NSW STATE EMERGENCY SERVICE

Singleton

Local Flood Emergency Sub Plan

FloodSafe

SINGLETON LGA FLOOD EMERGENCY SUB PLAN

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

Volume 1 of the Singleton LGA Flood Emergency Sub Plan

Endorsed by the Local Emergency Management Committee

November 2023

AUTHORISATION

The Singleton LGA Flood Emergency Sub Plan is a sub plan of the Singleton 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 Deputy Zone Commander

Print Name: Peter Keegan

Date: 30/11/2023

Endorsed

Signature: 

Chair, Local Emergency Management Committee

Print Name: Jason Linnane

Date: 30/11/2023

VERSION HISTORY

Version Number	Description	Date
	Singleton Shire Local Flood Plan	**November 2006**
	Singleton Shire Local Flood Plan	**May 2013**
	Singleton Flood Emergency Sub Plan	**February 2018**

AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to:

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

Amendment Number	Description	Updated by	Date

DISTRIBUTION LIST

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

CONTENTS

1 OUTLINE AND SCOPE

1.1 PURPOSE

1.1.1 The purpose of this plan is to set out the multi-agency arrangements for the emergency management of flooding in the Singleton 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 Singleton Local Emergency Management Plan (EMPLAN) and is endorsed by the Local Emergency Management Committee (LEMC).

1.3 ACTIVATION

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

1.3.2 The Singleton 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 Singleton LGA. The Singleton 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 Hunter Central Coast Emergency Management Region.

1.4.3 The plan sets out the Singleton Council level emergency management arrangements for prevention, preparation, response and initial recovery for flooding in the Singleton LGA. Hazard and Risk information can be found in Volume 2 (2018) of this document, and NSW SES Response Arrangements can be found in Volume 3 (2018).

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

1.4.5 This plan outlines the local level arrangements for the management of downstream consequences of flooding due to dam failure, however it does not cover the management of flooding of an underground mine by inrush or other

cause, which should be covered by the Mine Emergency Sub Plan for the respective mine.

1.5 GOALS

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

a. Protection and preservation of life.

b. Establishment and operation of flood warning systems.

c. Issuing of community information and community warnings.

d. Coordination of evacuation and welfare of affected communities.

e. Protection of critical infrastructure and community assets essential to community survival during an emergency incident.

f. Protection of residential property.

g. Protection of assets and infrastructure that support individual and community financial sustainability and aid assisting a community to recover from an incident.

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

1.6 KEY PRINCIPLES

1.6.1 The protection and preservation of human life (including the lives of responders and the community) is the highest priority.

1.6.2 Evacuation is the primary response strategy for people impacted by flooding.

1.7 ROLES AND RESPONSIBILITIES

1.7.1 General responsibilities of emergency service organisations and functional areas are set out in the NSW State EMPLAN and NSW State Flood Sub Plan.

1.7.2 Specific roles and responsibilities for agencies, functional areas and organisations in relation to flooding within Singleton LGA 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 Singleton LGA. This is outlined in Volume 2 – Hazard and Risk in Singleton LGA(2018).

2.1.2 Declared dams in or upstream of the Singleton Local Government Area.

Dam Name	Owner	Above Safety Threshold
Antienne Lease Tailings Dam (Liddell)	Liddell Tenements Pty Ltd/Liddell Coal Operations Pty Ltd	No
Ashton Coal Clean Water Dam 1	Ashton Coal Operations Ltd	No
Aldridge Creek Dam	Ellerston Pty Ltd	No
Bayswater 2 Main Dam	BHP Billiton - Mt Arthur Coal	No
Bayswater Ash Dam	AGL Macquarie Ltd	No

Bayswater Brine Decant Dam	AGL Macquarie Ltd	No
Bayswater Cooling Make Up Dam	AGL Macquarie Ltd	No
Bengalla CW1 Dam	Bengalla Mining Company	No
Bengalla DW1 Dam	Bengalla Mining Company	No
Bulga CHPP Dam	Bulga Coal Management Pty Ltd - Glencore	No
Bulga Mine Water Dam	Bulga Coal Management Pty Ltd - Glencore	No
Bulga North In-pit Tailings Storage	Bulga Coal Management Pty Ltd - Glencore	No
Bulga Old Tailings Dam	Bulga Coal Management Pty Ltd - Glencore	No
Camberwell Tailings Dam 2	Bloomfield Collieries Pty Ltd	No
Cumnock Tailings Storage Facility	Glencore Ravensworth Operations	No
Cumnock Tailings Storage Facility No 3	Glencore Ravensworth Operations	No
Dartbrook Mine Water Dam	AQC Dartbrook Management Pty Limited	No
Drayton Water Supply Dam	Maxwell Ventures (Management) Pty Ltd	No
Glenbawn Dam	WaterNSW	No
Glennies Creek Dam	WaterNSW	No
Hunter Valley Operations Lake James	HV Operations Pty Ltd	No
Liddell Ash Disposal Dam	AGL Macquarie Ltd	No
Liddell Ash Levee	Maxwell Ventures (Management) Pty Ltd	No
Liddell Cooling Water Dam	AGL Macquarie Ltd	No
Liddell Water Supply Dam	AGL Macquarie Ltd	No
MacDonalds Dam	BHP Billiton - Mt Arthur Coal	No
Mangoola Coal Raw Water Dam	Mangoola Coal Operations Pty Ltd - Glencore	No
Mangoola pit water dam	Mangoola Coal Operations Pty Ltd - Glencore	No
Mangoola Start-up tailings dam	Mangoola Coal Operations Pty Ltd - Glencore	No
Mount Pleasant Environmental Dam 3	MACH Energy	No
Mount Pleasant MWD	MACH Energy	No
Mount Pleasant Tailings Dam	MACH Energy	No
Mt Arthur North Environmental Dam	BHP Billiton - Mt Arthur Coal	No
Mt Arthur Tailings Storage Facility	BHP Billiton - Mt Arthur Coal	No
Mount Owen North Void Tailings Dam	Glencore Mt Owen Pty Limited	No
Mount Owen Rail Loop Tailings Dam	Glencore Mt Owen Pty Limited	No

Mt Thorley Abbey Green South Tailings	Yancoal Australia - Mt Thorley Warkworth Operations	No
Mt Thorley Central Ramp Tailings Dam	Yancoal Australia - Mt Thorley Warkworth Operations	No
Mt Thorley South Out Of Pit Water Dam	Yancoal Australia - Mt Thorley Warkworth Operations	No
Murrurundi Dam	Upper Hunter Shire Council	No
Parnells Creek MWD	HV Operations Pty Ltd	No
Plashett Dam	AGL Macquarie Ltd	No
Possum Skin Dam	Bloomfield Collieries Pty Ltd	No
Ravensworth Mine Inpit Storage Dam	Glencore Ravensworth Operations	No
Ravensworth South Tailings	MACH Energy	No
Ravensworth Void 4 East Tailings	Ashton Coal Operations Ltd	No
Ravensworth Void 5 Ash	AGL Macquarie Ltd	No
Riverview Void In-pit Water Storage	HV Operations Pty Ltd	No
SE Tailings Dam	HV Operations Pty Ltd	No
United Colliery Tailings 2	United Collieries Pty Ltd	No
Wambo Hunter Pit Tails	Wambo Coal Pty Ltd	No
Wambo South Water	Wambo Coal Pty Ltd	No
Wambo Tailings Dam	Wambo Coal Pty Ltd	No
Warkworth Main Water Dam—1N	Yancoal Australia - Mt Thorley Warkworth Operations	No
Warkworth North Pit Tailings	Yancoal Australia - Mt Thorley Warkworth Operations	No

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 Singleton LGA are also listed in Volume 3 (2018) of this plan.

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

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

e. Dam Owners will provide Dam Emergency Plans (where required) and consult with NSW SES on alert levels and messaging. Alert level definitions are listed in Dam Emergency Plans.

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

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

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

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

4.5 BRIEFING, TRAINING AND EXERCISING

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

Actions:

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

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

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

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

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

4.6 COMMUNITY RESILIENCE TO FLOODING

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

Actions:

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

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

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

Actions:

a. 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. Dam Owners will utilise the Dam Emergency Plan to provide warnings and information to NSW SES and communities (where appropriate).

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

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

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

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

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

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

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

h. The Public Information and Inquiry Centre will be established by NSW Police Force where required to provide information regarding evacuees and

emergency information. Contact details will be broadcast once the centre is established.

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

5.5 PROTECTION OF PROPERTY

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

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

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

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

5.6 ROAD AND TRAFFIC CONTROL

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

Actions:

a. Singleton 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 Singleton 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 (2018) 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 (2018) 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.

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 Singleton Council representatives.

b. NSW SES will conduct After Action Reviews, at the conclusion of response operations, which will involve all stakeholders. Findings will be shared and incorporated into improved disaster resilience planning.

c. NSW SES will provide information and data throughout the emergency response to inform community recovery. A report will be developed at the request of the SERCON at the conclusion of the response within an area. Should a response summary report be required it will include the following:

- The emergency action plan in place at conclusion of the response emphasising any continuing activities including community meetings/ engagement activities.
- Resources allocated to the emergency response and associated exit strategies.
- Details of any areas or situations with potential to re-escalate the emergency.
- A recommendation for the conclusion of NSW SES as lead agency to transition to NSW Reconstruction Authority as the lead agency for Recovery.
- Any actions that are incomplete or outstanding.
- Damage Assessment Data and Information obtained throughout the response phase which will further support the long-term recovery of communities.

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

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

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

6 RECOVERY OPERATIONS

6.1 INTRODUCTION

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

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

6.2 NSW SES RECOVERY ROLE

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

6.2.2 **Actions**:

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

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

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

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

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

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

7 ABBREVIATIONS

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

8 GLOSSARY

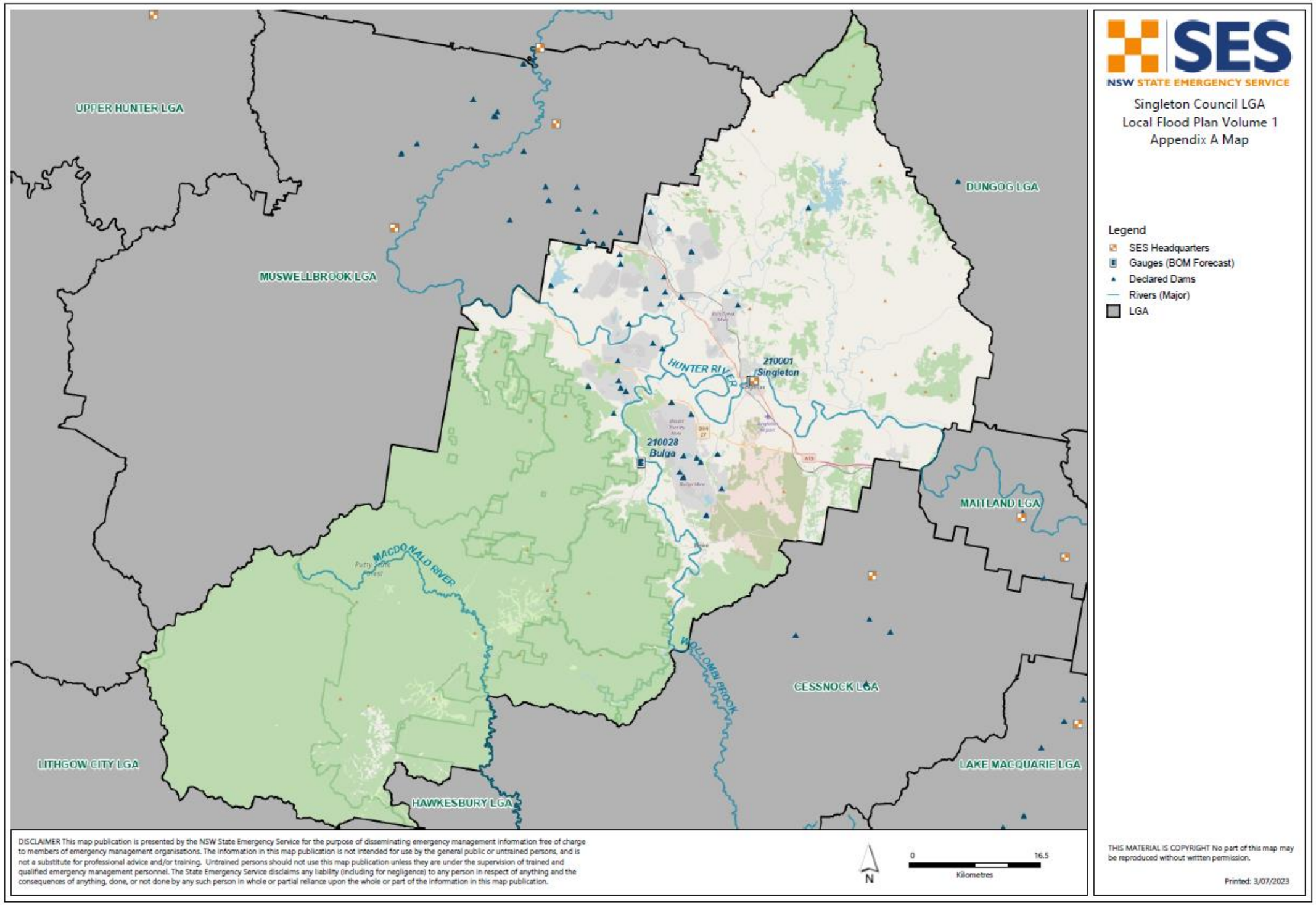
Common emergency service terminology can be found within the Australian Disaster Resilience Glossary.

Readers should refer to EMPLAN Annex 9 – Definitions.

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

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

9 Appendix A – Map of Singleton Local Government 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.
Singleton 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. • 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: – At the request of the SES closes and reopens the Flood Gates – 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. – Communicate warnings and/or evacuation of residents via social media and media releases. – Technical advice on the impacts of flooding.

AGENCY	RESPONSIBILITIES
	– Close and reopen council roads (and other roads nominated by agreement with Transport for NSW (TfNSW)) and advise NSW SES, NSW Police Force and people who contact the council for road information. – Assist NSW SES to provide filled sandbags and filling facilities to residents and business in areas which flooding is expected. • Assist with making facilities available for domestic pets and companion animals of evacuees during evacuations. • Operate flood mitigation works including critical structures such as detention basins and levees and advise NSW SES regarding their operation. • Manage and protect council-owned infrastructure facilities during floods. • Provide advice to NSW SES and the Health Services Functional Area during floods about key council managed infrastructure such as sewerage treatment and water supply. • Advise the Environmental Protection Authority of any sewerage overflow caused by flooding. • Work with NSW SES and NSW Department of Planning and Environment to collect flood related data during and after flood events. **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. Singleton Council assists and manages the **Hunter Valley Flood Mitigation Scheme (HVFMS).** **Prevention** • Maintains the Hunter Valley Flood Mitigation Scheme in a flood ready state. • Maintains operational capability in relation to emergency management. **Preparedness** • Closes flood gates in response to flood watches and warnings issued by the Bureau in accordance with the Flood Emergency Response Plan.

