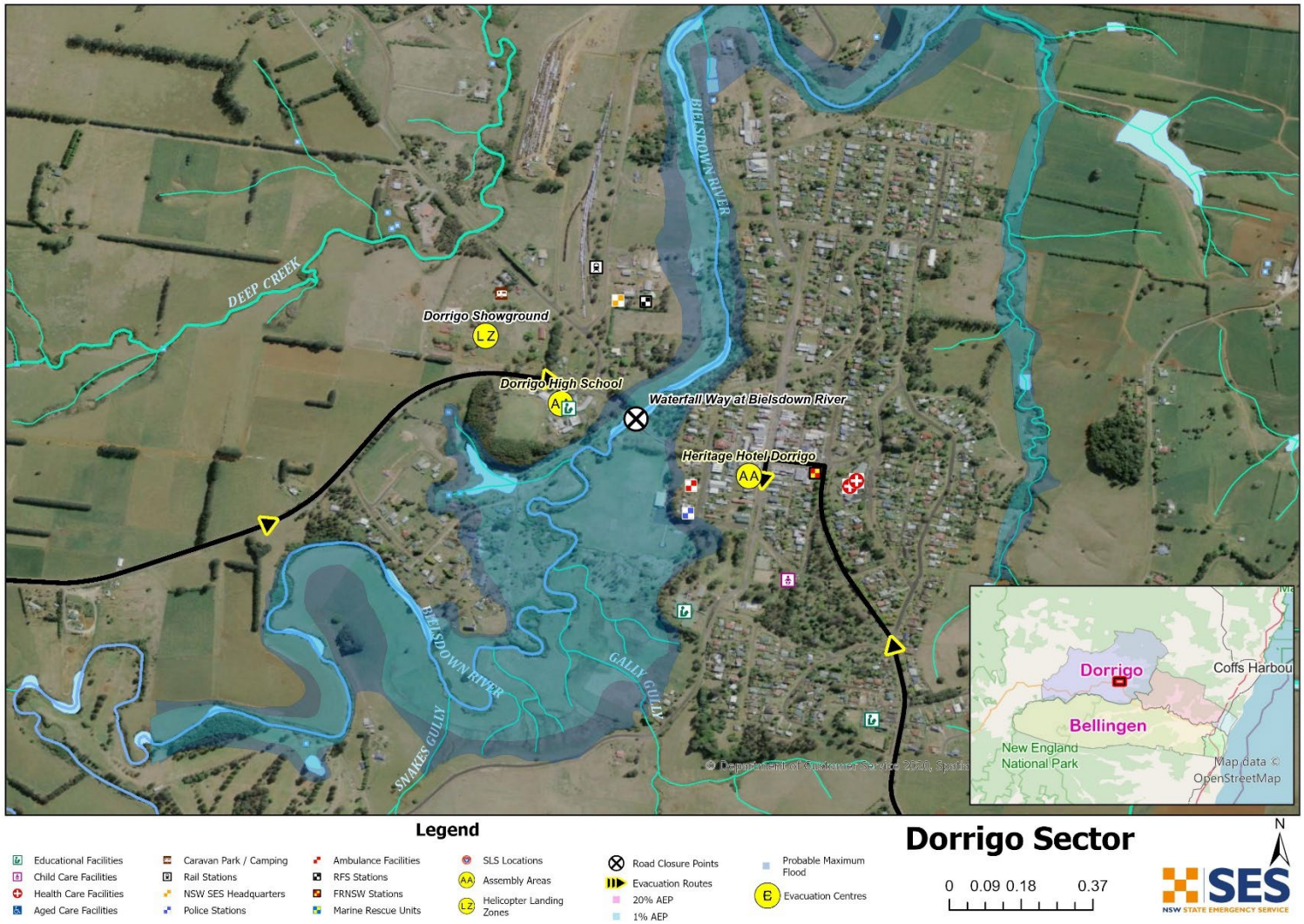
Information and Warnings	▪ Flood Warning ▪ AWS Advice ▪ AWS Watch & Act ▪ AWS Emergency Warning ▪ Sequenced door knocking of evacuation sub sectors ▪ Media announcements (including social media) ▪ Emergency Alert (SMS, Landlines) ▪ Standard Emergency Warning Signal (SEWS) ▪ Hazards Near Me App
	Dorrigo Unit may contact landholders as described in the Flood Action Card to establish localised bridge closures.
Property Protection	***Specific property protection measures:*** ▪ Monitoring rising flood waters. ▪ Relocation of livestock where resources are available. ▪ Relocation of farm machinery and valuable goods where resources are available. ▪ Control of surface water through sandbagging measures. ▪ Assist in the lifting of furniture to residents in need where resources are available. ▪ Monitoring integrity of dwellings surrounded by flood waters
	Protection of essential infrastructure: No identified essential infrastructure requiring protection. **Sewerage** – Sewerage Treatment Works (1% AEP) **Telecommunications** – Mt Moonbill Telecommunications Tower (Near Moombil) can become isolated. In large flood events there are limited telecommunications available in the rural areas due to the terrain.
Evacuation and/or Isolation Triggers	Evacuation may be considered due to: • Inundation of property • Closure of main evacuation routes • Failure of essential services
Evacuation Triggers	The “critical duration” (the storm duration that produces the highest discharge) Periods of rainfall at Dorrigo will be between 6 and 9 hours due to the flood storage in the Bielsdown River, immediately upstream of the Waterfall Way. Evacuations will be considered when rainfall exceeds the 1% event levels.
Sequencing of evacuation and/or warnings	Alert Gauge: Bielsdown River at Dorrigo.

	Consider watch and act messaging prepare to evacuate messaging for low lying areas of Dorrigo including GEMS ID 49184. Properties to closely monitor are: ▪ 4, 5, 9 Bean Street Dorrigo ▪ 2 Mahogany Street Dorrigo ▪ 66 Whisky Creek Road Dorrigo ▪ 20 Bielsdown Street Dorrigo ▪ 2 Industrial Properties on Ash Street Consider Watch & Act messaging Prepare to Isolate for GEMS ID 49185.
Evacuation Routes	There is no nominated evacuation centre in Dorrigo that is flood free. Assembly areas may be opened with prior arrangement at the Heritage Hotel Dorrigo (east of the river) and the Dorrigo High School (west of the river). ▪ Travel along Waterfall Way to Dorrigo High School. ▪ Travel along Waterfall Way to Heritage Hotel Motel.
Evacuation Route Closure	▪ Waterfall way closed to Bellingen and closed to traffic heading west from Dorrigo to Armidale as Town Bridge at Bielsdown River. ▪ Coramba Road to Kiwanna at Megan closed. ▪ Tyringham Road to Armidale Rd closed at Little Murray River. ▪ Tyringham Rd closed at Little Nymboida. Bridges closed: ▪ Rocky Creek bridges between the mountain top and Dorrigo (no alternative route). ▪ Bostobrick bridge over the Little Murray River (alternative route Fernbrook road to the Armidale-Grafton Road). ▪ Megan bridge over Wild Cattle Creek (alternative route by foot or 4WD vehicle over the railway bridge at Megan). ▪ Lower Bielsdown Bridge over the Bielsdown River at Billings Road. ▪ Closure of Waterfall Way at Town Bridge on Bielsdown River for maximum of 2 days. ▪ Coramba Road Sewerage Works Bridge. ▪ Ash Street Lower Bielsdown Bridge. ▪ Tyringham Road Little Murray Bridge ▪ Deervale Road Little Murray Bridge
Method of Evacuation	Primarily self-evacuation by private transport before road closures. If time permits at-risk residents will be door knocked by NSW SES, RFS and other emergency personnel and advised on the evacuation details.
Evacuation Centre/Assembly Point	**People should be encouraged to stay with friends/ relatives outside the flood affected areas**. Where this is not possible nominated centres will be determined by WELFAC upon request, refer to the Coffs Harbour and Bellingen Local Emergency Management Plan (EMPLAN) for possible identified facilities.