AGENCY	RESPONSIBILITIES
	Response • Advises NSW SES on status of scheme infrastructure. • Monitors the functioning of the scheme. • Provides intelligence in terms of real time flood modelling, high risk assets and surveillance of operation of scheme. • Responds to community calls regarding damage to scheme infrastructure or malfunctioning of infrastructure. **Recovery** • Undertakes post flood damage assessment of Scheme infrastructure. • Responds to community calls regarding damage and debris. • Prioritises repairs on based risk. • Builds back better.
Caravan Park Proprietor(s)	• Prepare a flood emergency plan for the Caravan Park. • Ensure that owners and occupiers of movable dwellings are aware that the caravan park is flood liable by providing a written notice to occupiers taking up residence and displaying this notice and emergency management arrangement within the park. • Ensure that owners and occupiers of movable dwellings are aware that if they are expecting to be absent for extended periods, they should: – Provide the manager of the caravan park with a contact address and telephone number in case of an emergency. – 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.

AGENCY	RESPONSIBILITIES
	• 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). 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.

AGENCY	RESPONSIBILITIES
Environmental Services Functional Area	The roles and responsibilities for Environmental Services are outlined in the Environmental Services (ENVIROPLAN) Supporting Plan.
Floodplain Management Australia	The roles and responsibilities for Floodplain Management Australia are outlined in the NSW State Flood Plan**.**
Fire and Rescue NSW	The roles and responsibilities for Fire and Rescue NSW are outlined in the NSW State Flood Plan.
Forestry Corporation of NSW	The roles and responsibilities for Forestry Corporation of NSW are outlined in the NSW State Flood Plan.
Health Services Functional Area	The roles and responsibilities for Health Services are outlined in the Health Services (HEALTHPLAN) Supporting Plan and NSW State Flood Plan.
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.
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 and also includes the following; Owns and manages the **Hunter Valley Flood Mitigation Scheme (HVFMS).** **Prevention** • Maintains the Hunter Valley Flood Mitigation Scheme in a flood ready state. • Maintains operational capability in relation to emergency management.

AGENCY	RESPONSIBILITIES
	Preparedness • Closes flood gates in response to flood watches and warnings issued by the Bureau in accordance with the Flood Emergency Response Plan. **Response** • Advises NSW SES on status of scheme infrastructure. • Monitors the functioning of the scheme. • Provides intelligence in terms of real time flood modelling, high risk assets and surveillance of operation of scheme. • Responds to community calls regarding damage to scheme infrastructure or malfunctioning of infrastructure. **Recovery** • Undertakes post flood damage assessment of Scheme infrastructure. • Responds to community calls regarding damage and debris. • Prioritises repairs on based risk. • Builds back better.
NSW Food Authority	The roles and responsibilities for NSW Food Authority are outlined in the Food Safety Emergency Sub Plan.
NSW National Parks and Wildlife Services	The roles and responsibilities for NSW National Parks and Wildlife Services are outlined in the NSW State Flood Plan.
NSW Police Force	The roles and responsibilities for NSW Police Force are outlined in the NSW State Flood Plan.
NSW Reconstruction Authority	The roles and responsibilities for NSW Reconstruction Authority are outlined in the NSW State Flood Plan.
NSW Rural Fire Service	The roles and responsibilities for NSW Rural Fire Service are outlined in the NSW State Flood Plan.
Owners of Declared Dams within or upstream of the LGA	The roles and responsibilities for Owners of Declared Dams are outlined in the NSW State Flood Plan.
Public Information Services Functional Area	The roles and responsibilities for Public Information Services are outlined in the Public Information Services Supporting Plan and NSW State Flood Plan**.**
SEOCON/SEOC	The roles and responsibilities for the SEOCON/SEOC are outlined in the NSW State Flood Plan**.**
Surf Life Saving NSW	The roles and responsibilities for Surf Life Saving NSW are outlined in the NSW State Flood Plan.
Telecommunications Services Functional Area	The roles and responsibilities for Telecommunications Services are outlined in the Telecommunications Services (TELCOPLAN) Supporting Plan.

AGENCY	RESPONSIBILITIES
Transport for NSW (TfNSW)	• 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.
Community Groups	• Support prevention, preparedness, response and recovery efforts - Community Resilience Network - Local Get Ready Teams
Private companies or other organisations	• Assist with the notification and preparation of a flood - School of Infantry (ADF) - Mines Managers - Businesses in Singleton • Assist the vulnerable facilities listed in the Singleton EMPLAN.
Service and sporting clubs	• Singleton Sports Council assist with the preparation and recovery of the grounds facilities.
Aboriginal organisations or groups	• Act as the point of contact between NSW SES and the Wonnarua, Wanaruah community. • Inform the NSW SES Singleton Unit Commander about flood conditions and response needs. • Disseminate flood information, including flood and evacuation warnings, to the Wonnarua, Wanaruah community.

NSW STATE EMERGENCY SERVICE

HAZARD AND RISK IN SINGLETON LGA

Volume 2 of the Singleton LGA Local Flood Plan

Last Update: February 2018

AUTHORISATION

Hazard and Risk in Singleton LGA 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 and historical records.

Approved

NSW SES Hunter Region Controller

Date: 20/02/18

Tabled at LEMC

Date: 01/03/18

CONTENTS

LIST OF TABLES

VERSION LIST

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

Description	Date
Singleton Local Flood Plan	November 2006

AMENDMENT LIST

Suggestions for amendments to this Volume should be forwarded to:

The Singleton Local Controller

NSW State Emergency Service

9-11 Queen Street

SINGLETON NSW 2330

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

Amendment Number	Description	Updated by	Date
	None		

Document Issue: Version 3-02052016

1 THE FLOOD THREAT

1.1 OVERVIEW

a. The Singleton LGA is located in the Hunter Region of NSW about 80 km northwest of Newcastle. Singleton township is the major population centre in the LGA with rural communities at Broke to the south and Jerrys Plains and Bulga to the west.

b. Singleton is located on the New England Highway (A15) which is a significant transport route from Newcastle north to Queensland on the western side of the Great Dividing Range. The main transport from Newcastle to Singleton is the Hunter Expressway which joins the New England Highway at Branxton, approximately 20km south east of Singleton. The Golden Highway (B84) joins the Putty Road about 10km south of Singleton township.

c. Singleton LGA adjoins Cessnock LGA to the south and east, Upper Hunter LGA to the north and Maitland LGA to the east. Singleton LGA is located in the Hunter River Basin which is shown on Map 1 – Hunter River Basin.

1.2 LANDFORMS AND RIVER SYSTEMS

a. The Hunter River is the second largest coastal river in New South Wales, draining a catchment area of 21,000 sq. km the bulk of which (16000 sq. km) lies upstream of Singleton. The catchment is roughly circular in shape and is bounded by the Barrington Tops, Mt Royal and Liverpool Ranges in the north, the Great Dividing Range in the west and south-west and the Hunter Range in the south. The north-eastern and southern sections of the catchment are rugged and largely wooded, while the western portion is made up of comparatively open country. South-east of Scone the main river widens, and there are extensive floodplains within the Singleton LGA.

b. The Hunter River has several major tributaries which join it upstream of the Singleton LGA. These include the Isis, Pages and Goulburn Rivers and their tributaries, as well as the Dart and Rouchel Brooks and the Kingdon Ponds. The Hunter River itself rises in Barrington Tops at an altitude of about 1500 metres, and flows for about 220 kilometres in a south-westerly direction to Denman below where it is joined by the Goulburn River. From there the river flows eastwards and through the Singleton LGA.

c. Within the Council area the Hunter is joined by the Bowmans, Glennies, Rix, First, Stanhope and Lambs Valley Creeks, and the West and Glendon Brooks, all of which flow in from the north, and by Wollombi Brook and Minimbah, Jump Up and Black Creeks from the south. By far the most significant of these in terms of flooding is Wollombi Brook (also known locally as the Cockfighter Creek).

d. Except for the Wollombi Brook there is only limited floodplain development along these tributaries, except on their lower reaches, but the Hunter River has extensive

floodplains from the point at which it enters the shire above Jerrys Plains, to the point at which it leaves it near Dalwood. In places, the floodplain is more than five kilometres in width.

e. The Hunter River is shown on Map 1 – Hunter River Basin.

1.3 STORAGE DAMS

a. Storage Dam locations are shown on Map 2 - Singleton LGA Map.

b. Of the 65 prescribed dams in the Hunter River catchment, 35 are located within the Singleton LGA. Many of these dams are contained in open cut coal mining operations which dominate the areas to the west of Singleton and do not pose any direct flood threat to life.

c. Notable prescribed dams include and are shown in Table 2:

   i. Glenbawn Dam

   ii. Glennies Creek

   iii. Plashett Dam

d. Other prescribed dams located in the Singleton LGA are shown Table 1:

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

Prescribed Dam Name		
Antiene Lease Tailings	Mount Owen North Void Tailings	Ravensworth Void 5
Ashton Coal Clean Water Dam 1	Mount Owen Rail Loop Tailings	Riverview Void In-pit Water Storage
Bayswater Brine Decant	Mt Thorley Abbey Green South TSF	SE Tailings Storage
Bulga Old Tailings	Mt Thorley Central Ramp Tailings	United Colliery Tailings Dam 2
Camberwell Tailings 2	Mt Thorley South Out Of Pit Water	Wambo Chitter Dump Water Dam
Cumnock Tailings Storage Facility	Possum Skin Dam	Wambo Hunter Pit Tails Dam
Cumnock Tailings Storage Facility	Ravensworth Inpit Storage	Wambo South Water
Hunter Valley Operations Lake James	Ravensworth South Tailings	Wambo Tailings
Lemington Mine Tailings	Ravensworth Void 3	Warkworth Mine Tailings
Montose	Ravensworth Void 4 East Tailings	Warkworth North Pit Tailings

Table 2: Prescribed Dams in Singleton LGA; summary of information about each storage.

Glenbawn Dam (2)	
Owner / Operator	Water NSW
Description of Dam	Un-gated earth and rock fill clay core dam with concrete chute spillway and fuse plug. Includes privately owned hydroelectric power station. Dam capacity is 870 000 ML with the top 120 000 ML reserved for flood mitigation (3).
Location	On the Hunter River, 14km east of Scone.
Communities Downstream	Aberdeen, Muswellbrook, Denman, Jerrys Plains, Singleton, Maitland, Raymond Terrace, Hexham and Newcastle
Monitoring System	A water level sensor at the dam measures depth above spillway crest and triggers the transmission of alarms to State Water to action. Monitoring also includes piezometers and seepage monitoring.
Warning System	Early Warning Network (EWN) voluntary register is in place.
Other	Peak flood arrival times in Singleton are as follows: Sunny Day Failure: 6h50min 1% AEP flood: 16.25hrs

Glennies Creek Dam (2)	
Owner / Operator	Water NSW
Description of Dam	Curved earth and rock fill embankment with a concrete slab on the upstream face. Spillway is uncontrolled rock cut. Capacity is 283 000 ML.
Location	On Glennies Creek, 39km upstream of the junction with the Hunter River and 25km north of Singleton.
Communities Downstream	Jerrys Plains, Singleton, Greta, Maitland, Raymond Terrace, Hexham and Newcastle. Approximately 9,000 people would be impacted by floodwaters in Singleton.
Monitoring System	A water level sensor at the dam measures depth above spillway crest and triggers the transmission of alarms to State Water to action.
Warning System	Monitoring of seepage is also regularly undertaken Early Warning Network (EWN) voluntary register in place
Other	Approximate travel time of a Sunny Day failure to Singleton is 3h15min Backup flooding would occur on all tributaries in the LGA including Wollombi Brook.

Plashett Dam (4)	
Owner / Operator	AGL Macquarie Pty Ltd
Description of Dam	46m high, zoned earth-fill dam with a 800m crest length. Storage capacity at full supply level is 65000 ML (5). Spillway is a broad crested weir on an uncontrolled concrete lined chute.
Location	Located on Saltwater Creek approximately 3kms upstream of its confluence with the Hunter River at Jerry's Plains (approximately 60km upstream of Singleton). The dam provides backup water storage for Bayswater and Liddell Power Stations.
Communities Downstream	Jerry's Plains, Singleton, Maitland, Raymond Terrace, Hexham and Newcastle Approximately 9,000 people would be impacted by floodwaters in Singleton.
Monitoring System	Visual Inspection
Warning System	None identified.
Other	Communications with the dam are generally by telephone otherwise by radio from Bayswater Power Station. In the event of dam failure, flood wave would reach Jerrys Plains in around 24 minutes and Singleton in about 10 hours. (4) The Dam is able to safely pass extreme floods, and failure of the saddle wall which is 1m lower than the main wall would only occur in an estimated 1:100,000yr (0.001% AEP) event.

1.4 WEATHER SYSTEMS AND FLOODING

a. Four major rainfall mechanisms are responsible for most of the flooding in the Singleton LGA (5).

i. **Inland depressions** forming in the tropics over northern Australia and moving in a southerly or south-easterly direction. Depositing heavy rainfall as they move, these systems usually cause flooding to occur in the western and northern parts of the catchment. Floods of this origin occur in the late summer and autumn months.

ii. **Ex-tropical cyclones** originating in the Coral Sea and moving southwards along the Queensland and New South Wales coasts. Occasionally these systems move far enough south to affect the Lower Hunter Valley, with heavy rains occurring over the catchment of the Wollombi Brook when the low pressure cell becomes stationary off or over the coastline. Flooding of this origin is rare and occurs only in the summer and early autumn months.

iii. **East Coast low-pressure systems** can also produce flooding when deep depressions off the coast are accompanied by blocking anti-cyclones over inland

New South Wales. In these circumstances a cool, moist, south-easterly airstream results in heavy rain along the coast and flooding along the Wollombi Brook. Rainfall volumes fall off sharply towards the west. Such floods tend to occur in the cooler months.

iv. **Sequences of fronts** crossing the Hunter River valley from west to east, usually in the cooler months. When several fronts cross in quick succession, the cumulative effect of heavy rains can lead to flooding.

b. Some 90 per cent of the floods recorded at Singleton (including all of the severe ones) have occurred between the months of January and August. Depending on the weather system which is creating the flooding, different rivers and creeks will be active and flooding within the shire will result from different origins.

1.5 CHARACTERISTICS OF FLOODING

a. Flooding on the majority of tributaries along the Hunter River within the Singleton Shire is flash flooding which lasts for only a few hours. However, back-up flow from the Hunter up the major tributaries (Wollombi Brook, First Creek and Glendon Brook) may cause flooding along the lower reaches of these streams for longer periods.

b. The Hunter River is approximately 10m in depth at Singleton, with the water level generally less than 1m in depth. Therefore a significant flood is required to fill the channel and overtop the banks. Initially very minor flooding may be experienced from around 9.77m on the Singleton Gauge (210001) where minor inundation can be expected on terraces adjacent either end of the pilot bypass channel (5).

c. The low lying area of Glenridding (Doughboy Hollow, about 8 km south of the railway bridge) is one of the first areas to become inundated from flow overtopping the river banks and cutting the Putty Road at 12.0m on the Singleton Gauge (210001).

d. Floodwater then flows north through rail culverts and adjacent (outside) the town levee to James Cooke Park meeting with flood fringe areas of Dunolly in the north-west. Such inundation can be expected at 12.94m on the Singleton Gauge (210001) (5).

e. At approximately the same height 12.94m at the Singleton Gauge (210001) a secondary flow path becomes established across Glenridding and Doughboy Hollow, entering the Hunter River several kilometres down stream of Singleton (5).

f. Further inundation and backwater flooding will change the flood fringe area in Dunolly to a floodway at 13.82m at the Singleton Gauge (210001). The Glenridding / Doughboy Hollow floodway becomes a high flood hazard with floodwaters between 0.5 and 1m in depth (5).

g. A small area of backwater flood storage starts appearing at 14.18m at the Singleton Gauge (210001) in residential areas, notably adjacent to Queen St and west of the golf course (6).

h. In a 1% AEP event (14.43m at the Singleton Gauge) (5) significant inundation of Singleton's urban area can be expected due to backwater flooding and breaching of the rail line in the vicinity of the station. It should be noted the rail embankment is not an engineered levee and ballast (100mm) will typically wash out. Inundated areas remain low hazard flood storage (5) while the remainder of the floodplain is classified as a high hazard floodway (6).

i. An event with similar characteristics to the 1955 flood (14.71m at the Singleton Gauge (210001)), approximately equivalent to a 0.5% AEP event, will result in overtopping of the rail line, which creates floodways running along residential streets including Walter St, Park St, Fredrick St and the southern end of John St. Areas adjacent the golf course in the north (Gipp St) also become high hazard floodways.

j. In extreme events (15.91m at the Singleton Gauge (210001) (5) virtually the entire remaining urban area of Singleton becomes inundated flood storage (6). In such circumstances Kelso St becomes one of the main floodways running west to east within Singleton, now linking with the reminder of the high hazard floodway floodplain (5).

k. Due to variations in flood levels on different rivers, water travel times can vary significantly from event to event. The indicative flow travel times listed in Table 2 need to be regarded as approximations only.

Table 3: Indicative Flow Travel Time for the Hunter River

Locations	Travel Time (h.mm)
Aberdeen to Muswellbrook (22km)	2.30
Muswellbrook to Denman (37km)	4.00
Denman to Jerrys Plains (42km)	4.30
Jerrys Plains to Singleton (54km)	5.30
Singleton to Elderslie (16km)	3.30

Table 4: Indicative Flow Travel Time for the Wollombi Brook

Locations	Travel Time (h.mm)
Wollombi to Broke (42km)	4.30
Broke to Bulga (21km)	2.15
Bulga to Singleton (64km)	6.30

1.6 FLOOD HISTORY

The 1949 Flood:

a. Few records exist of the 1949 flood on Wollombi Brook. There is a height estimate, of unknown accuracy, of over 12m at Bulga Gauge (210028). It was the highest flood ever measured at Broke and Warkworth and at the Warkworth Bridge was 0.72 metres higher than the 1955 flood.

The 1955 Flood:

b. The 1955 flood (14.71m at the Singleton Gauge (210001)) inundated the entire central business district of Singleton, and virtually the whole residential area as it then existed (up to 2.5m depths). The water reached a depth of approximately 1 metre at the Singleton Railway Station and was of high velocity (2m/s) (5).

c. On the Singleton-Warkworth (Putty) Road and on the New England Highway at Whittingham, the water was more than 3 metres deep. Extensive structural damage was caused, especially to houses in Glenridding and to the railway line which experienced washouts at several locations. Several “high islands” remained above flood level.

The 1971 Flood:

d. Floodwaters reached 14.07m on the Singleton Gauge (210001). There was flooding all around the town and most access routes were cut, little water entered the built up area north of the railway line. The Glenridding and Dunolly areas were inundated.

The 2007 Flood

e. In June 2007 a major flood occurred on the Hunter River caused by an East Coast Low with a flood peak of 14.2m at the Singleton Gauge (210001). Residents in the low lying areas of Glenridding and Dunolly were evacuated and approximately 91 properties experienced over floor flooding in these areas (6). Despite losing the last evacuation route (Queen St/Redbournberry bridge) for a short period of time, evacuation from Singleton had not been initiated prior to the river reaching this height.

Table 5: Flood History of Major Floods at the Singleton Gauge (210001)

Date	Peak Gauge Height (m)
05 March 1977	13.300
14 August 1952	13.640
18 June 1949	13.740
18 June 1930	13.870
02 February 1971	14.070
15 May 1913	14.170
10 June 2007	14.200
25 February 1955	14.550

1.7 FLOOD MITIGATION SYSTEMS

a. There are no additional detention basins within the Singleton LGA.

b. Singleton township is protected by a levee – For more information refer to Section 2.2.7 below.

1.8 EXTREME FLOODING

a. In a 1% AEP event (14.43m at the Singleton gauge) the town of Singleton becomes isolated and surrounded by high hazard floodway. This occurs well before the Singleton levee overtops. Much of the town behind the levee is inundated by flood storage.

b. An extreme flood at Singleton (PMF) has been estimated as reaching a height of approximately 15.91 metres at the Singleton Gauge (210001) (6). This flood would overtop the town's levees by about 1m and would inundate the entire town as well as the lower-lying portions of Singleton Heights. Water levels throughout Singleton could be expected to be 2-3m deep (5).

c. The likelihood of such a flood occurring is extremely small. The PMF has a notional Average Recurrence Interval of 10,000 to 100,000 years (5).

2 EFFECTS ON THE COMMUNITY

2.1 COMMUNITY PROFILE

Table 6: Census of Housing and Population data (2011)

Census Description	Singleton LGA	Broke	Singleton
Total Persons	22,694	640	15,877
Aged 0-4 yrs	1,651	53	1,196
Aged 5-14 yrs	3,379	81	2,314
Aged 65 + yrs	2,351	66	1,694
Of Indigenous Origin	845	9	664
Who do not speak English well	54	0	38
Have a need for assistance (profound/severe disability)	831	10	657
Living alone (Total)	1,602	40	1,293
Living alone (Aged 65+)	505	9	393
Residing in caravans, cabins or houseboats or improvised dwellings	137	4	115
Occupied Private Dwellings (Households)	7,759	218	5,551
No Motor Vehicle	343	4	304
Caravan, cabin, houseboat or improvised dwell	89	3	83
Rented via State or Housing Authority	370	0	390
Rented via Housing Co-Op or Community Church Group	11	0	0
No Internet Connection	1,544	34	1,218
Unoccupied Private Dwellings	879	76	465
Average persons per occup dwelling	2.7	2.7	2.7
Average vehicles per occup dwelling	2.0	2.2	1.9

SPECIFIC RISK AREAS - FLOOD

Hunter River Basin

2.2 SINGLETON (INCLUDING COMBO AND REDBOURNBERRY)

2.2.1 Community Overview

a. The town of Singleton which includes the central business district has a population of 15,877 and is the largest local centre in the LGA. Singleton township is located on the south side of the Hunter River, inside a bend. The town is protected in part by a levee along its north western boundary.

b. Combo refers to the 5 properties towards the northern end along Combo Lane. Redbournberry is located directly to the east of the Singleton township, and is bound to the east by the Hunter River.

c. Singleton and Combo are shown on Map 3 – Singleton/Combo Town Map

2.2.2 Characteristics of Flooding

a. Singleton is affected by riverine flooding from the Hunter River (5).

2.2.3 Flood Behaviour

a. At 11.6m at the Singleton Gauge (210001) (10% AEP flood event) Combo Lane is inundated just north of the end of the levee by an overbank flow from the river, which re-enters the river at the end of White Falls Lane, southeast of Singleton (5).

b. Initial backwater inundation of Singleton occurs from 13.82m at the Singleton Gauge (210001) (5% AEP flood event) from the east through the golf course (5).

c. At 14.18m at the Singleton Gauge (210001) (2% AEP flood event) the levee continues to protect the town, but increased backwater flooding affects residential properties located on the town's western boundary (5).

d. Backwater inundation and flood storage areas within urban areas become flow paths (Kelso Street, the showground and Gipps Street) in events including and over 14.43m at the Singleton Gauge (210001) (1% AEP flood event) (5).

e. Records suggest that the average recurrence intervals for floods reaching or exceeding the presently accepted minor, moderate and major flood thresholds at the Singleton Gauge (210001) are approximately (5):

Description	ARI
Minor flood (10.0 metres)	4 years
Moderate flood (11.5 metres)	7 years
Major flood (13.0 metres and above)	10 years

2.2.4 Classification of Floodplain

a. Singleton has Rising Road Access until 14.2m at the Singleton Gauge (210001) when the last evacuation route along Queen Street becomes inundated (5).

b. From 14.43m at the Singleton Gauge (210001) Singleton becomes a series of large high flood islands (5).

c. At 14.7m high flood island areas include Campbell, View and Barton Streets, Ardersier Drive and the Singleton Hospital site in Dangar Road (5).

d. In the extreme (PMF) event (15.91m at the Singleton Gauge (210001)) only very small areas along View Street and parts of Ardersier Drive remain high flood islands (5).

2.2.5 Inundation

a. The Bureau of Meteorology provide flood warnings to the Singleton Gauge (210001) located at the Dunolly Bridge.

b. The town of Singleton is susceptible to floods exceeding the Major flood classification of 13.0m at the Singleton Gauge (210001).

c. Singleton experiences the following sequence of inundation in events exceeding 14.0m at the Singleton Gauge (210001):

   i. Backwater flooding of the Singleton township begins from the east at 14.07m at the Singleton Gauge (210001);

   ii. Backwater flooding in the vicinity of Queen Street causing residential areas adjacent to Queen Street and east of the golf course experience low hazard inundation from 14.18m at the Singleton Gauge (210001) (6);

   iii. Overbank flows travelling around the end of the levee at Combo lane in the north;

   iv. Inundation of urban areas in the south once the railway line is overtopped adjacent to Glenridding from 14.43m at the Singleton Gauge (210001) with depths generally less than a metre (6); and

   v. Overtopping of the town levee or levee failure in events exceeding 14.87m at the Singleton Gauge (210001) (5).

d. In an extreme event (PMF) of 15.91m at the Singleton Gauge (210001), almost the entire urban area of Singleton can become inundated. Water depths are expected to be in the vicinity of 2-3m throughout urban areas where only very small areas along View Street and parts of Ardersier Drive remain flood free.

2.2.6 Isolation

a. The township of Singleton is isolated well before the town levee overtops, due to loss of evacuation routes across the floodplain. The following summarises evacuation route closures:

   i. Bridgman Road may close near Blaxland Avenue (500m north of the intersection with the New England Highway) at a gauge height of 10.6m. This is the normal access route to the Evacuation Centre in Singleton Heights.

   ii. The New England Highway north is likely to be closed between Bridgman Road and White Avenue at 12.3m.

   iii. The New England Highway south (at Doughboy Hollow, south of Cemetery lane) is likely to be closed at 13.7m

   iv. The last road evacuation route out of Singleton along Queen Street and over the Redbournberry Bridge is likely to be closed at 14.2m following inundation west of the bridge near the intersection of Raworth Street.

   v. The rail line does not become inundated until 14.7m, however use of rail for evacuation has not been explored.

b. The isolation of 3 properties on Combo Lane occurs from 12.0m at the Singleton Gauge (210001).

2.2.7 Flood Mitigation Systems

a. The Singleton levee ensures that in most floods water is retained outside the town of Singleton and flows alongside built up areas on the town's western extents, or is directed through the Glenridding (Doughboy Hollow) floodway to the southeast (5).

Table 7: Levees in Singleton; summary of information

Singleton Levee	
Location	The levee is located on the eastern bank of the Hunter River and runs along the north western boundary of the settlement from Waterworks Lane in the south to Combo Lane in the north.
Type of Levee (ring etc.)	The levee is a 2.2km earth and concrete wall levee that protects the western side of Singleton.
Owner	Singleton Council
Design Height and freeboard	The levee was built to protect against a 1955 size event of 14.57m at the Singleton Gauge (210001) with the below additional design heights (2): • Between Waterworks Lane in the south to Hunter St in the north, the design height of the levee is 14.57m +1m at the Singleton Gauge (210001) • Between Hunter St and north to Combo Lane the design height is 14.57 + 0.3m at the Singleton Gauge (210001)

Overtopping Height	14.87m at the Singleton Gauge (210001)
No. of properties protected	Approximately 2350 residential properties.
Known low points	The levee will first overtop in the section between Hunter Street and north to Combo Lane.
Location and sequence of inundation	Being an open levee system backwater flooding may occur from the east behind the northern end of the levee adjacent the golf course causing inundation of properties prior to the levee overtopping.
Consequences of levee overtopping or failure	The levee protects Singleton from direct flood threat up to 14.57m at the Singleton Gauge (210001) however urban areas behind the levee are still inundated by floodwaters due to backwater flooding and breaching of the railway line. High ground behind the levee exists in small isolated pockets once the levee has overtopped. In a PMF flood (15.91m at the Singleton Gauge (210001)) water depths behind the levee are expected to be in the vicinity of 2-3m throughout urban areas where only very small pockets along View Street and parts of Ardersier Drive remain flood free.
Deficiencies	There are seven screw down stormwater discharge gates in the levee and these must be closed to prevent floodwaters entering the town stormwater drainage system. There is no pump to remove water that falls over the local catchment when the flood gates are closed.

b. The Main Northern Rail line running along the south western boundary of Singleton acts as a pseudo levee preventing flow into town from the Glenridding area. It should be noted that this is not an engineered levee and its prolonged operational performance in large events is unknown.

c. Initial active flow through the south western portion of town will occur once the railway line is overtopped. Studies indicate this may occur in a 1% AEP flood (14.43m at the Singleton Gauge (210001)) where the breach will occur between John Street South and the railway station exposing residential properties to inundation. However as noted above it could be expected that the rail line embankment may fail earlier (5).

2.2.8 Dams

a. Impacts below include Dunolly and Glenridding.

Glennies Creek Dam

b. In the event of a Sunny Day failure of Glennies Creek Dam, flood waters from the dam would arrive in approximately 3 hours, cutting evacuation routes and overtopping the town's levee. Within a further 4 hours flood waters would reach their maximum depth of several metres in most areas and the majority of Singleton's houses and other buildings would be completely inundated (2).

c. Inundation mapping can be found in the Glennies Creek Dam DSEP.