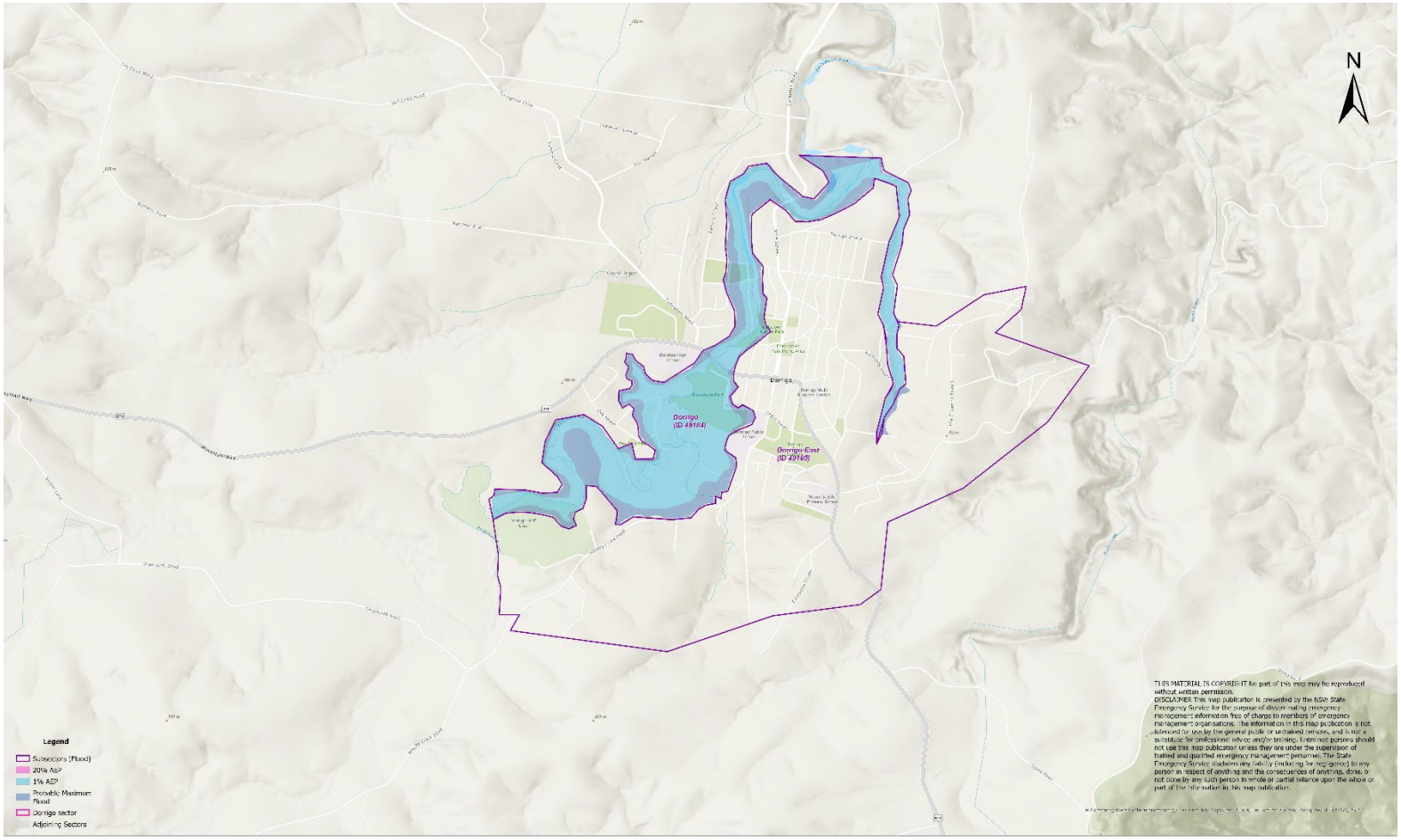
Large scale evacuations	When large-scale evacuations are likely, the NSW SES Incident Controller will liaise with the LEOCON and request support of the EOC as required. **Large scale evacuations would be unlikely in this sector but if required additional locations will be identified.**
Rescue	▪ The flood rescue management process adopted will be determined by the Incident Controller, based on the scale of the flood rescue operations. ▪ The Incident Controller may declare a flood rescue area of operations and establish a flood cell to assist with the management of flood rescues. ▪ All Flood Rescue Operations will be undertaken as per the State Rescue Policy.
Resupply	Table 2, in Volume 2 provides information about isolated communities in the Bellingen Shire area and potential periods of isolation. If resupply is required, it will be coordinated as per the arrangements outlined in Volume 1 of this plan.
Aircraft Management	***Helicopter Landing Points:*** **Possible** Helicopter Landing Zones in this sector. Aviation plan will determine exact locations when required and should be field verified prior to approval. **Aviation Base (if established):** ▪ Coffs Harbour Airport **(S30° 1.200, E 153° 07.000)** ▪ Armidale Airport **(S 30° 31.53, E 151° 36.55)** **Helicopter Landing Zones:** ▪ Dorrigo Showground Western side of closure **(S30° 21.190, E 152° 42.336)** ▪ Dorrigo Gun Club Range Town Water Tanks **(S30° 21.207, E152° 42.713)** ▪ Dorrigo Showground Western side of closure **(S30° 21.190, E 152° 42.336)**
	Airports: **Aviation Base (if established):** ▪ Coffs Harbour Airport **(S30° 1.200, E 153° 07.000)** ▪ Armidale Airport **(S 30° 31.53, E 151° 36.55)**

Other	Special considerations relating to the evacuation: ▪ Closure of schools - coordinated through the Department of Education. ▪ The evacuation of domestic animals, horses and livestock to the appropriate facility to be managed by Department of Primary Industries and Local Land Services. ▪ Closure of licensed premises. All hotels and licensed clubs will be closed if required. ▪ Security. Police patrols to be established to maintain law and order after evacuation has occurred. ▪ The NSW SES will use flood boats, aircraft, community contacts and other agencies to monitor the safety of individuals, where feasible. ▪ These arrangements will stay in place until the "Reduced Threat - Return with Caution" is provided by the NSW SES to residents to return to their premises.

3.2. DORRIGO SECTOR/COMMUNITY MAP



3.3. EVACUATION PLANNING



Polygon ID	Polygon Name	Flood Emergency Response Classification of Community	Population Estimate	Dwelling Estimate	Vehicle Estimate	Warning Time	Evacuation Time
49185	Dorrigo East	High Flood Island	1037	570	1026	2.70	4.71
49583	Dorrigo West	Rising Road Access	197	112	202	1.33	3.34

Warning Time = (No. of properties * 5 minutes)/60/28 teams +WLF
Evacuation Time = WAT +WLF + (Vehicles/600) + TSF

Note: Warning time and evac time are in decimals of hr. For example if warning time is 3.08 it is 3 hours and 05 minutes

Dorrigo Sector Evacuation Planning

NSW STATE EMERGENCY SERVICE

Created 1st November 2024

4. URUNGA SECTOR

4.1. URUNGA RESPONSE ARRANGEMENTS

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

Sector Description

This sector covers Urunga, South Urunga, Newry Island, Bellinger Keys and urban parts of Yellow Rock. Urunga is located on the southern bank of Kalang River, near its entrance to the Pacific Ocean.

Bellinger Keys is adjacent to the Kalang River south of Urunga and is an estate near the "Honey Place".

Yellow Rock has two distinct flooding problems with the rural areas being affected by the Bellinger River system and the urban area being affected by the Kalang River system. Yellow Rock is located to the east of the Pacific Highway, on the northern bank of the Kalang River facing Urunga. It consists of approximately 150 properties.

Newry island is located to the west of Urunga and the Pacific Highway, formed by branches of the Kalang River.

Hazard

- Riverine Flooding – High (Extreme)
- Flash Flooding - Medium
- Storm - High

Flood Affect Classification

Polygon ID	Polygon Name	Gauge Name	Gauge Number	Gauge Height	Flood Emergency Response Classification of Community	Population Estimate	Dwelling Estimate	Vehicle Estimate	Warning Time	Evacuation Time
295	Newry Island	Urunga	205407	2.4	Low Flood Island	192	86	155	1.26	3.26
436	Marina Drive Area	Urunga	205407	1.7	Low Flood Island	72	35	63	1.10	3.11
437	Yellow Rock Road A	Urunga	205407	2.4	Low Flood Island	256	125	225	1.37	3.38
48116	Urunga CBD	Urunga	205407	3.45	Rising Road Access	315	203	365	1.60	3.61
48117	Urunga Caravan Park	Urunga	205407	3.45	Low Trapped Perimeter	20	11	20	1.03	3.03
48512	Bellinger Keys	Urunga	205407	2.95	Rising Road Access	389	174	313	1.52	3.52
48914	North Urunga	Urunga	205407	1.7	Low Flood Island	225	131	236	1.39	3.39
48915	Urunga West	Urunga	205407	2.4	Rising Road Access	171	57	103	1.17	3.17
48916	Urunga Waters Caravan Park	Urunga	205407	2.4	Low Flood Island	0	0	0	1.00	3.00
48917	Newry Island South	Urunga	205407	2.4	Low Flood Island	92	41	74	1.12	3.12
49586	Urunga South	Urunga	205407	2.95	Overland Escape Route	91	41	74	1.12	3.12
49587	Newry	Urunga	205407	2.4	Overland Escape Route	0	0	0	1.00	3.00

At risk properties

Urunga: 161

Bellinger Keys: 149

Newry Island: 120

Yellow Rock Residential: 94

Total number of properties within Sector/Community

1,409

Sector Control

The Incident Controller will nominate a Sector Commander to control evacuations in this Sector. The NSW SES will conduct evacuations in this sector with assistance from NSW Police, Fire and Rescue NSW, and NSW Rural Fire Service (RFS) volunteers.