Glenbawn Dam

d. In the event of a Sunny Day Failure of Glenbawn Dam, the start of the flood wave would take approximately 6h50min to reach Singleton with the peak of the flood wave taking approximately 10h30min (2).

e. In a Sunny Day failure and PMF Dam Failure scenario, modelling shows that all areas of Singleton south of the Hunter River will be impacted by floodwaters (2).

f. Inundation mapping can be found in the Glenbawn Dam DSEP.

Plashett Dam

g. It has been estimated that a Sunny Day failure would cause inundation extents similar to those of a 20% AEP flood event (estimated height of 10.27m) (5).The peak of the flood wave would take approximately 10 hours to reach Singleton (4).

2.2.9 At Risk Facilities

a. There are 6 schools, 3 childcare centres, 8 aged care facilities and 1 hospital at risk of flooding in Singleton. These are described in Annex 2 below.

2.2.10 Other Considerations

a. There is a large transient workforce that work in support of mining operations to the west of the town. This workforce generally only stay in accommodation in the town for the period of their shifts and then return elsewhere to their permanent accommodation.

2.3 DUNOLLY

2.3.1 Community Overview

a. Dunolly is a locality located on the northern bank of the Hunter River between Singleton and Singleton Heights. Dunolly is predominately rural but has a mixture of residential and light industrial use.

b. There are approximately 27 dwellings and a caravan park located in Dunolly with 65 residents and 43 residents in the caravan park (6).

c. Dunolly is shown on Map 4 – Dunolly Town Map

2.3.2 Characteristics of Flooding

a. Dunolly is affected by riverine flooding from the Hunter River.

2.3.3 Flood Behaviour

a. In major flood events Dunolly is classified as High Hazard Floodway (6).

b. Initially, floodwaters are contained within the Hunter River channel. Once flood levels reach a gauge height of 10.04m at the Singleton Gauge (210001), floodwater breaks-out from the Hunter River channel to the floodplain around Dunolly.

2.3.4 Classification of Floodplain

a. Dunolly has rising road access up until 13.9m on the Singleton Gauge (210001) where the area becomes inundated (7).

2.3.5 Inundation

a. The Bureau of Meteorology provide flood warnings to the Singleton Gauge (210001) located at the Dunolly Bridge.

b. At 13.0m at the Singleton Gauge (210001) water begins to enter the urban areas of Dunolly. Approximately 27 dwellings, a commercial property and a caravan park (54 sites) are flood prone in these areas (7).

c. By 13.82m (5% AEP event) at the Singleton Gauge (210001) almost the entire Dunolly floodplain is inundated (5).

d. In an event approximating 14.5m at the Singleton Gauge (210001) it is likely that the area would be inundated to depths of up to 2 metres (5).

2.3.6 Isolation

a. The last road out of Dunolly closes at approximately 13.9m at the Singleton Gauge (210001) (8).

b. There may be small areas in Dunolly that are isolated after the evacuation route closes.

2.3.7 Flood Mitigation Systems

a. There are no flood mitigation systems located in Dunolly.

2.3.8 Dams

a. Refer to Section 2.2.8.

2.3.9 At Risk Facilities

a. The Singleton Caracourt Caravan Park in Dunolly is at risk of flooding. More information can be found in Annex 2.

2.3.10 Other Considerations

a. No other considerations.

2.4 GLENRIDDING

2.4.1 Community Overview

a. The Glenridding locality is located directly south and adjacent to Singleton, but outside the protection of both the Singleton town levee and the Main Northern Rail Line.

b. Glenridding has an approximate population of 160 people (2006 census) and compromises of roughly 55 dwellings, 5 commercial/industrial business and a caravan park (6).

c. Glenridding is shown on Map 5 – Glenridding Town Map

2.4.2 Characteristics of Flooding

a. Glenridding is affected by riverine flooding from the Hunter River.

2.4.3 Flood Behaviour

a. This area is classified as 'High Hazard Floodway' in 10% AEP event (13.0m at the Singleton Gauge (210001)) (6).

b. Flooding is characterised by high hazard overland flow paths fed by out of bank flooding crossing Putty Road and flowing east across the floodplain (Doughboy Hollow) where it meets again with the Hunter River several kilometres downstream of Singleton.

c. By 13.82m at the Singleton Gauge (210001) almost the entire Glenridding floodplain is inundated.

2.4.4 Classification of Floodplain

a. Glenridding has rising road access towards Singleton.

2.4.5 Inundation

a. The Bureau of Meteorology provide flood warnings to the Singleton Gauge (210001) located at the Dunolly Bridge.

b. Inundation of rural areas around Glenridding begins at a height of 10.04m at the Singleton Gauge (210001).

c. At 13.0m at the Singleton Gauge (210001) (approximate 10% AEP event) water will begin to enter the urban areas of Glenridding.

d. By 14.5m at the Singleton Gauge (210001) all properties are expected to be inundated above floor level.

2.4.6 Isolation

a. Inundation of rural roads may cause localised inundation between heights of 10.0m and 14.5m at the Singleton Gauge (210001).

b. No modelling has been completed to assess the extent to which localised isolations occur.

2.4.7 Flood Mitigation Systems

a. There are no formal flood mitigation systems located in Glenridding.

2.4.8 Dams

a. Refer to Section 2.2.8.

2.4.9 At Risk Facilities

a. There is one caravan park located in Glenridding that is at risk of flooding. More information can be found in Annex 2.

2.4.10 Other Considerations

a. No other considerations.

2.5 BULGA

2.5.1 Community Overview

a. Bulga is located 20km south west of the Singleton township on Putty Road. In 2011 the population of Bulga was 358.

b. Bulga is shown on Map 6 – Bulga Town Map.

2.5.2 Characteristics of Flooding

a. Bulga is affected by riverine flooding from the Wollombi Brook.

2.5.3 Flood Behaviour

a. Flood modelling has not been completed for Bulga.

2.5.4 Classification of Floodplain

a. Classification of the floodplain has not been undertaken for Bulga.

2.5.5 Inundation

a. The Bureau of Meteorology provide flood warnings to the Bulga Gauge (210028).

b. Historically, areas around the Putty Road intersections with The Bulga Inlet Road and Wambo Road have become inundated with floodwaters however it is unknown if any properties have been affected by over flood flooding.

2.5.6 Isolation

a. At approximately 6.0m on the Bulga Gauge (210028), Bulga becomes isolated. Isolation can last for up to 24 hours (8).

2.5.7 Flood Mitigation Systems

a. There are no flood mitigation systems located in Bulga.

2.5.8 Dams

a. There are no dams located upstream that will impact Bulga.

2.5.9 At Risk Facilities

a. There are no at risk facilities, at risk of flooding located in Bulga.

2.5.10 Other Considerations

a. No other considerations.

2.6 BROKE

2.6.1 Community Overview

a. Broke is located 24km south of the Singleton township on Wollombi Brook. In 2011 the population of Bulga was 640.

b. Broke is shown on Map 7 – Broke Town Map.

2.6.2 Characteristics of Flooding

a. Broke is affected by riverine flooding from the Wollombi Brook.

2.6.3 Flood Behaviour

a. Flood modelling has not been completed for Broke.

2.6.4 Classification of Floodplain

a. Classification of the floodplain has not been undertaken for Broke.

2.6.5 Inundation

a. The Bureau of Meteorology provide flood warnings to the Bulga Gauge (210028) which is located approximately 15km downstream of Broke.

b. The Brickmans Bridge Gauge (210135) is located approximately 10km upstream of Broke, however there are no warnings provided to this gauge.

c. Historically, areas on Wollombi Street, Archer Street, Nelson Street, Singleton Street, Cochrane Street, Blaxland Street, Harrowby Street, Cathcart Street and rural properties alongside Wollombi Brook have been located within flood extents, however it is unknown if any properties have been affected by over flood flooding.

d. Historical flood extents are shown on Map 7 – Broke Town Map.

2.6.6 Isolation

a. Historically Broke has become isolated by floodwaters. Isolation is attributed to small catchment flooding of access roads such as Broke Road, as well as flooding attributed to Wollombi Brook.

2.6.7 Flood Mitigation Systems

a. There are no flood mitigation systems located in Broke.

2.6.8 Dams

a. There are no dams located upstream that will impact Broke.

2.6.9 At Risk Facilities

a. There are no at risk facilities, at risk of flooding located in Broke.

2.6.10 Other Considerations

a. No other considerations.

2.7 ROAD CLOSURES

a. Table lists roads liable to flooding in the Singleton LGA

Table 8: Roads liable to flooding in Singleton LGA.

Road	Closure location	Consequence of closure	Alternate Route	Indicative gauge height
Major Road Closures (6)				**Singleton Gauge (210001)**
Bridgman Road	Just south of Blaxland Avenue	Closes main access to Singleton Heights	White Avenue	10.6m
Putty Road	700m south of John Street high level bridge over railway line	Secondary access between Singleton and Sydney lost	New England Highway	12m
New England Highway (north)	Between Bridgman Road and White Avenue	Evacuation route closed leading west to Singleton Heights.	Queen Street and Redbournberry Bridge leading to Singleton Heights.	12.3m
New England Highway (south)	Doughboy Hollow at Whittingham	Evacuation route to Maitland closed	None	13.7m
Queen Street	Between Raworth Street and Redbournberry Bridge	Loss of last road evacuation route and access to Singleton Heights	None	14.2m
Outlying Areas				**(Singleton Gauge)**
Neotsfield and Kanoona Lanes, Whittingham		Up to 16 houses isolated on low flood islands	None	11.5m
Racecourse Lane, Whittingham		5 properties isolated	None	12m
Scotts Flat Road	600m south of Pankhurst Bridge	Isolation of 10-12 houses on low flood islands	None	12m
Army Camp Road	Doughboy Hollow	Secondary access closed to Army camp	Range Road and New England Highway	12.5m
Combo Lane	To Pigeon Point	Isolation of 3 properties	None	12.0m

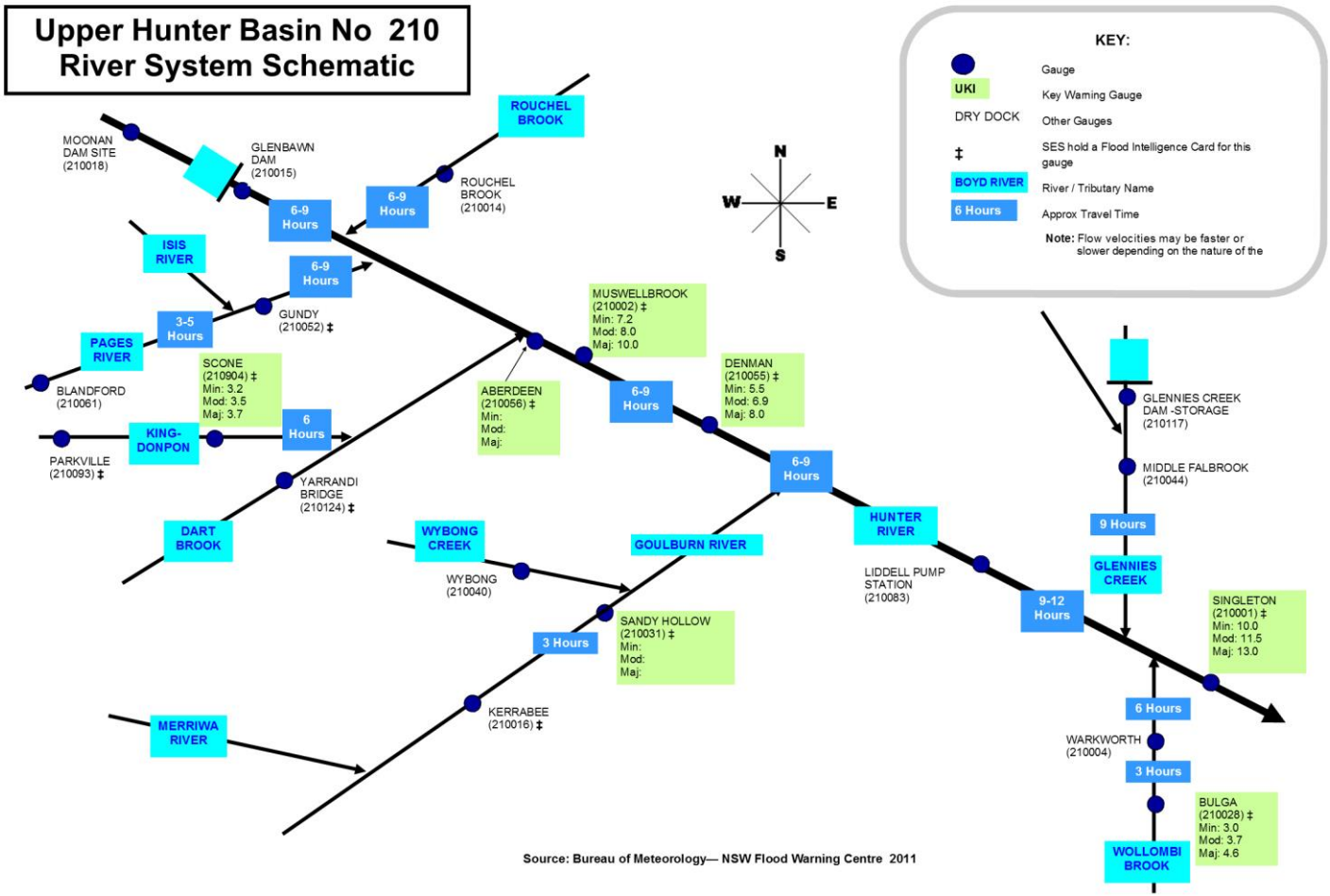
2.8 SUMMARY OF ISOLATED COMMUNITIES AND PROPERTIES

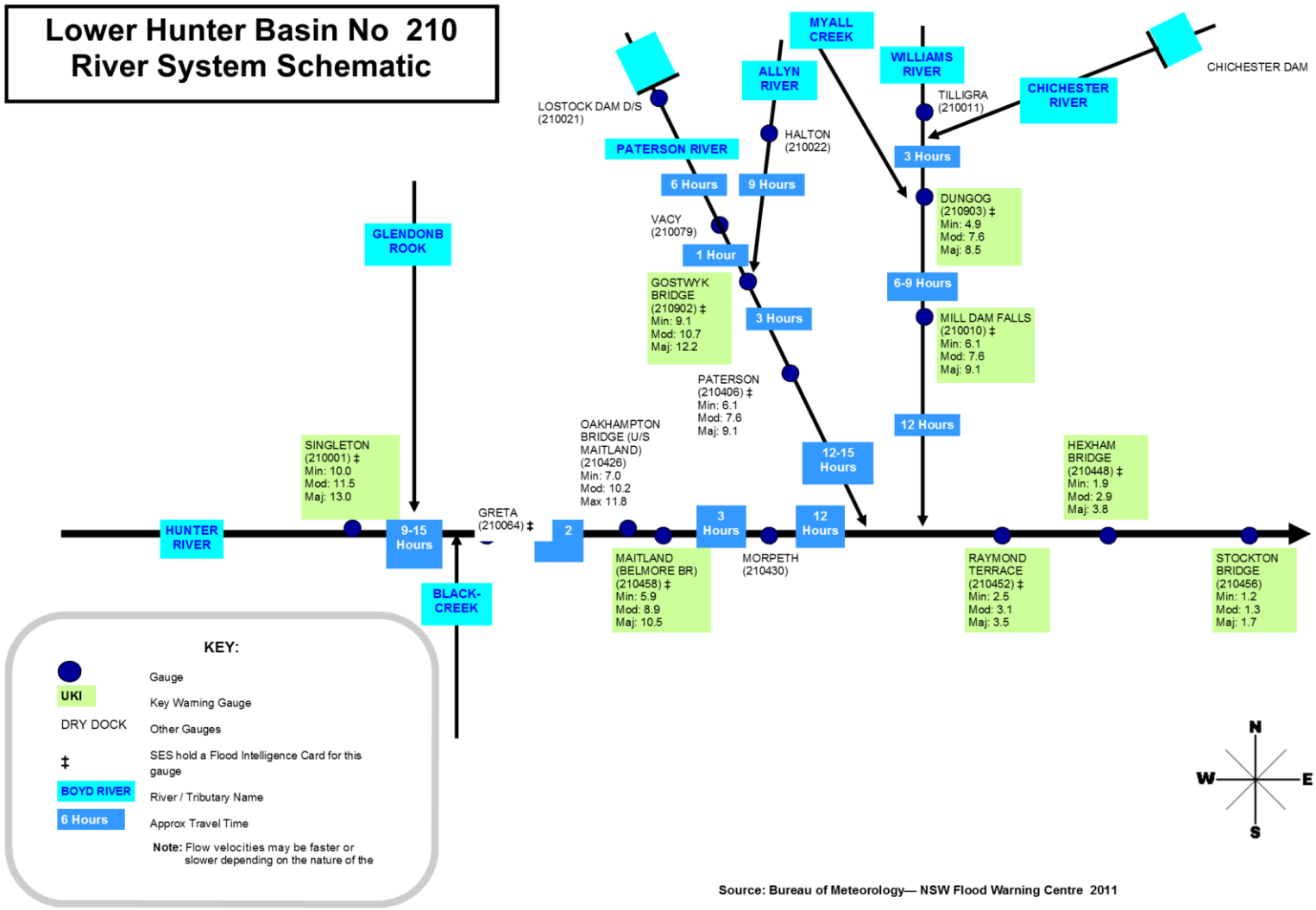
Table 9: Potential Periods of Isolation for communities in Singleton LGA during a 1% AEP Flood (14.47m on Singleton gauge)

Town / Area (River Basin)	Population/ Dwellings	Flood Affect Classification	Approximate period isolation	Days								NOTES
				1	2	3	4	5	6	7	8	
Dunolly / Combo	30 homes, 1 business & 54 site caravan park	Rising road access until 12.5m else inundated in 1% AEP	2 days									Properties completely inundated in 1% AEP
Glenridding	55 homes. 5 businesses & 50 site caravan park	Rising road access until 12.5m else inundated in 1% AEP	2 days									Properties completely inundated 1% AEP.
Singleton	2350 homes	7 low flood islands in 1% AEP. >50% reduction area in 0.5% AEP. Inundated in PMF.	2 days + (behind levee)									Evacuation required in 1% AEP.
Whittingham		2% AEP (2007) high flood island. Unknown in 1% / PMF	2 days									High flood island at Whittingham Hall on Range Road. Remainder of floodplain inundated.

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: HUNTER RIVER BASIN SCHEMATICS





Source: Bureau of Meteorology— NSW Flood Warning Centre 2011

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

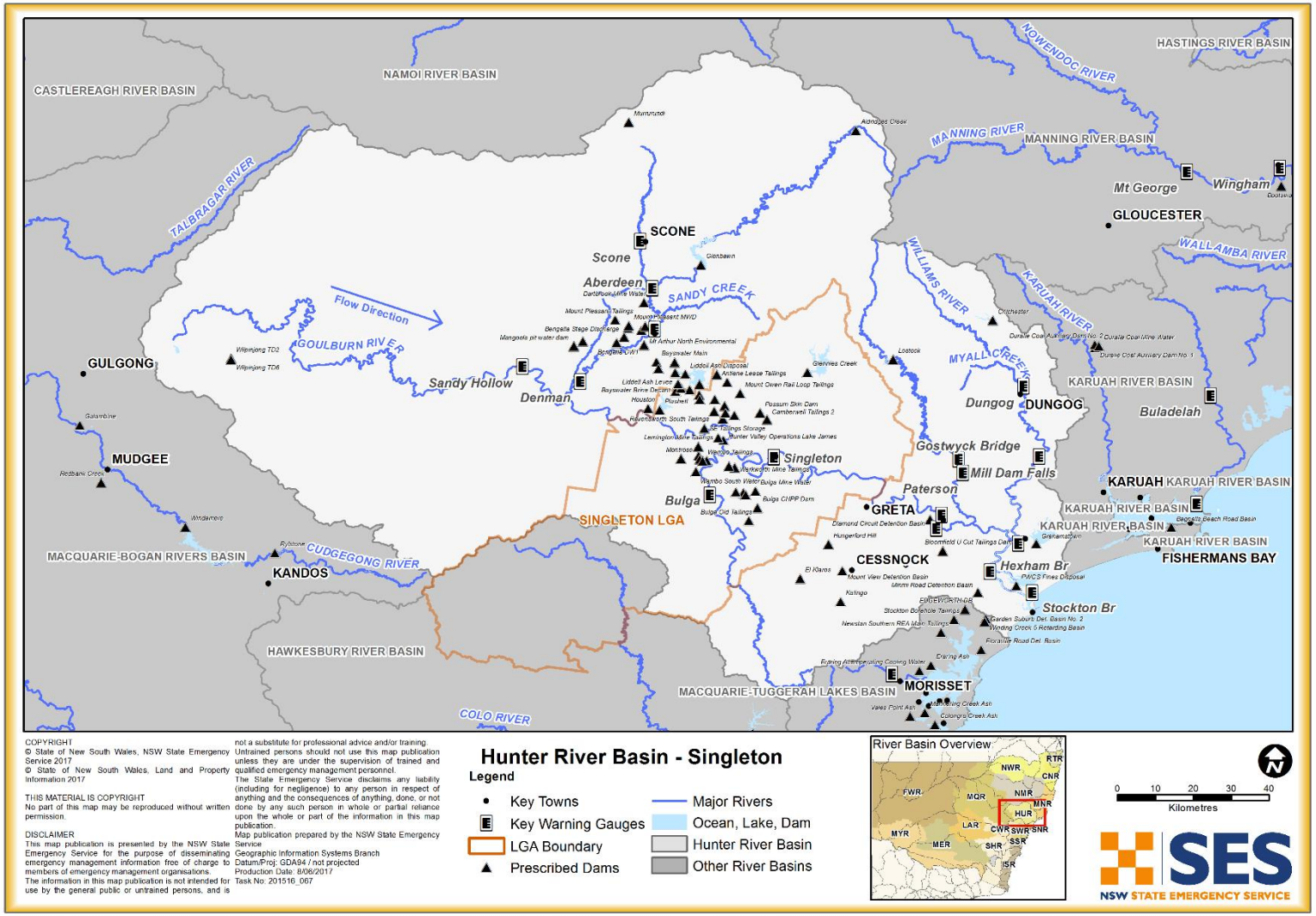
Hunter River Valley

Facility Name	Street	Suburb	Comment
Schools			
Australian Christian College	23 Maitland Road	Singleton	Isolated above 14.2m. Subject to inundation in a levee overtopping event.
Singleton High School	75-81 York Street	Singleton	Isolated above 14.2m. Subject to inundation in a levee overtopping event.
Singleton Public School	8 Hunter Street	Singleton	Isolated above 14.2m. Subject to inundation in a levee overtopping event.
King Street Public School	King Street	Singleton	Isolated above 14.2m. Subject to inundation in a levee overtopping event.
St Catherine's Catholic College	Queen Street	Singleton	Isolated above 14.2m. Subject to inundation in a levee overtopping event.
Hunter Prelude	1 Civic Avenue	Singleton	Isolated above 14.2m. Subject to inundation in a levee overtopping event.
Child Care Centres			
Rainbow Early Learning Centre	23 Maitland Road	Singleton	Isolated above 14.2m. Subject to inundation in a levee overtopping event.
Singleton Pre-School	56 York Street	Singleton	Isolated above 14.2m. Subject to inundation in a levee overtopping event.
St Patricks Early Education Centre	Cnr Market & Boundary Streets	Singleton	Isolated above 14.2m. Subject to inundation in a levee overtopping event.

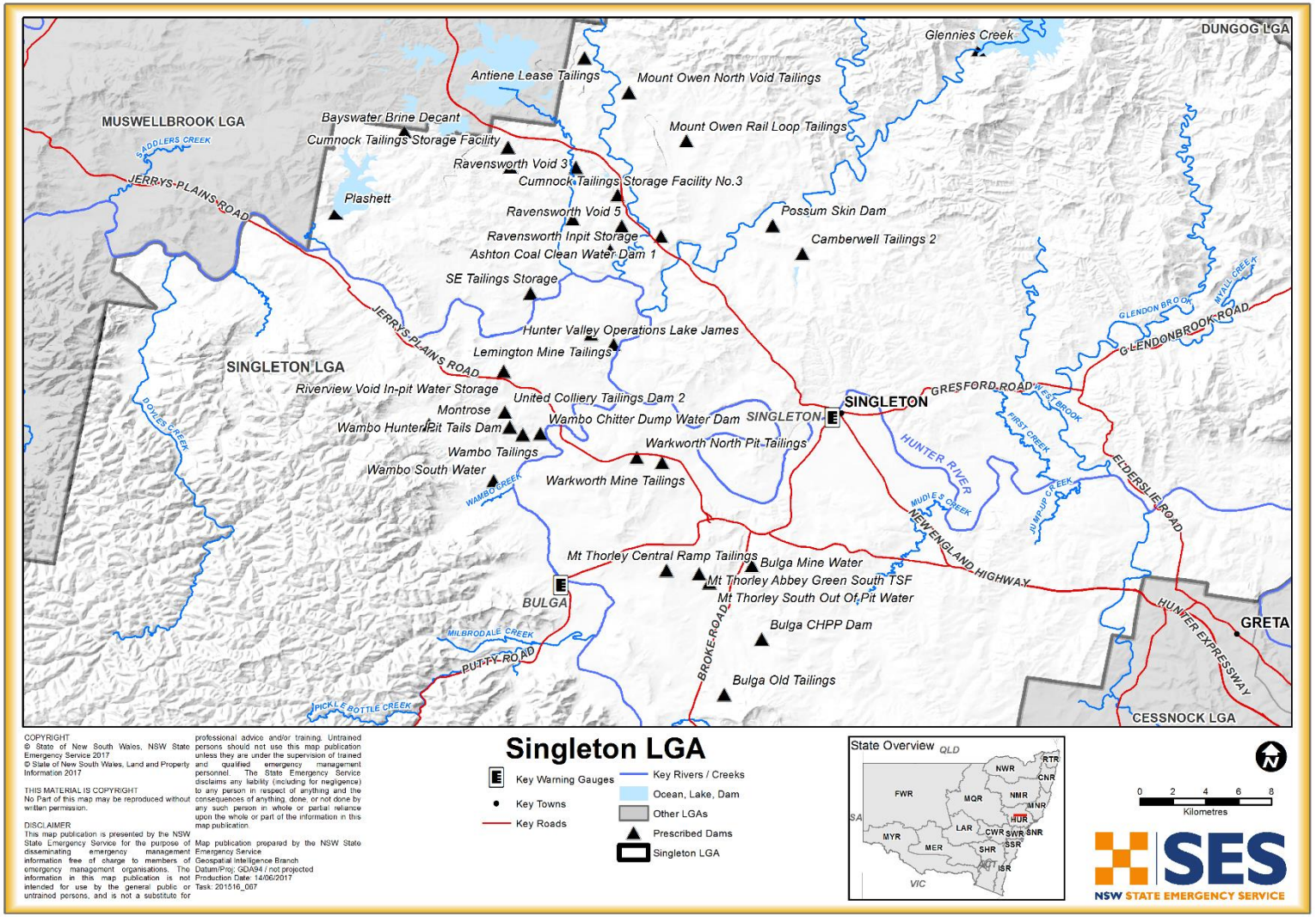
Facilities for the aged and/or infirm			
Singleton District Hospital	Dagner Road	Singleton	High Flood island up to PMF
'Cooinda' Aged Hostel	42 Bathurst Street	Singleton	Isolated above 14.2m
Ryder Cheshire Home for the Physically Disabled	Castlereagh Street	Singleton	Isolated above 14.2m
Singleton Community Services Centre / Senior Citizens Centre	Bathurst Street	Singleton	Isolated above 14.2m
Anglican Aged Units - All Saints Court Retirement Village	High Street	Singleton	Isolated above 14.2m
Singleton Sheltered Workshop	Bishopgate Street	Singleton	Isolated above 14.2m
Department of Housing Aged Persons Units	Orchard Avenue/Howe Street/ Buchan Avenue/ Waterhouse Avenue/Pelerin Avenue	Singleton	Isolated above 14.2m
St Elizabeth Group Homes	6 and 32 Elizabeth Street/15 Boundary Street	Singleton	Isolated above 14.2m
Mercy Nursing Home and Convent	Combo Lane	Singleton	Isolated above 14.2m
Utilities and infrastructure			
Singleton Train Station	Munro Street	Singleton	Awaiting qualification & references
Electricity Substation	Orchard Avenue	Singleton	Awaiting qualification & references
Telephone Exchange	Ryan Avenue	Singleton	Awaiting qualification & references
Water Treatment Works	Bridgeman Road	Obanvale	Unaffected up to PMF
Sewerage Treatment Works	Army Camp Road	Glenridding	There are no identified actions for NSW SES in response to this facility being impacted by flood water.

Camping Ground / Caravan Parks			
Singleton Caracourt Caravan Park	Corner of Bridgeman Road and New England Highway (A15).	Dunolly	54 sites consisting of 40 on-site cabins/caravans, 8 sites for tourist caravans and 6 sites for tents. Inundation occurs around 13.0m at the Singleton Gauge (210001).
Wyland Caravan Park	20 Carrington Street	Glenridding	50 sites consisting of 12 cabins, 28 on-site caravans and 10 sites for tourist caravans. Inundation occurs around 13.0m at the Singleton Gauge (210001).