Key Warning Gauge Name

Name	AWRC No.	Min (m)	Mod (m)	Maj (m)
Urunga	205407	1.50	2.00	2.40
Upper Newry Island	205458	N/A	N/A	N/A
Kooroowi (Scotchman)	205440	N/A	N/A	N/A

General Strategy	▪ Evacuation of at-risk population. ▪ Self-evacuation to friends/family outside of the impact area. ▪ Establishment of an evacuation centre at the **C.ex Urunga Golf and Sports Club.**
Key Risks / Consequences	▪ Loss of life from floodwater drownings ▪ Significant urban flooding ▪ Extensive road closures and disruption to road networks ▪ Infrastructure damage, including roads, bridges and culverts ▪ Power outages ▪ Sewerage system failure ▪ Water supply disruption ▪ Loss of life from high velocity floodwater ▪ Overland flows causing isolation, inundations and road closures ▪ Damaging winds and intense rainfall causing roof and tree damage
Information and Warnings	▪ Flood Watch ▪ Flood Warning ▪ AWS Advice ▪ AWS Watch & Act ▪ AWS Emergency Warning ▪ Sequenced door knocking of evacuation sub sectors ▪ Media announcements (including social media) ▪ Emergency Alert (SMS, Landlines) ▪ Standard Emergency Warning Signal (SEWS) ▪ Hazards Near Me App
	SES will doorknock Newry Island Residents prior to 2.4m (Urunga gauge 205407).
	SES will utilise social media platforms to engage and inform community in line with AWS warnings.
Property Protection	***Specific property protection measures:*** ▪ Monitoring rising flood waters. ▪ Relocation of livestock where resources are available. ▪ Relocation of farm machinery and valuable goods where resources are available. ▪ Control of surface water through sandbagging measures. ▪ Assist in the lifting of furniture to residents in need where resources are available. ▪ Monitoring integrity of dwellings surrounded by flood waters
	Assistance with property protection: A sandbagging station will be set up for Urunga residents at the Urunga SES unit (7 Orara Street Urunga)
	Protection of essential infrastructure: The following utilities and infrastructure are at risk of flooding: i. The Ambulance Station, Newry Street (from 3.25 metres Urunga gauge 205407 and storm water) ii. Fire Station, Bonville Street (from 3.25 metres Urunga gauge 205407 and storm water) iii. A number of sewerage treatment plants and pump stations are at risk of flooding from 3.25 metres Urunga gauge (205407/559011).

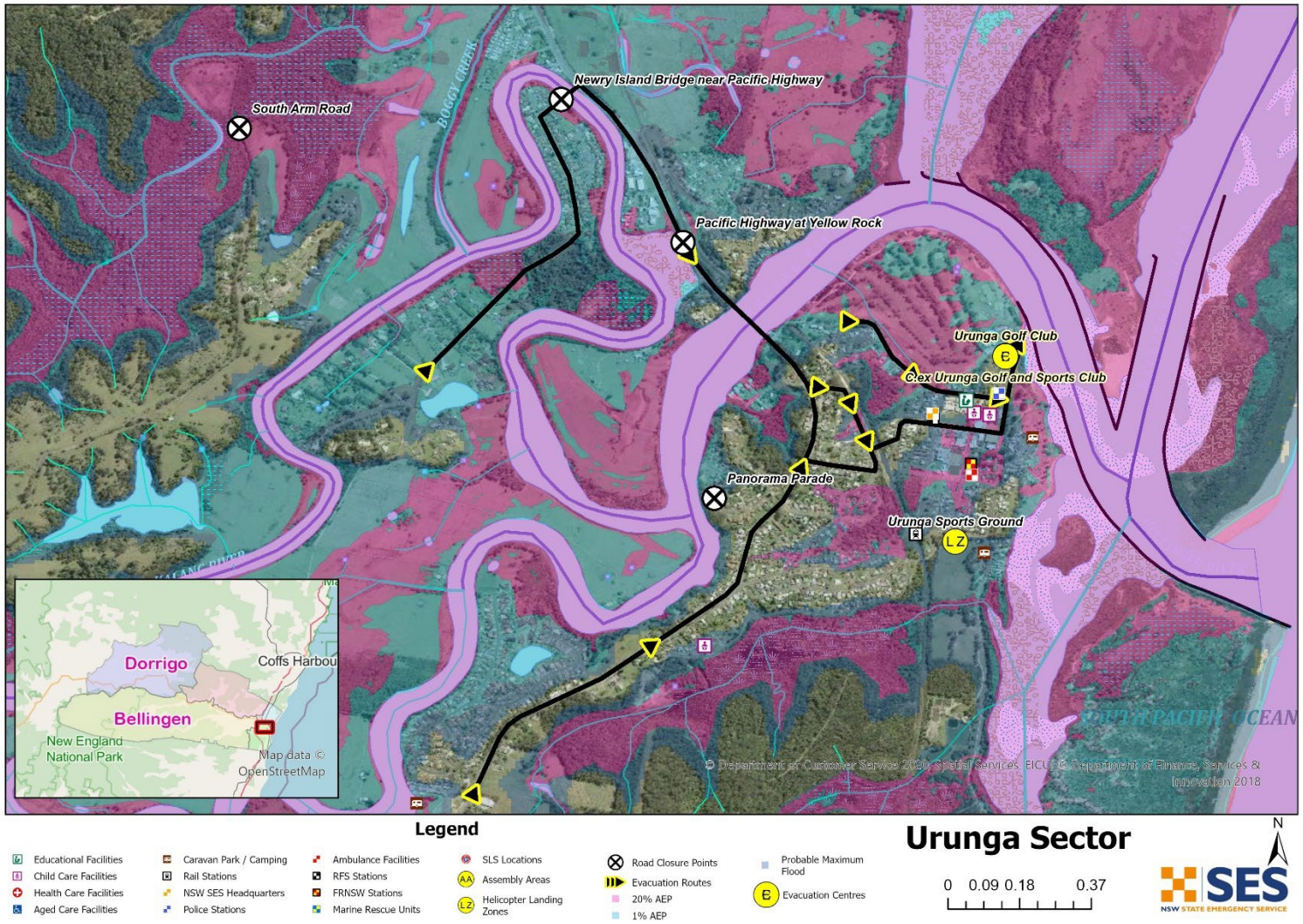
	iv. Sewerage pump stations on Newry Island. There are also a number of treatment plants and pump stations in Urunga at risk of flooding in 1% AEP (3.25m).
Evacuation and/or Isolation Triggers	Evacuation may be considered due to: • Inundation of property • Closure of main evacuation routes • Failure of essential services The effect of flooding on the towns and outlying areas in this sector is very much dependent on tidal influences. Tidal levels will need to be identified at the onset of main river flooding.
Evacuation Triggers	The key evacuation triggers based on Bureau of Meteorology flood height predictions at the Urunga Gauge (205407). **1. Prediction to reach or exceed 1.50m** – Overground flooding may commence in low lying areas of Urunga in Bellingen Street, Morgo Street, Atherton Drive and Crescent Close near Golf Course as well as Marina Crescent and surrounds. **2. Prediction to reach or exceed 1.70m** – From this height overfloor flooding may commence in low lying areas of Urunga in Bellingen Street, Morgo Street, Atherton Drive and Crescent Close near Golf Course as well as Marina Crescent and surrounds. **3. Prediction to reach or exceed 2.40m** - Newry Island, Urban areas of Yellow Rock and Urunga Waters Caravan Park are all affected by the evacuation route closure at 2.4m on Giinagay Way. If heights are predicted to exceed 2.4m overfloor inundation may occur and evacuation routes will be closed. Urunga Holiday and Caravan Park needs monitoring from this height as flooding maybe compounded by storm surge events. Low lying areas between Urunga and Hungry Head maybe impacted from this height. Possible inundation of South Arm Road which may cause localised isolations. Low lying farm properties may be impacted from this height. **4. Prediction to reach or exceed 2.95m** – Flooding of low-level properties in Bellinger Keys may commence from this height. **5. Prediction to reach or exceed 3.45m** -Overfloor Flooding may affect 15 properties in the Urunga CBD by this height. Low lying areas of the CBD can be affected by ponding of floodwater from rainfall and tidal influence are likely, this should be monitored for earlier flooding consequences. **6. Prediction to reach or exceed 8.32m (PMF)** – From this height consequences of over floor flooding include Yellow Rock (Urban) 94 properties, Urunga 161 properties and Newry Island 120 properties.
Sequencing of evacuation and/or warnings	**1. Prediction to reach or exceed 1.50m** - Targeted Watch and Act Prepare to Evacuate for low lying areas of Urunga in Bellingen Street, Morgo Street, Atherton Drive and Crescent Close near Golf Course GEMS ID North Urunga 48914 as well as Marina Crescent Area GEMS ID 436. **2. Prediction to reach or exceed 1.70m** - Targeted Emergency Warning Evacuate now/before for low lying areas of Urunga in Bellingen Street, Morgo Street, Atherton Drive and Crescent Close near Golf Course GEMS ID North Urunga 48914 as well as Marina Crescent Area GEMS ID 436. Targeted Watch and Act Prepare to Evacuate for low lying areas of Newry Island and urban areas of Yellow Rock including Island Place, Newry Island Drive, Marshall Place, GEMS ID Newry Island 295, Newry Island South 48917.