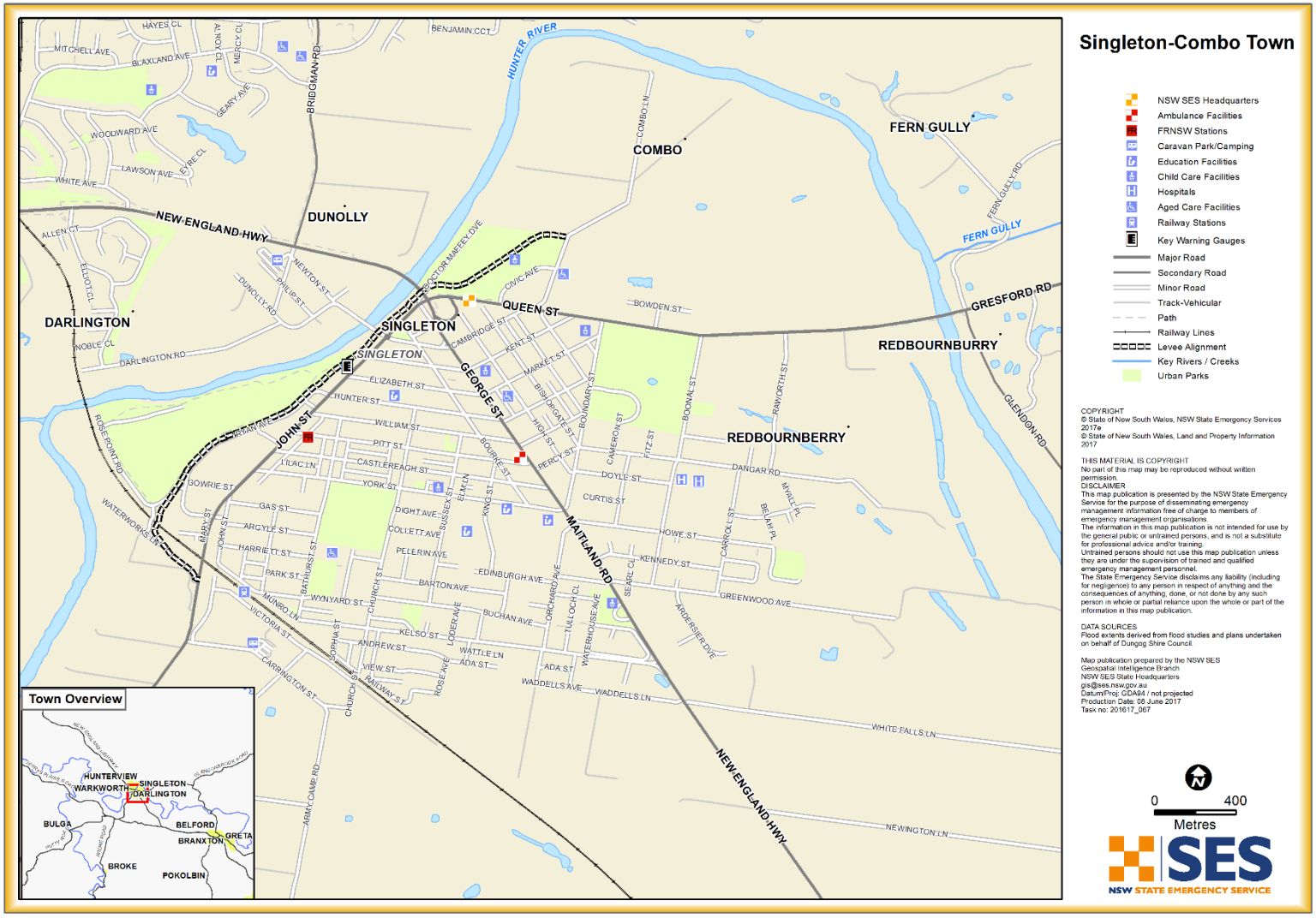
MAP 1: HUNTER RIVER BASIN MAP



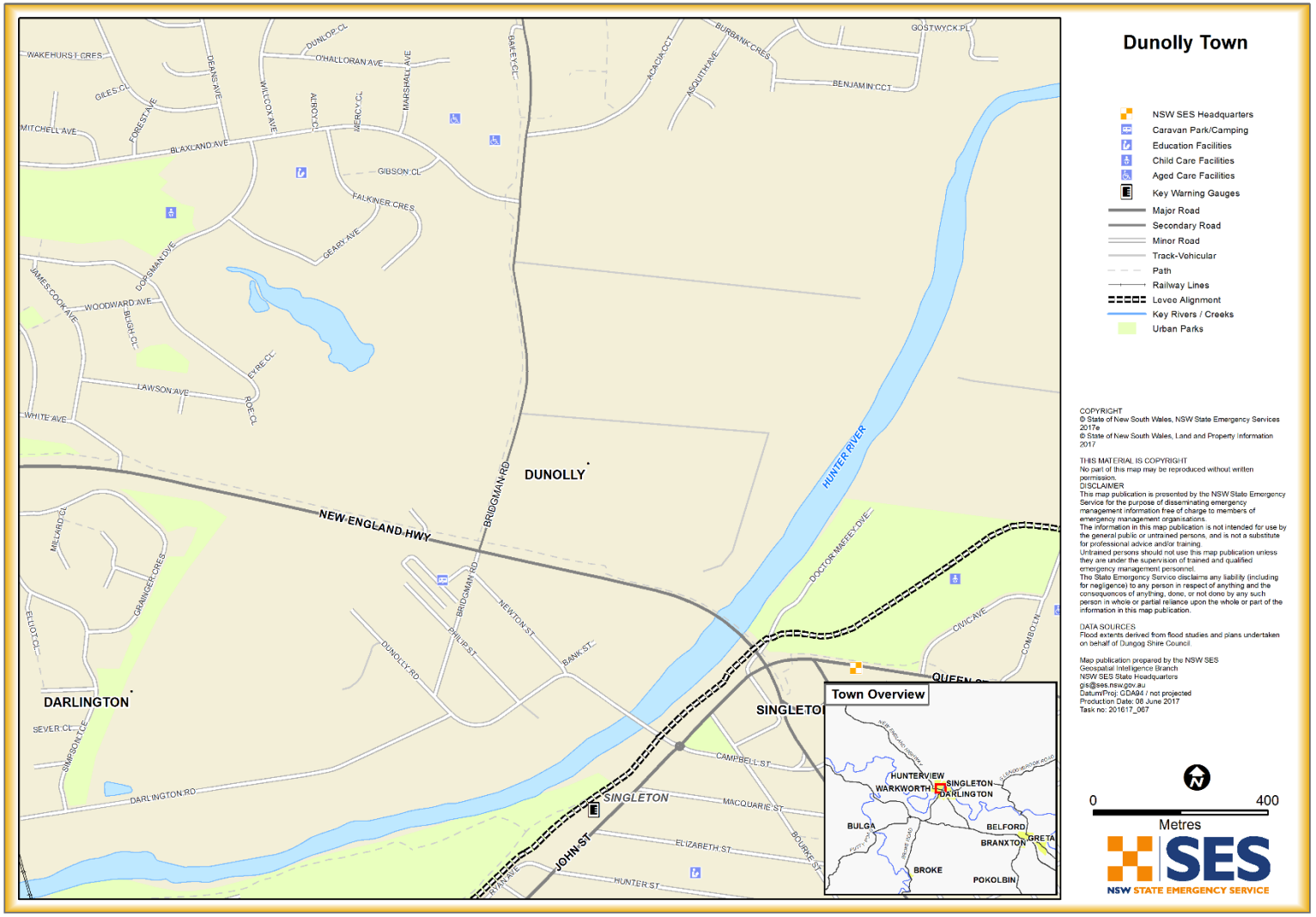
MAP 2: SINGLETON LGA MAP



MAP 3: SINGLETON/COMBO TOWN MAP



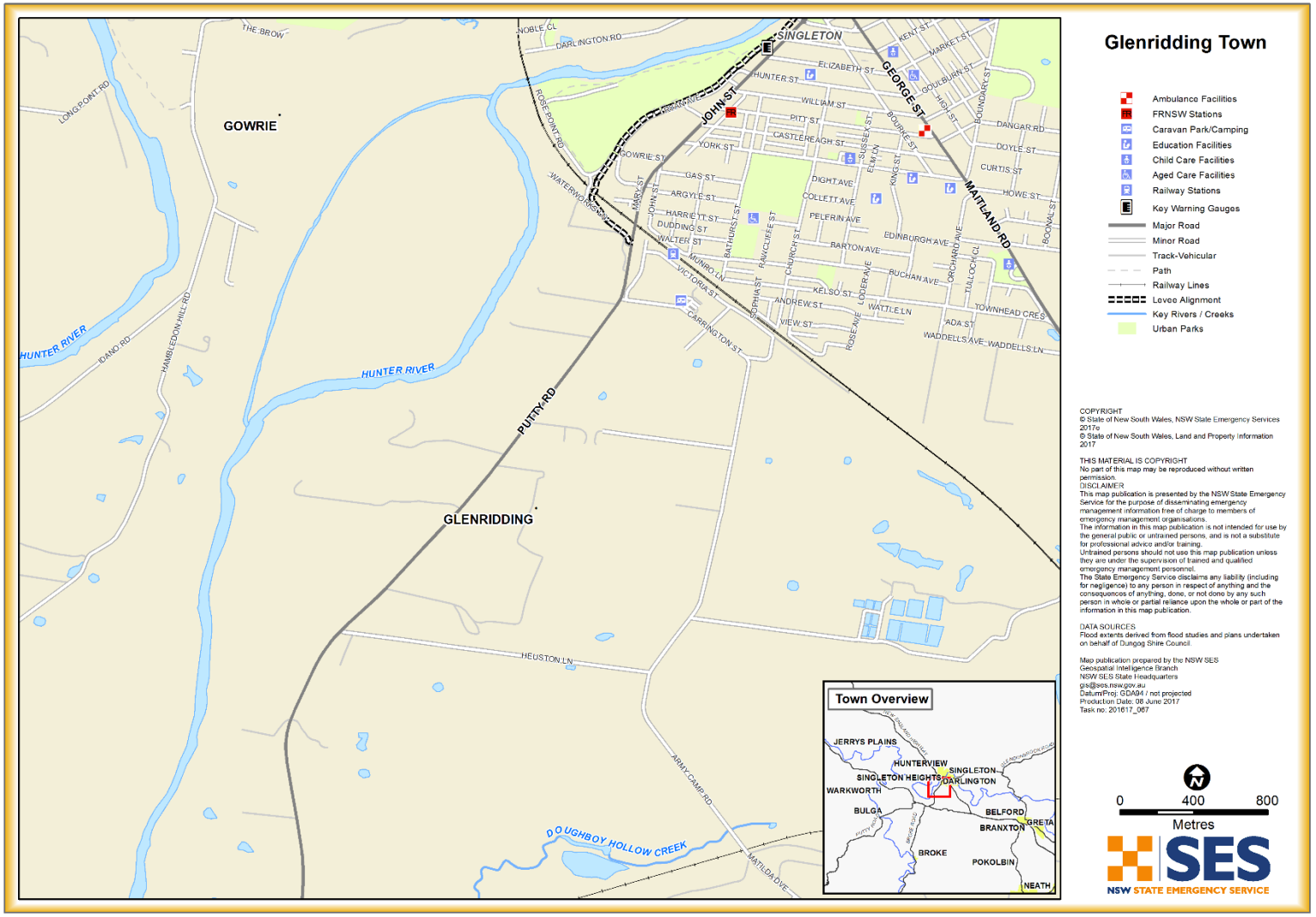
MAP 4: DUNOLLY TOWN MAP



DATA SOURCES
Flood extents derived from flood studies and plans undertaken on behalf of Dungog Shire Council.

Map publication prepared by the NSW SES
Geospatial Intelligence Branch
NSW SES State Headquarters
gis@ses.nsw.gov.au
Datum/Proj: GDA94 / not projected
Production Date: 08 June 2017
Task no: 201617_067

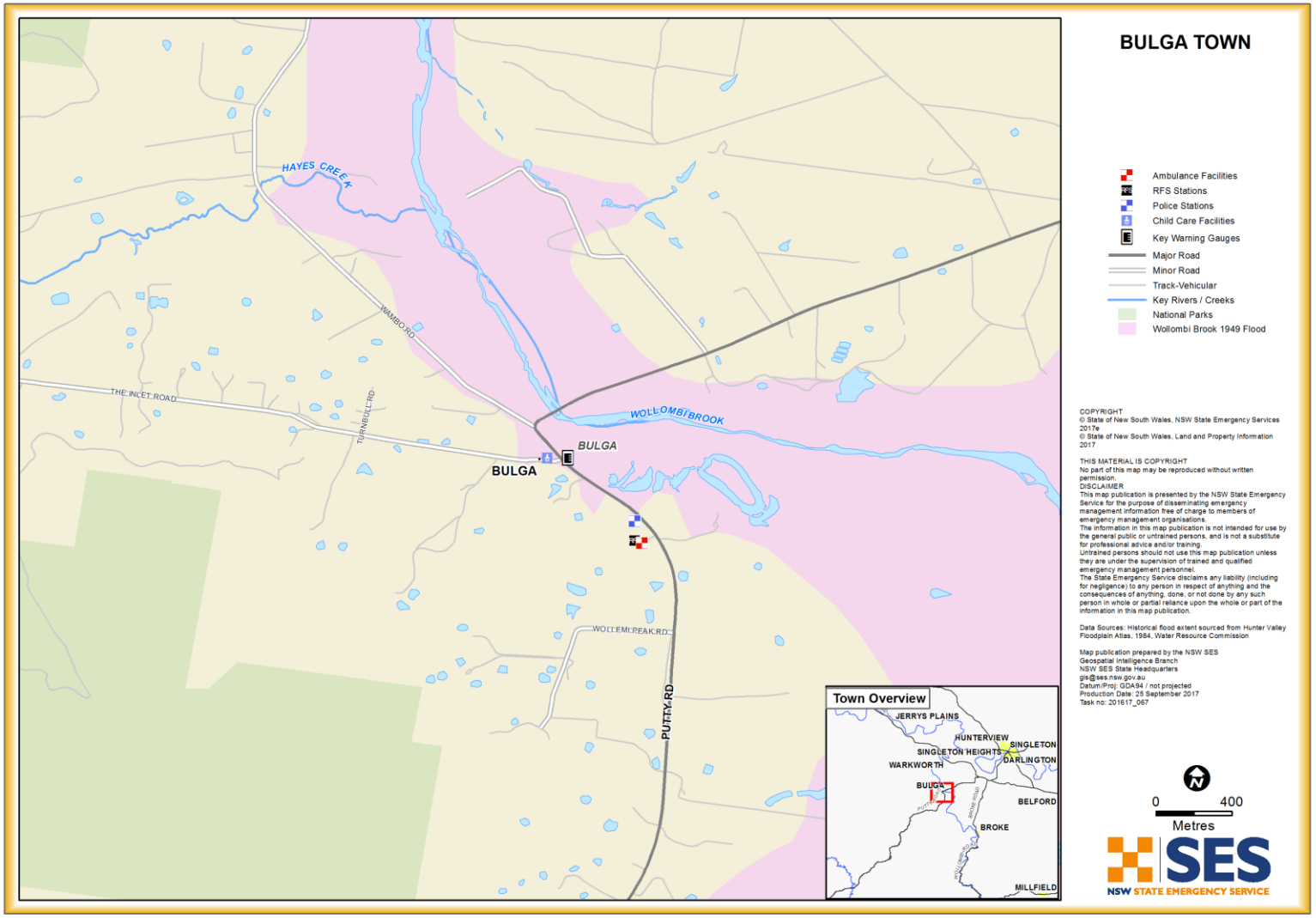
MAP 5: GLENRIDDING TOWN MAP



DATA SOURCES
Flood extents derived from flood studies and plans undertaken on behalf of Dungog Shire Council.