	Properties in Yellow Rock (including Christine Close, Elizabeth Drive, Kylie Street and Jean Close) are not affected until 3.1m but evacuation must be completed before the evacuation route (Newry Island Drive to the Pacific Highway to Urunga) is flooded at around 2.4 to 2.5 metres. Consider Watch and Act Prepare to Evacuate for Yellow Rock Road A GEMS ID 437. Targeted Watch and Act Prepare to Evacuate for Urunga Waters Caravan Park GEMS ID 48916 and low-lying areas in Newry GEMS ID 49587. **3. Prediction to reach or exceed 2.40m** - Targeted Emergency Warning Evacuate Now/Before for low lying properties on Newry Island and urban areas of Yellow Rock. Newry Island GEMS ID 295 and Newry Island South GEMS ID 48917 and Yellow Rock Road A GEMS ID 437. Targeted Emergency Warning Evacuate now/before for Urunga Waters Caravan Park GEMS ID 48916. Consider Emergency Warning Evacuate now/before for low lying areas in Newry GEMS ID 49587. Targeted Watch and Act Prepare to Evacuate for: ▪ Low lying parts of Urunga CBD (Urunga CBD GEMS ID 48116) including Pilot Street, Lords Ave, Henry Street, Bonville Street, Newry Street Minerva Street and Urunga Railway Station. ▪ Bellinger Keys (Bellinger Keys GEMS ID 48512) including Burrawong Parade, Rosedale Avenue, Melaleuca Place, Lake Court, Myall Circuit, Lake Circuit and; ▪ Urunga Caravan Park (GEMS ID 48117) and Urunga South (49586). From this height consider a targeted Watch and Act Prepare to Isolate for Urunga West (GEMS ID 48915) **4. Prediction to reach or exceed 2.95m** - Targeted Emergency Warning Evacuate Now/Before low-lying parts Bellinger Keys (Bellinger Keys GEMS ID 48512) and Urunga South (49586). **5. Prediction to reach or exceed 3.45m** - Targeted Emergency Warning Evacuate Now/Before for low-lying parts Urunga CBD (Urunga CBD GEMS ID 48116) and Urunga Caravan Park (48117). **6. Prediction to reach or exceed 8.32m (PMF)** - Targeted Emergency Warning Move to Higher Ground ***all areas*** including Yellow Rock (Urban) 94 properties, Urunga 161 properties and Newry Island 120 properties. **Operation evacuation sectors:** The management of evacuations will be divided into the following operational sectors: ▪ Evacuation of residents in low lying properties in Urunga around Golf Course precinct. ▪ Evacuation of residents in low lying properties on Newry Island. ▪ Evacuation of residents in low lying properties in urban areas of Yellow Rock
Evacuation Routes	▪ **For Prediction 2**, **North Urunga**: Bellingen Street, Morgo Street then North Street to C.ex **Urunga and Marina Drive Area**: South on Giinagay Way, Newry Street, Fitzroy Street, Comalaroi Street, Bowra Street Then Mogo Street, then North Street to C.ex Urunga. ▪ **For Prediction 3**, South on Giinagay Way, Newry Street, Fitzroy Street, Comalaroi Street, Bowra Street Then Mogo Street, then North Street to C.ex Urunga. ▪ **For Prediction 4**, North on Giinagay Way, Newry Street, Fitzroy Street, Comalaroi Street, Bowra Street Then Mogo Street, then North Street to C.ex Urunga. ▪ **For prediction 5**, Morgo Street, then North Street to C.ex Urunga.
Evacuation Route Closure	Road closures affecting the sequenced evacuation of sectors: ▪ Yellow Rock Road closes (2.89m Urunga gauge 205407) ▪ Giinagay Way at Yellow Rock (2.4m U/S Newry Island gauge 205458).

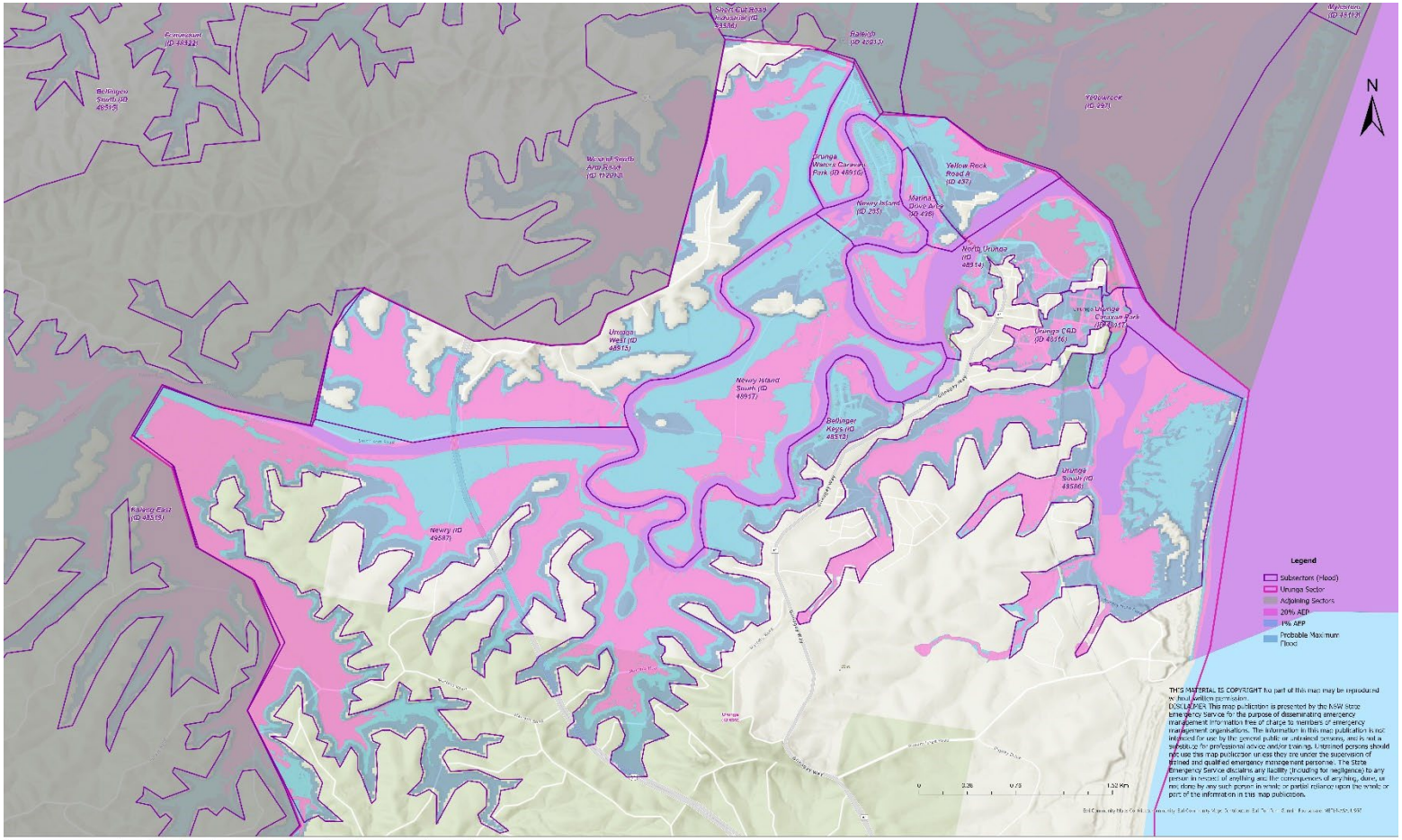
	▪ Giinagay Way at Raleigh (road has been upgraded and may not be affected until much larger floods). ▪ Evacuation along Fitzroy Street, Urunga may be impeded by local stormwater. ▪ Newry Island Drive (2.50m Urunga gauge). Other roads on Newry Island can include Island Parade (2.18m), Marshall Place (3.0m), The Grover (4.12m) and Hollis Close (6.58m) U/S Newry Island gauge 205458. ▪ Marina Crescent (1.5 to 1.7m Urunga gauge 205407) ▪ Bellingen Street (1.5-1.7m Urunga gauge 205407) ▪ Crescent Close (1.5-1.7m Urunga gauge 205407) ▪ Marshall Place Newry Island (3.0m U/S Newry Island gauge 205458) ▪ Ranger Street (12.4 U/S Newry Island gauge 205458) impacting South Urunga residents. ▪ Panorama Parade (2.8m U/S Newry Island gauge 205458) isolates 20 dwellings on Panorama Parade and Allison Place. ▪ Kalang Road – closes in minor flood levels. ▪ South Arm Road, Brierfield (1.93m U/S Newry Island gauge 205458) ▪ South Arm Road at Urunga is also likely to flood with overland flow and flash flooding.
Method of Evacuation	Primarily self-evacuation by private transport before road closures. If time permits at-risk residents will be door knocked by NSW SES, RFS and other emergency personnel and advised on the evacuation details.
Evacuation Centre/Assembly Point	**People should be encouraged to stay with friends/ relatives outside the flood affected areas**. Where this is not possible an evacuation centre will be established at the Cex Urunga Golf and Sports Club at 2 North Street, Urunga.
Large scale evacuations	When large-scale evacuations are likely, the NSW SES Incident Controller will liaise with the LEOCON and request support of the EOC as required. **Large scale evacuations would be unlikely in this sector but if required additional locations will be identified.**
Rescue	▪ The flood rescue management process adopted will be determined by the Incident Controller, based on the scale of the flood rescue operations. ▪ The Incident Controller may declare a flood rescue area of operations and establish a flood cell to assist with the management of flood rescues. ▪ All Flood Rescue Operations will be undertaken as per the State Rescue Policy. Consideration should be given to calling out of Area (OOA) flood rescue crews at the minor flood level if further rises are expected.
Resupply	It is possible that the following areas may require resupply during larger floods: ▪ South Arm Road residents ▪ Repton residents ▪ Other isolated areas as requested.
	Table 2, in Volume 2 provides information about isolated communities in the Bellingen Shire area and potential periods of isolation. If resupply is required, it will be coordinated as per the arrangements outlined in Volume 1 of this plan.

Aircraft Management	***Helicopter Landing Points:*** **Possible** Helicopter Landing Zones in this sector. Aviation plan will determine exact locations when required and should be field verified prior to approval.. **Aviation Base (if established):** ▪ Coffs Harbour Airport **(S 30° 30.02, E 153° 1.21)** **Helicopter Landing Zones:** ▪ Urunga Recreation Reserve - Corner of Pilot Street and South Street East **(S 30° 27.718, E 153°02.575)**
	Airports: Coffs Harbour Airport **(S 30° 19.2, E 153° 07.0)**
Other	Special considerations relating to evacuation: ▪ Closure of schools - coordinated through the Department of Education. ▪ The evacuation of domestic animals, horses and livestock to the appropriate facility to be managed by Department of Primary Industries and Local Land Services. ▪ Closure of licensed premises. All hotels and licensed clubs will be closed if required. ▪ Security. Police patrols to be established to maintain law and order after evacuation has occurred. ▪ The NSW SES will use flood boats, aircraft, community contacts and other agencies to monitor the safety of individuals, where feasible. ▪ These arrangements will stay in place until the “Reduced Threat - Return with Caution” is provided by the NSW SES to residents to return to their premises.

4.2. URUNGA SECTOR/COMMUNITY MAP



4.3. EVACUATION PLANNING



Polygon ID	Polygon Name	Gauge Name	Gauge Number	Gauge Height	Flood Emergency Response Classification of Community	Population Estimate	Dwelling Estimate	Vehicle Estimate	Warning Time	Evacuation Time
295	Newry Island	Urunga	205427	2.4	Low Flood Island	140	56	151	1.20	4.26
438	Marina Drive Area	Urunga	205427	1.7	Low Flood Island	72	35	63	1.10	3.11
437	Yellow Rock Road A	Urunga	205427	2.4	Low Flood Island	246	124	224	1.47	4.48
48116	Urunga CBD	Urunga	205427	3.45	Rising Road Access	315	203	365	1.00	3.61
48117	Urunga Caravan Park	Urunga	205427	4.45	Low Trapped Perimeter	70	11	20	1.25	4.08
48513	Bellinger Keys	Urunga	205427	2.95	Rising Road Access	389	174	313	1.52	3.52
48514	North Urunga	Urunga	205427	1.7	Low Flood Island	229	131	236	1.39	3.33
48815	Urunga West	Urunga	205427	2.4	Rising Road Access	57	57	103	1.17	3.17
48816	Urunga Workers Caravan Park	Urunga	205427	2.4	Low Flood Island	0	0	0	1.00	3.00
48917	Newry Island South	Urunga	205427	2.4	Low Flood Island	92	41	74	1.12	3.12
49586	Urunga South	Urunga	205427	2.95	Overland Escape Route	41	41	74	1.12	4.12
49587	Newry	Urunga	205427	2.4	Overland Escape Route	0	0	0	1.00	3.00

Warning Time = (No. of properties * 6 minutes)/8028 seems +WLF
Evacuation Time = WAF +WLF + (Vehicles/800) + TRF

Note: Warning time and evac time are in decimals of hr. For example 1 warning time is 1.50 it is 1 hours and 30 minutes

5. REPTON SECTOR

5.1. REPTON RESPONSE ARRANGEMENTS

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

Sector Description

This sector covers Repton, Mylestom and rural areas of Yellow Rock Road and eastern parts of Raleigh.

Raleigh is located on either side of the Bellinger River, and either side of the Pacific Highway.

Repton is located on the northern bank of the Bellinger River, to the east of the Pacific Highway. It is bounded to the north by the Bongil Bongil National Park and Bundageree Creek.

Mylestom, is located on the northern bank of the Bellinger River on the coast.

Hazard

- Riverine Flooding – High (Extreme)
- Flash Flooding - Medium
- Storm - High

Flood Affect Classification

Polygon ID	Polygon Name	Gauge Name	Gauge Number	Gauge Height	Flood Emergency Response Classification of Community	Population Estimate	Dwelling Estimate	Vehicle Estimate	Warning Time	Evacuation Time
297	Yellowrock	Repton	205403	2.4	Low Flood Island	70	27	49	1.08	3.08
300	Bellinger River Tourist Park	Repton	205403	1.25	Low Flood Island	12	7	13	1.02	3.02
48112	Repton	Repton	205403	2.4	Low Flood Island	106	44	79	1.13	3.13
48113	Mylestom	Repton	205403	2.1	High Trapped Perimeter	248	165	297	1.49	3.50
48913	Raleigh	Repton	205403	3.5	Rising Road Access	205	79	142	1.24	3.24
49590	Camerons Corner East	Bellingen	205442	3.5	Rising Road Access	18	7	13	1.02	3.02
49986	Short Cut Road Industrial	Repton	205403	3.5	Rising Road Access	3	1	2	1.00	3.00

At risk properties

Yellow Rock (Rural) – 10
Mylestom – 179
Raleigh - 49

Total number of properties within Sector/Community: 605

Sector Control

The Incident Controller will nominate a Sector Commander to control evacuations in this Sector. The NSW SES will conduct evacuations in this sector with assistance from NSW Police, Fire and Rescue NSW, and NSW Rural Fire Service (RFS) volunteers.