Map publication prepared by the NSW SES
Geospatial Intelligence Branch
NSW SES State Headquarters
gis@ses.nsw.gov.au
Datum/Proj: GDA94 / not projected
Production Date: 08 June 2017
Task no: 201617_067

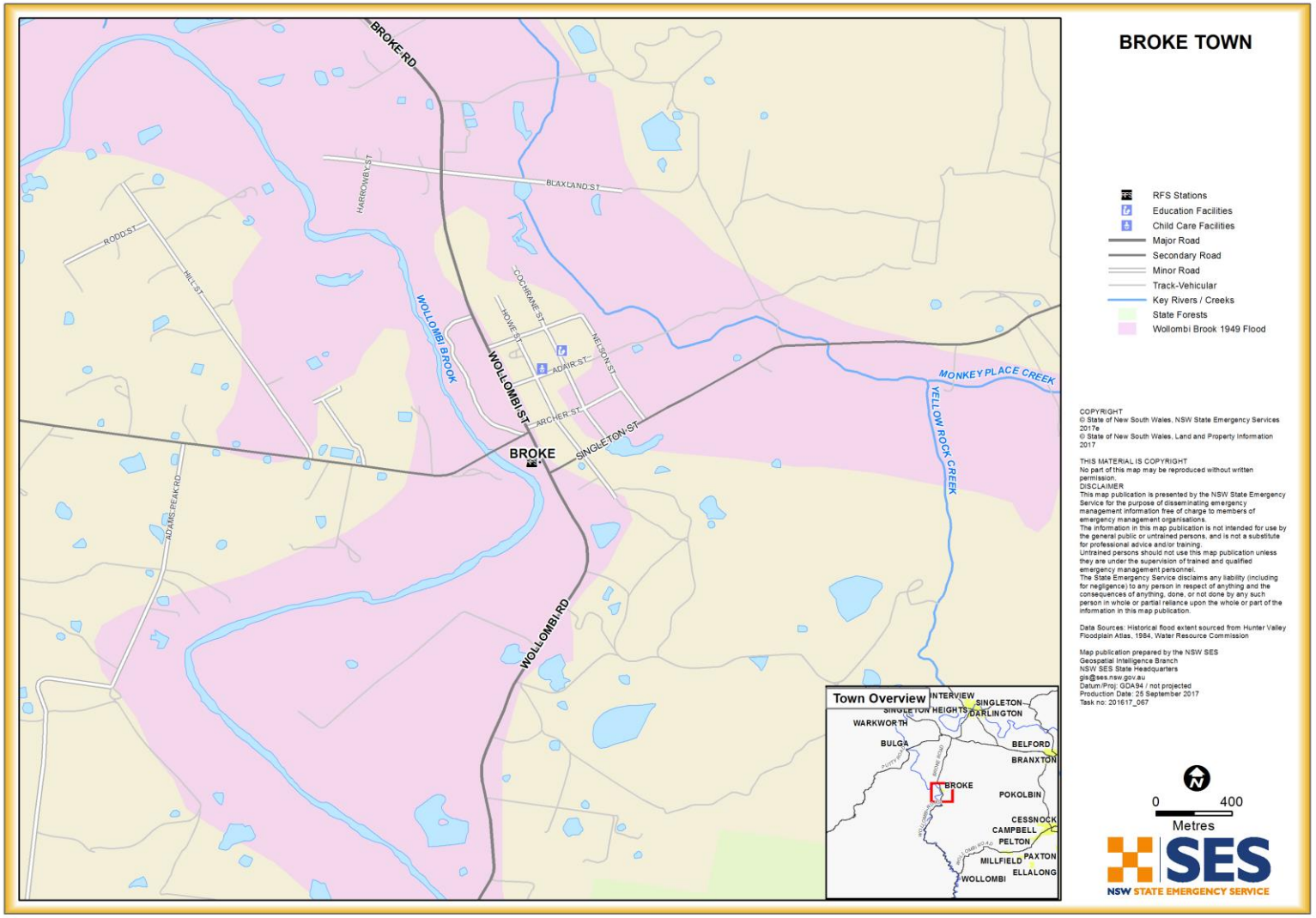
MAP 6: BULGA TOWN MAP



Data Sources: Historical flood extent sourced from Hunter Valley Floodplain Atlas, 1984, Water Resource Commission

Map publication prepared by the NSW SES
Geospatial Intelligence Branch
NSW SES State Headquarters
gis@ses.nsw.gov.au
Datum/Proj: GDA94 / not projected
Production Date: 28 September 2017
Task no: 201617_067

MAP 7: BROKE TOWN MAP



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1. **Water NSW.** *Glenbawn Dam DSEP.* 2015.

2. —. *Glennies Creek Dam DSEP.* s.l. : Water NSW, 2015.

3. **AGL Macquarie Pty Ltd.** *Plashett Dam DSEP.* 2014.

4. **WBM.** *Singleton Flood Study.* 2007.

5. **Singleton Council.** *Singleton Floodplain Risk Management Study and Plan.* 2012.

6. **Merrick, Simon.** *Local Controller - NSW SES Singleton Unit.* July 2017.

7. **NSW State Emergency Service.** *Flood Intelligence Card - Singleton Gauge.* 2015.

8. —. *Flood Intelligence Card - Bulga (210028).* 1999.

SES RESPONSE ARRANGEMENTS FOR SINGLETON

Volume 3 of the Singleton Local Flood Plan

CONTENTS

VERSION LIST

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

Description	Date
Singleton Local Flood Plan	November 2006

AMENDMENT LIST

Suggestions for amendments to this Volume should be forwarded to:

The Singleton Local Controller

NSW State Emergency Service

9-11 Queen Street

SINGLETON NSW 2330

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

Amendment Number	Description	Updated by	Date

SINGLETON: FLOOD WARNING SYSTEMS AND ARRANGEMENTS

Chapter 1 of Volume 3 (NSW SES Response Arrangements for Singleton) of the Singleton LGA Local Flood Plan

Last Update: February 2018

AUTHORISATION

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

Approved

NSW SES Hunter Region Controller

Date: 20/02/18

Tabled at LEMC

Date: 01/03/18

Document Issue: 3.1-07042014

CONTENTS

LIST OF TABLES

1. GAUGES MONITORED BY THE NSW SES SINGLETON LOCAL HEADQUARTERS

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

Gauge Name	Type	AWRC No.	Bureau Gauge No.	Stream	Flood level classification in metres			Special Reading Arrangements	Owner
					MIN	MOD	MAJ		
Sandy Hollow ‡	Automatic	210031	561008	Goulburn River	n/a	n/a	n/a		NSW Office of Water
Brickmans Bridge	Automatic	210135	561058	Wollombi Brook	n/a	n/a	n/a		NSW Office of Water
Bulga *‡	Automatic	210028	61347	Wollombi Brook	3.0	3.7	4.6		NSW Office of Water
Muswellbrook *‡	Automatic	210002	561005	Hunter River	7.2	8.0	10.0		NSW Office of Water
Denman *‡	Automatic	210055	561105	Hunter River	6.5	7.9	9.0		NSW Office of Water
Maison Dieu	Automatic	210128	561053	Hunter River	n/a	n/a	n/a		NSW Office of Water
Long Point	Automatic	210134	561057	Hunter River	n/a	n/a	n/a		NSW Office of Water
U/S Singleton	Automatic	210129	561054	Hunter river	n/a	n/a	n/a		NSW Office of Water
Singleton *‡	Automatic	210001	561010	Hunter River	10.0	11.5	13.0		NSW Office of Water

Notes: The Bureau of Meteorology provides flood warnings for the gauges marked with an asterisk (*).
NSW SES Local Flood Advices are provided for the gauges marked with a single cross (†).
The NSW SES holds a Flood Intelligence Card for the gauges marked with a double cross (‡).

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

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

Television Stations:

Station	Location
Prime	Newcastle
NBN	Newcastle

Radio Stations:

Station	Location	Frequency	Modulation
2UH (ABC)	Muswellbrook	1044	AM
1233 ABC	Newcastle West	1233	AM
2HD	Sandgate	1143	AM
Power FM	Muswellbrook	98.1	FM
2NUR FM	Callaghan	103.7	FM
NEW FM	Sandgate	105.3	FM
KO FM	Charlestown	102.9	FM
NX FM	Charlestown	106.9	FM

Newspapers:

Name	Location
Singleton Argus	Singleton
Newcastle Herald	Newcastle

Social Media:

Platform	Page / Feed	Administrator	Address / Details
Facebook	NSW SES – Singleton Unit	NSW SES Singleton Unit	@SESSingleton
Facebook	NSW SES – Hunter Region	NSW SES Hunter Region	@NSWSESHUR
Facebook	NSW SES	NSW SES Media and Communications	@NSW.SES
Twitter	NSW SES	NSW SES Media and Communications	/NSWSES

Other Agencies:

Name
Rural Fire Services – Hunter Valley Team
Whittingham Telephone Tree
Combo Lane Telephone Tree
Glenridding Telephone Tree
Hambleton Hill Telephone Tree

SINGLETON: NSW SES LOCALITY RESPONSE ARRANGEMENTS

Chapter 2 of Volume 3 (NSW SES Response Arrangements for Singleton) of the Singleton LGA Local Flood Plan

Last Update: February 2018

AUTHORISATION

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

Approved

NSW SES Hunter Region Controller

Date: 20/02/18

01/03/18

Tabled at LEMC

Date:

Document Issue: V3.2-07042014

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LIST OF TABLES

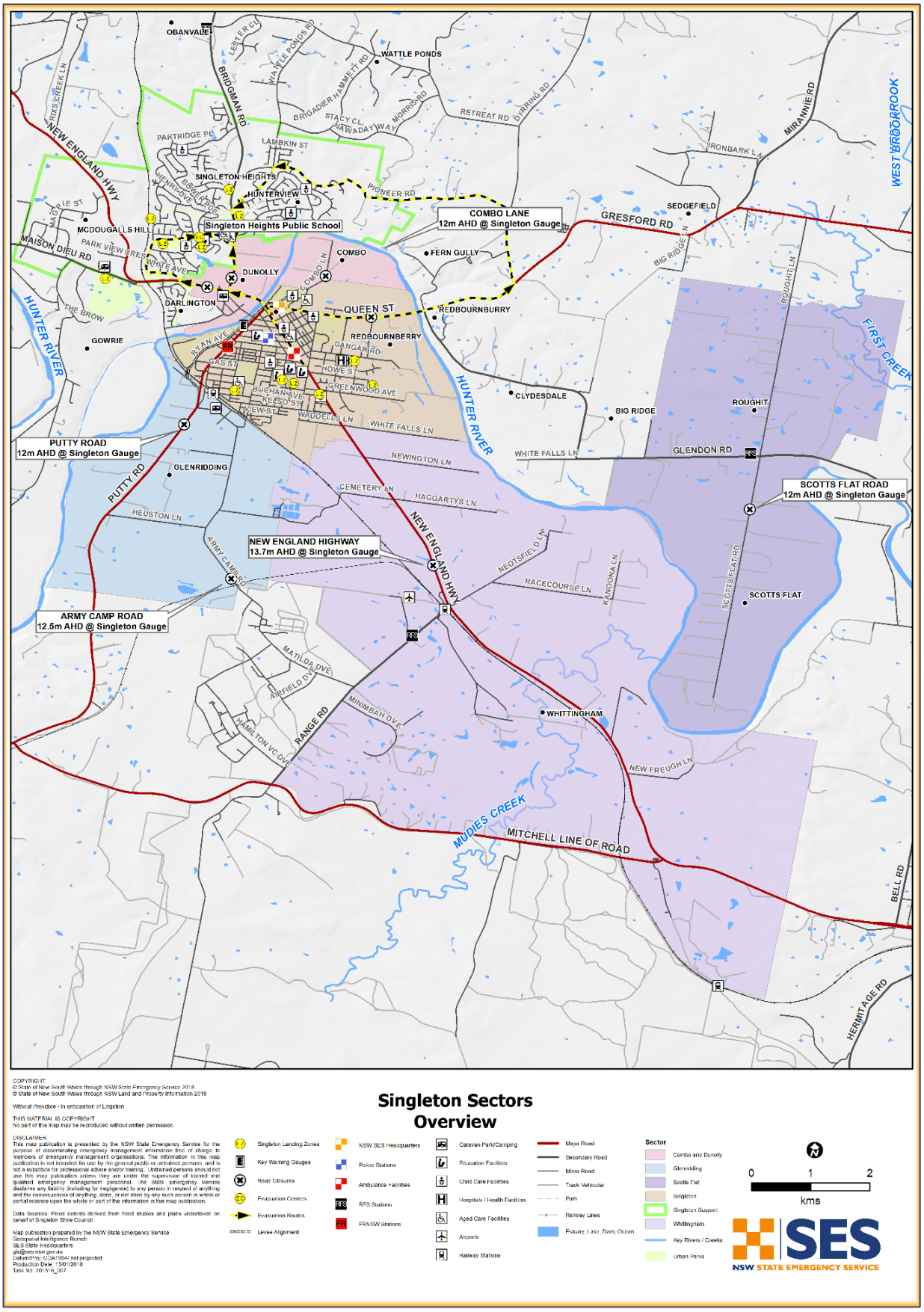
SECTOR OVERVIEW

Table 1: Overview of Sectors in the Singleton LGA.