Key Warning Gauge Name

Name	AWRC No.	Min (m)	Mod (m)	Maj (m)
Repton	205403	2.0	-	3.0
Bellingen Bridge	205442	3.70	6.70	8.20

General Strategy

- Evacuation of at-risk population.
- Self-evacuation to friends/family outside of the impact area.

Key Risks / Consequences

- Loss of life from floodwater drownings
- Significant urban flooding
- Extensive road closures and disruption to road networks
- Infrastructure damage, including roads, bridges and culverts
- Power outages

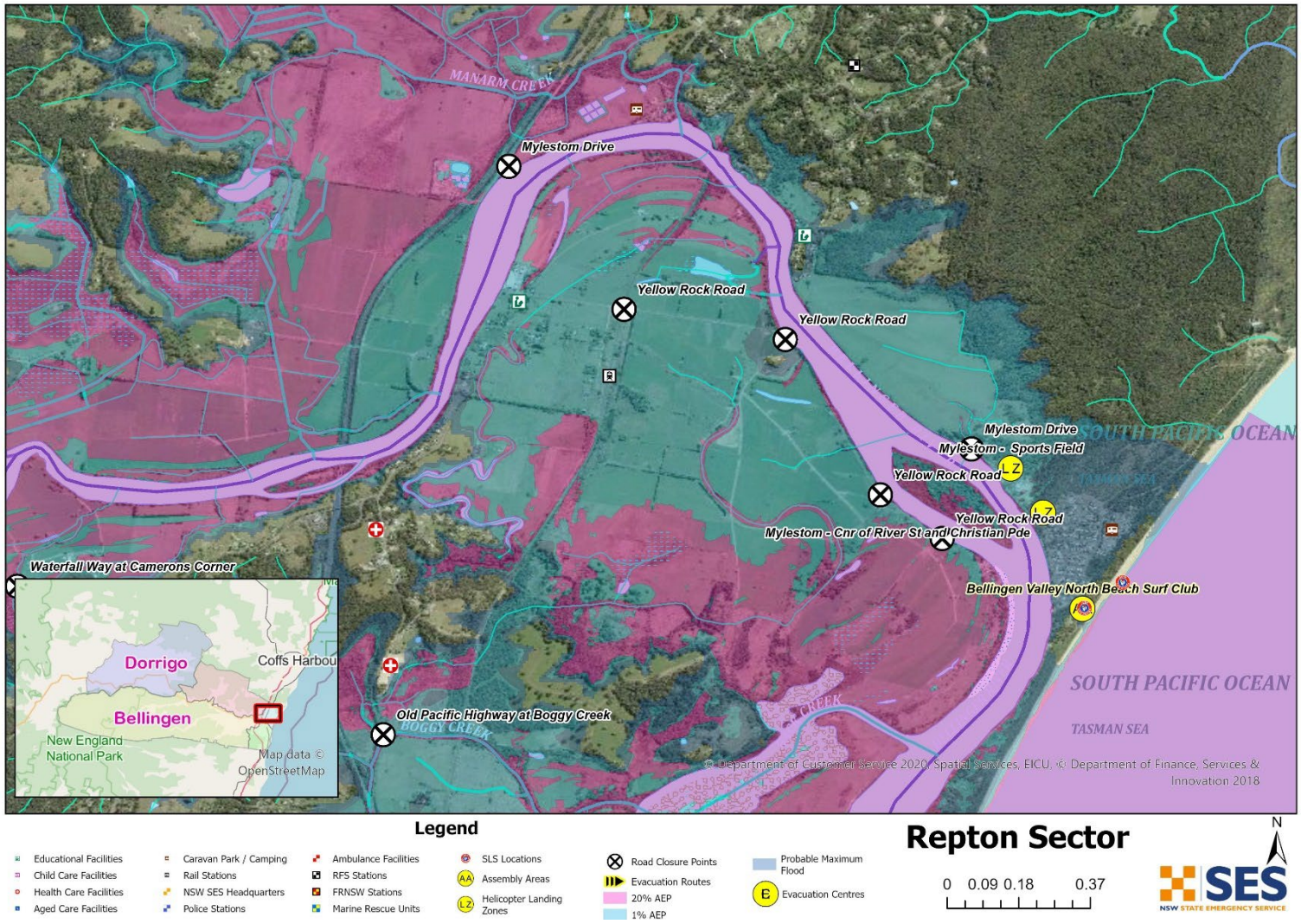
	▪ Sewerage system failure ▪ Water supply disruption ▪ Loss of life from high velocity floodwater ▪ Overland flows causing isolation, inundations and road closures ▪ Damaging winds and intense rainfall causing roof and tree damage
Information and Warnings	▪ Flood Watch ▪ Flood Warning ▪ AWS Advice ▪ AWS Watch & Act ▪ AWS Emergency Warning ▪ Sequenced door knocking of evacuation sub sectors ▪ Media announcements (including social media) ▪ Emergency Alert (SMS, Landlines) ▪ Standard Emergency Warning Signal (SEWS) ▪ Hazards Near Me App
	SES will doorknock Bellingen River Tourist Park prior to 1m (Repton gauge 205403) and conduct reconnaissance and speak to residents along Yellow Rock Road.
	SES will utilise social media platforms to engage and inform community in line with AWS warnings.
Property Protection	***Specific property protection measures:*** ▪ Monitoring rising flood waters. ▪ Relocation of livestock where resources are available. ▪ Relocation of farm machinery and valuable goods where resources are available. ▪ Control of surface water through sandbagging measures. ▪ Assist in the lifting of furniture to residents in need where resources are available. ▪ Monitoring integrity of dwellings surrounded by flood waters
	Assistance with property protection: A sandbagging station will be set up for Mylestom residents at North Beach Bowling Club (429 River Street Mylestom). Contact needs to be made with Raleigh Public School (North Street Raleigh) Contact needs to be made with Norco Foods (North Street Raleigh)
	Protection of essential infrastructure: **North Coast Railway** – line at Raleigh (around 3 metres on the Repton gauge 205403). **Dairy Factories** – Raleigh (around 5 metres on the Bellingen gauge 205442).
Evacuation and/or Isolation Triggers	Evacuation may be considered due to: • Inundation of property • Closure of main evacuation routes • Failure of essential services The effect of flooding on the towns and outlying areas in this sector is very much dependent on tidal influences. Tidal levels will need to be identified at the onset of main river flooding.

Evacuation Triggers	The key evacuation triggers based on Bureau of Meteorology flood height predictions at the **Repton Gauge** (205403). **1. Prediction to reach or exceed 1.00m (Repton Gauge 205403) equals 6.0m (Bellingen Gauge 205442)** – Early warning for Bellinger River Tourist Park (Up to 125 sites dependant on tourist season). **2. Prediction to reach or exceed 1.25m (Repton Gauge 205403) equals 7.0m (Bellingen Gauge 205442)** – Water begins to enter Bellinger River Tourist Park with significant over floor flooding by 2.4m. **3. Prediction to reach or exceed 2.0m (Repton Gauge 205403)** - Early warning for Rural areas of Yellow Rock Road and Mylestom. Road closure on evacuation route for Yellow Rock Road occurs from 2.4m. Mylestom Drive closes at 2.15m **4. Prediction to reach or exceed 2.4m (Repton Gauge 205403) equals 9.6m (Bellingen Gauge 205442)** - Residents living along Yellow Rock Road are not affected by over floor flooding until 3.1m but residents need to be evacuated at 2.4m before road access is cut. **5. Prediction to reach or exceed 3.58m (Repton Gauge 205403)** – Overfloor flooding commences in Raleigh around North Street from a 5% AEP (3.58), approximately 7 dwellings increasing to 24 by 1% AEP (4.66). **6. Prediction to reach or exceed 8.8m (Repton Gauge 205403)** – PMF we can expect significant overfloor flooding in all sectors residents should move to higher ground.
Sequencing of evacuation and/or warnings	**1. Prediction to reach or exceed 1.00m (Repton Gauge 205403) equals 6.0m (Bellingen Gauge 205442)** - Targeted Watch and Act Prepare to Evacuate for Bellinger River Tourist Park and surrounding houses (Up to 125 sites dependant on tourist season) GEMS ID 300. **2. Prediction to reach or exceed 1.25m (Repton Gauge 205403) equals 7.0m (Bellingen Gauge 205442)** - Targeted Emergency Warning Evacuate Now/Before for Bellinger River Tourist Park and surrounding houses GEMS ID 300. **3. Prediction to reach or exceed 2.0m (Repton Gauge 205403)** - Targeted Watch and Act Prepare to Evacuate 2.0m for Yellow Rock (rural areas) GEMS ID 297 and Repton GEMS ID 48112. Watch and Act Prepare to Isolate for GEMS ID Mylestom 48113. **4. Prediction to reach or exceed 2.4m (Repton Gauge 205403) equals 9.6m (Bellingen Gauge 205442)** - Targeted Emergency Warning Evacuate Now/Before for Yellow Rock GEMS ID 297 and Repton GEMS ID 48112. Consider Watch and Act Prepare to Evacuate messaging for Raleigh GEMS ID 48913 if heights are likely to reach or exceed 3.5m. Consider Watch and Act Prepare to Evacuate for Camerons Corner East GEMS ID 49590. Consider Watch and Act Prepare to Isolate for Short Cut Road Industrial GEMS ID 49986 if prediction is to reach or exceed 3.5m. **5. Prediction to reach or exceed 3.58m (Repton Gauge 205403)** - Emergency Warning Evacuate Now/Before for areas around Raleigh GEMS ID 48913. Consider Emergency Warning Evacuate Now/Before Camerons Corner East 49590.

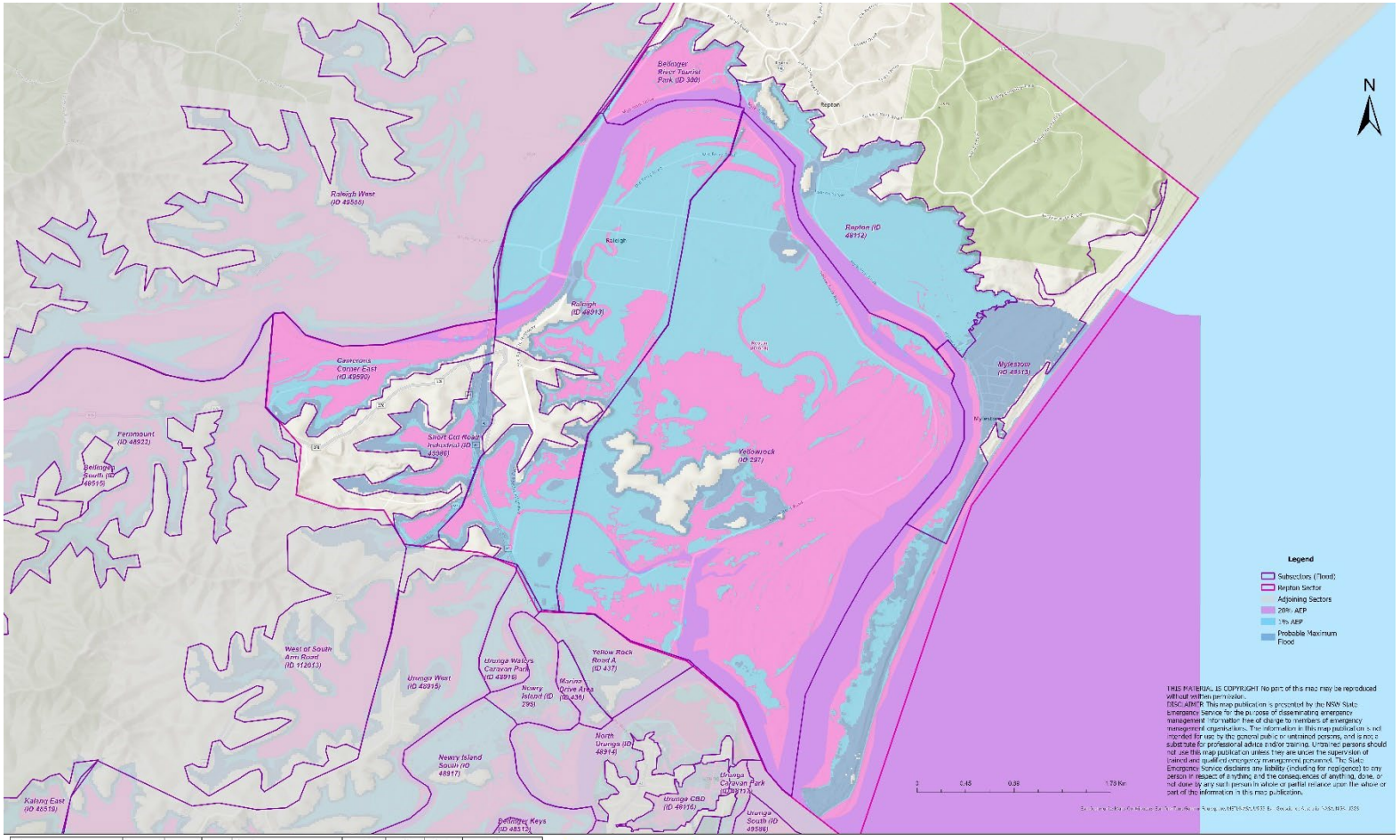
	6. Prediction to reach or exceed 8.8m (Repton Gauge 205403) - Emergency Warning Move to Higher Ground in all subsectors.
Evacuation Routes	**Prediction 2:** ▪ Relocation of Bellinger River Tourist Park along Mylestom Drive to high areas. **Prediction 4:** ▪ Travel South down Yellow Rock Road to Giinagay Way, then onto the Pacific Motorway. **Prediction 5:** ▪ Residents in low lying areas of Raleigh travel along Giinagay Way onto the Pacific Motorway and North to Bonville Public School, Gleniffer Road.
Evacuation Route Closure	Road closures affecting the sequenced evacuation of sectors: ▪ Yellow Rock Road (northern end) to Giinagay Way to Urunga (2.4m Repton gauge 205403). ▪ Yellow Rock Road Southern End at Yellow Rock (2.8m Urunga gauge 205407) ▪ Mylestom Road closes at (3.5m Repton gauge 205403). ▪ Repton- Mylestom Drive (Mylestom Drive 2.15m Repton gauge 205403) ▪ Keevers Drive (Old Pacific Highway) closes at a low point crossing of Manarm Creek (3.5m Repton gauge 205403).
Method of Evacuation	Primarily self-evacuation by private transport before road closures. If time permits at-risk residents will be door knocked by NSW SES, RFS and other emergency personnel and advised on the evacuation details.
Evacuation Centre/Assembly Point	**People should be encouraged to stay with friends/ relatives outside the flood affected areas**. Where this is not possible an evacuation centre will be established at the Urunga Cex Golf and Sports Club. For residents in the Mylestom area an alternative maybe an Assembly Area established at the Bellingen Valley North Beach Recreation and Bowling Club.
Large scale evacuations	When large-scale evacuations are likely, the NSW SES Incident Controller will liaise with the LEOCON and request support of the EOC as required. **Large scale evacuations would be unlikely in this sector but if required additional locations will be identified.**
Rescue	▪ The flood rescue management process adopted will be determined by the Incident Controller, based on the scale of the flood rescue operations. ▪ The Incident Controller may declare a flood rescue area of operations and establish a flood cell to assist with the management of flood rescues. ▪ All Flood Rescue Operations will be undertaken as per the State Rescue Policy. Consideration should be given to calling out of Area (OOA) flood rescue crews at the minor flood level if further rises are expected.
Resupply	Resupply map be required into the township of Mylestom as there are no grocery services within the town. The duration of flooding is usually less than 24hrs.
	Table 2, in Volume 2 provides information about isolated communities in the Bellingen Shire area and potential periods of isolation. If resupply is required, it will be coordinated as per the arrangements outlined in Volume 1 of this plan.

Aircraft Management	***Helicopter Landing Points:*** **Possible** Helicopter Landing Zones in this sector. Aviation plan will determine exact locations when required and should be field verified prior to approval.. **Aviation Base (if established):** ▪ Coffs Harbour Airport **(S 30° 19.2, E 153° 07.0)** **Helicopter Landing Zones:** ▪ Mylestom - Corner of River Street and Christian Parade **(S 30° 27.718, E 153°02.575)** ▪ Mylestom - Sports Fields, River Street – Inundated from a 5% AEP – 3.58m Repton gauge **(S 30°27.606, E 153°02.406)**
	Airports: Coffs Harbour Airport **(S 30° 19.2, E 153° 07.0)**
Other	Special considerations relating to evacuation: ▪ Closure of schools - coordinated through the Department of Education. ▪ The evacuation of domestic animals, horses and livestock to the appropriate facility to be managed by Department of Primary Industries and Local Land Services. ▪ Closure of licensed premises. All hotels and licensed clubs will be closed if required. ▪ Security. Police patrols to be established to maintain law and order after evacuation has occurred. ▪ The NSW SES will use flood boats, aircraft, community contacts and other agencies to monitor the safety of individuals, where feasible. ▪ These arrangements will stay in place until the “Reduced Threat - Return with Caution” is provided by the NSW SES to residents to return to their premises.

5.2. REPTON SECTOR/COMMUNITY MAP



5.3. EVACUATION PLANNING



Polygon ID	Polygon Name	Gauge Name	Gauge Number	Gauge Height	Flood Emergency Response Classification of Community	Population Estimate	Dwelling Estimate	Vehicle Estimate	Warning Time	Evacuation Time
297	Yellowrock	Repton	205403	2.4	Low Flood Island	70	27	49	1.08	3.08
300	Bellinger River Tourist Park	Repton	205403	1.25	Low Flood Island	12	7	13	1.02	3.02
48112	Repton	Repton	205403	2.4	Low Flood Island	106	44	79	1.13	3.13
48113	Myleston	Repton	205403	2.1	High Trapped Perimeter	248	165	297	1.49	3.50
48913	Raleigh	Repton	205403	3.5	Rising Road Access	205	79	142	1.24	3.24
49590	Camerons Corner East	Bellingen	205442	3.5	Rising Road Access	18	7	13	1.02	3.02
49986	Short Cut Road Industrial	Repton	205403	3.5	Rising Road Access	3	1	2	1.00	3.00

Warning Time = (No. of properties * 5 minutes)/6026 teams + WLT
Evacuation Time = WAT + WLT + (Vehicles/600) + 1.5

Note: Warning time and evac time are in decimals of an hr. For example if warning time is 3.59 it is 3 hours and 35 minutes

Repton Sector Evacuation Planning

NSW STATE EMERGENCY SERVICE

Created 28th November 2024

BELLINGEN SHIRE NSW SES
CARAVAN PARK ARRANGEMENTS

Chapter 4 of Volume 3 (NSW SES Response Arrangements for Bellingen Shire) of the Bellingen Flood Emergency Sub Plan

Last Update: December 2024

CONTENTS

CONTENTS **2**

LIST OF TABLES **2**

1 ARRANGEMENTS FOR THE EVACUATION OF CARAVAN PARKS AND THE RELOCATION OF MOVABLE DWELLINGS **3**

1.1 General 3
1.2 Advising Procedures 3
1.3 Evacuation of Occupants and Relocation of Moveable Dwellings 4
1.4 Return of Occupants and Moveable Dwellings 5

LIST OF REFERENCES **10**

LIST OF TABLES

Table 1: Caravan Parks at risk of Inundation and/or Isolation from Flooding. **6**
Table 2: Caravan Parks at risk from Coastal Erosion and/or Coastal Inundation. **9**

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

1.1 GENERAL

1.1.1 The following caravan parks are flood liable:

a. Reflections Mylestom – Holiday Park

b. Bellinger River Tourist Park

c. Bellingen Showground

d. Reflections Urunga Holiday Park

e. Urunga Waters Tourist Park

f. Brigalow Caravan Park (May not be open)

1.1.2 For more information on individual caravan parks see Table 1 and Table 2 at the end of this Chapter.

1.2 ADVISING PROCEDURES

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

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

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

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

- Provide the manager of the caravan park with a contact address and telephone number in case of an emergency.
- Leave any movable dwelling in a condition allowing it to be relocated in an emergency (i.e.: should ensure that the wheels, axles and draw bar of the caravans are not removed, and are maintained in proper working order).

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

- Ensure that they have spare batteries for their radios.
- Listen to a local radio station for updated flood information.
- Prepare for evacuation and movable dwelling relocation.

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

1.3 EVACUATION OF OCCUPANTS AND RELOCATION OF MOVEABLE DWELLINGS

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

a. Isolate power to moveable dwellings.

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

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

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

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

1.3.2 Where possible, movable dwellings that can be moved will be relocated by their owners. Park managers will arrange for the relocation of movable dwellings as required. Council and NSW SES personnel may assist if required. Vans are to be moved to the locations outlined in Tables 1 and 2 at the end of this Chapter.

1.3.3 Caravan park managers will:

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

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

c. Advise the NSW SES Bellingen Local Commander of:

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

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

e. Inform the NSW SES Bellingen Local Commander when the evacuation of the caravan park has been completed.

f. Provide the NSW SES Bellingen Local Commander with a register of people that have been evacuated.

1.4 RETURN OF OCCUPANTS AND MOVEABLE DWELLINGS

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

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

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

Table 1: Caravan Parks at risk of Inundation and/or Isolation from Flooding.

Name	Address/Location description	Town/Sector	Number of sites	Risk	Evacuation route	Evacuation route closure	Moveable dwelling relocation location	Evacuation centre	Notes
Reflections Mylestom – Holiday Park	30 Beach Parade Myleston	Repton Sector	82 Camping sites 52 cabins	Likely to be inundated in a PMF	Isolation commences at 2.15m Higher ground maybe available to the north up Rutile Trail	2.15m on the Mylestom Drive	There maybe higher ground at the end of Rutile Trail to the north	Stay in place unless a PMF is predicted then move to higher ground.	If Myestom Drive is closed then higher ground can by found north on Rutile Drive.
Bellinger River Tourist Park	96 Mylestom Drive, Repton	Repton Sector	54 camping sites 6 cabins	Can become inundated from 6m on the Bellingen gauge and 1.25m on the Repton Gauge	North to Perry Road then north on Keevers Drive then onto the Pacific Highway	2.5m on the Repton gauge	Caravans are relocated along Mylestom Drive east of railway line to higher ground. Alternate location top of Perry's Road at the look out.	Coffs Harbour Christian Community College	
Bellingen Showground	Black Street Bellingen	Bellingen Sector	25 sites	Inundation may commence from 8.1m	North on Hammond Street then west on Wheatley Street,	Caution: overland flow does affect local streets in and around	Caravans are relocated along Lyon Street to park in front of the	North Bellingen Children Centre	

					North on Sunset Ridge Drive and east on Elliott Close	the proposed assembly area.	Bellingen Cemetery.		
Reflections Urunga Holiday Park	2 Morgo Street, Urunga	Urunga Sector	90 camping sites 30 cabins	Likely to become inundated in the lower areas from 20% AEP and totally inundated by a PMF	North on Morgo Street and left onto North Street	Localised flooding of Morgo Street is possible	In and around the Urunga Cex	C.ex Urunga Golf and Sports Club	Susceptible to storm surge which will increase the potential for flooding
Urunga Waters Tourist Park	4437 Giinagay Way Urunga	Urunga Sector	Approx 47 semi permanaent sites/cabins	By 2.96m (Urunga Gauge) the park experiences overground flooding. Evacuation required by 2.4m.	South on Giinagay Way, Newry Street, Fitzroy Street, Comalaroi Street, Bowra Street Then Mogo Street, then North Street to C.ex Urunga.	Giinagay Way closes access to the evacuation centre at 2.4m	In and around the Urunga Cex	C.ex Urunga Golf and Sports Club	Susceptible to storm surge which will increase the potential for flooding
Brigalow Caravan Park (May not be open)	Giinagay Way, Urunga (Near the Honey Place)	Urunga Sector	Unknown	Inundation commences from 3.0m	North on Giinagay Way Newry Street, Fitzroy Street,	Nil known	Uphill along Giinagay Way	C.ex Urunga Golf and Sports Club	

					Comalaroi Street, Bowra Street Then Mogo Street, then North Street to C.ex Urunga.				

Table 2: Caravan Parks at risk from Coastal Erosion and/or Coastal Inundation.

Nil known at this stage.

LIST OF REFERENCES

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