Sector	Community	Sector Basis	Total properties	Properties potentially at risk
1	Singleton Township	Low Flood Island	2,350	Approximately 1,200 in 1% AEP; 2,100 in 0.5% AEP and 2,350 in PMF
2	Combo and Dunolly	Low Flood Island	Combo - 4 houses; Dunolly - 27 houses, I commercial property plus caravan park (54 sites)	Combo - 4 houses; Dunolly - 27 houses, I commercial property plus caravan park (54 sites)
3	Glenridding	Low Flood Island	55 houses, 5 commercial properties plus caravan park (50 sites)	55 houses, 5 commercial properties plus caravan park (50 sites)
4	Whittingham	Majority of sector is Low Flood Island. Range Road is classified as rising road area	Dangar Road -1 house; Greenwood Avenue – 2 houses; Whittingham – 29 houses	Dangar Road -1 house; Greenwood Avenue – 2 houses; Whittingham – 29 houses
5	Scotts Flat	Low Flood Island	10 to 12	10 to 12

Note: NSW SES will develop sector response arrangements for Bulga and Broke upon completion of the Floodplain Risk Management Process in these areas as there is insufficient data at this time.

MAP 1 – SECTOR OVERVIEW MAP



1. SINGLETON TOWNSHIP

1.1. SINGLETON TOWNSHIP RESPONSE ARRANGEMENTS

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

Sector Description **Sub-Sectors –** **1. Bravo** **2. Charlie** **3. Delta**	This sector includes Singleton Township, including the central business district and residential areas. It is broadly bounded by the Hunter River to the west, Queen Street to the north and by the Main Northern Railway line to the south. A 2,262m long levee along the western boundary provides protection to the majority of the sector up to the 1% AEP level (14.43m). The levee is not overtopped at this level, although backwater flooding has begun. The last evacuation route out of the division closes at 14.20m. For large scale evacuations the division is split into three sub-sectors for operational management (Alpha Sector is Combo and Dunolly evacuation areas): 1. Bravo – Bound by York Street (south), New England Highway, Main Northern Railway Line and Singleton levee 2. Charlie – Bound by Singleton levee, York Street (north) and New England Highway 3. Delta – Bound by Combo, New England Highway and Hunter River.
Hazard	Inundation as a result of riverine flooding from the Hunter River. Inundation is largely mitigated by the levee, however when this asset overtops, the majority of the township is inundated.
Flood Affect Classification	Low flood island.
At risk properties	▪ Expect 1,200 properties in 1% AEP; ▪ around 2,100 in 0.5% AEP and ▪ 2,350 in PMF **Total number of properties in Sector:** 2,350
Sector Control	**Control –** The NSW SES Incident Controller will control operations and evacuations in this sector. **Command –** The NSW SES Incident Controller will remain in command of all NSW SES assets in this sector. Agency Commanders will retain command of their own assets. **Coordination –** Where coordination of functional areas and support agencies is required, the Local Emergency Operations Controller will perform this role through the activation of and Emergency Operations Centre.

Key Warning Gauge Name

Name	AWRC No.	Min (m)	Mod (m)	Maj (m)
Singleton (Dunolly Bridge)	210001	10.0	11.5	13.0

General Strategy

- Provision of flood rescue assets to the sector to ensure an appropriate standard of coverage.
- Undertaking of specific actions in response to heights predicted by the Bureau, supported by Flood Intelligence and Action Cards.
- Timely issuing of Flood Bulletins that inform the community of likely impacts.
- Evacuation and registration of at risk population:
    - Self-evacuation to friends/family outside of the impact area. These community members should still register at the identified Assembly Area.

	○ Establishment of an Assembly Area/Evacuation Centre in consultation with the Welfare Services Functional Area Coordinator. • Establishment of temporary worksites such as helicopter landing zones and sandbag filling areas.
Key Risks / Consequences	• 14.07m – Backwater flooding of Singleton Township begins from the east. • 14.20m – The last evacuation route via Queen Street closes at Raworth Street. • 14.43m (1% AEP) – Depths of inundation through the town are generally less than a metre. Significant flow paths are established along Kelso Street and through the showground, linking up to the golf course through Gipps Street. Extensive backwater inundation of properties is occurring on the eastern side of George Street/Maitland Road (New England Highway). The Main Northern Railway line at the old low level rail crossing, between the new high level bridge and Singleton Railway Platform is overtopped. • 14.57m - Is the peak of the 1955 flood and the design level of the levee. • 14.71m (0.5% AEP) – Inundation depths are generally greater with between 1.5 and 2 metres along the flow paths. At this level only View Street, Barton Avenue, the Hospital and Ardersier Drive are flood free. • 14.87m – Is the lowest point on levee crest (Combo Lane area). • 15.91m (PMF) – Flood depths within Singleton generally exceed about 2 – 3 metres with only very small areas in View Street and part of Ardersier Drive flood free.
Information and Warnings	The NSW SES will issue the following relevant and contextualised information to the public: • NSW SES Bulletins ○ Flood Watch ○ Local Flood Advice ○ Flood Warning ○ Equipment and Livestock Warning ○ Media Releases • Evacuation Warning • Evacuation Order • Evacuation All Clear NSW SES Flood Bulletins will associate flood heights predicted by the Bureau with possible local consequences. The NSW SES will use the following methods of delivery to provide flood information to the public: • Sequenced door knocking • Emergency Alert • Standard Emergency Warning Signal (SEWS) • Media briefing

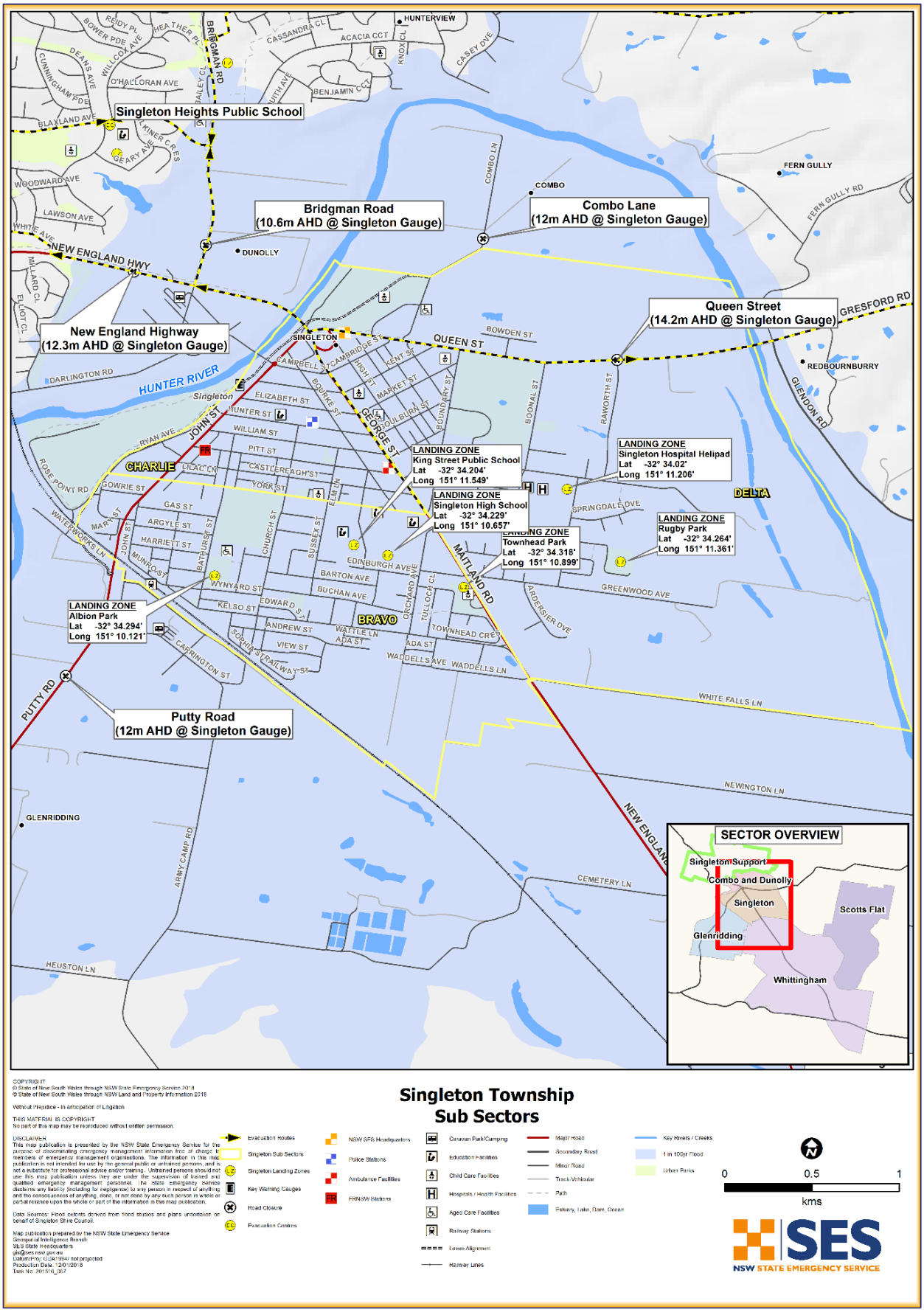
	• Interagency briefings – LEMC or EOC • Social Media • Radio All NSW SES Bulletins, Evacuation Warning and Orders will be posted to the following social media forums: • Facebook: NSW SES – Hunter Region • Facebook: NSW SES – Singleton Unit Bureau products, such as Flood Watches and Flood Warnings will include NSW SES safety advice. For more information refer to the Singleton Local Flood Plan Chapter 1 of Volume 3 – Flood Warning Systems and Arrangements.
Property Protection	**Assistance with property protection** NSW SES will monitor rising flood waters and provide the following assistance for flood-threatened properties where time and resources permit: • Relocation of personal property for at risk locations • Relocation of movable at-risk public assets • Protection of property through sandbagging • Monitoring the integrity of dwellings surrounded by flood waters Specific requests for assistance are received through the 132 500 centralised call-taking system. Property protection is limited due to the fast rising and depth of floodwater in this division. **Protection of essential infrastructure** The local telephone exchange is located in Ryan Avenue and is situated on the upper story of the building. The electricity substation is located in Orchard Avenue on raised ground approximately 0.5m above the roadway.
	Operation of flood mitigation measures: Singleton Council is responsible for closing the eight screw down type gates, if flooding is expected to reach 10.00m.
Evacuation Triggers	If this sector requires evacuation, 2,350 properties will require evacuation. • If height prediction is to exceed 12.00m then an Evacuation Warning should be considered • If height prediction is to reach/exceed 14.20m then an Evacuation Order is issued

Sequencing of evacuation	The Singleton Township Division is divided into three sectors i.e. Bravo, Charlie and Delta with the sequencing of evacuations to be carried out in that same order. NSW SES Singleton Unit maintains Flood Evacuation Boxes, that support the mass evacuation operation.
Evacuation Routes	Residents who wish to leave the local government area can do so by heading south on the New England Highway (A15) **until approximately 13.70m (Singleton Gauge),** when the highway is likely to close at Doughboy Hollow. Residents who evacuate to Singleton Heights can proceed via the New England Highway and White Avenue to Singleton Heights **up to 12.30m**. **After 12.30m and up to 14.20m,** evacuees proceed via Queen Street and over Redbournberry Bridge to Gresford Road, then Dyrring Road, Pioneer Road, Bridgeman Road and Blaxland Avenue to Singleton Heights
Evacuation Route Closure	• Putty Road, Glenridding closes around 12.00m • New England Highway (A15) northbound closes around 12.30m between Bridgeman Road and White Avenue • New England Highway (A15) southbound closes around 13.70m at Doughboy Hollow • Queen Street closes around 14.20m at Raworth Street. This is the last evacuation route out of Singleton Township.
Method of Evacuation	• Evacuations should reflect the principles outlined in the Evacuation Planning Handbook (Attorney-General's Department – Australian Emergency Management Institute) • At risk residents will be advised of Evacuation Warnings and Evacuation Orders via warnings issued and/or doorknocks from emergency services personnel advising them of the arrangements. • Self-evacuation by private transport to family/friends or an Evacuation Centre/Assembly Area is the preferred method of withdrawal. • An Evacuation Centre may be established as required. • Evacuation will be conducted by the NSW SES and can be supported by the NSW RFS, NSW Police Force, NSW Ambulance and/or the Transport Services Functional Area Coordinator where required. • NSW Police will be responsible for security of evacuated areas.
Evacuation Centre/Assembly Point	Evacuation Centres/Assembly Areas will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential locations include: ▪ Singleton Diggers, Dorsman Drive, Singleton Heights ▪ Singleton Heights Sports Centre, 105 Blaxland Avenue, Singleton Heights ▪ Singleton Heights Public School, 1 - 13 Dorsman Drive, Singleton Heights
Large scale evacuations	In large scale evacuations the Singleton Township Sector is divided into three subsectors: Bravo, Charlie and Delta.

	▪ **Sector Bravo** is the area south of York Street, west of Maitland Road/New England Highway, north of Main Northern Railway line and east of the Singleton levee. **This sector is split into 20 doorknocking areas.** ▪ **Sector Charlie** is the area bounded by the Singleton levee, York Street and George Street/New England Highway. **This sector is split into nine (9) doorknocking areas.** ▪ **Sector Delta** is the urban area to the east of George Street/Maitland Road/New England Highway. **This sector is split into 14 doorknocking areas.**
Rescue	NSW SES will ensure flood rescue assets are present in this sector. These assets will be managed by the NSW SES Incident Controller.
Resupply	There is no requirement for resupply operations to be undertaken in this sector. In unusually protracted flood operations a resupply strategy may be developed for rural areas surrounding this sector. Table 2, in Volume 2 provides information about isolated communities in the Singleton Shire area and potential periods of isolation. A flowchart illustrating the Resupply process is shown in Volume 1 of the Local Flood Plan, Attachment 1

Aircraft Management	Aircraft will be tasked by the NSW SES at a Region or State Level. **Helicopter Landing Points** Suitable Landing Points to support this sector are located at: • Singleton Heights Public School, Singleton Heights (flood free) • Alroy Oval, Singleton Heights (flood free) • Mines Rescue, Lachlan Avenue, Singleton Heights (flood free) • Allan Bull Reserve, Bridgman Road, Hunterview (flood free) • Baptist Church and Community Hall, Gardner Circuit, Singleton Heights (flood free) • Singleton Council Works Depot, Maison Dieu Road, Singleton • Singleton Hospital Helipad, Dangar Road and Carroll Street, Singleton • Ruby Park, Howe Street, Singleton • Singleton High School, York Street, Singleton • Albion Park, Wynyard Street, Singleton • Apex Park, Buchan Avenue, Singleton • King Street Public School, King Street, Singleton • Town Head Park, Maitland Road, Singleton Note that many of these landing points are inundated in extreme flooding. **Airports** Airports that service this sector and can provide helicopter refuelling include: ***Newcastle Airport*** Location: 32°47’42”S 151°50’04”E 1 Williamtown Drive, Williamtown Owners: Newcastle City Council, Port Stephens Council

1.2. SINGLETON TOWNSHIP MAP



1.3. EVACUATION PLANNING

NSW SES Singleton Unit have developed a comprehensive strategy for undertaking doorknocking operations in the Singleton Township. Subsectors are identified in 8 'boxes' stored at the NSW SES Singleton Unit with all of the information required to undertake evacuations of that subsector. Areas identified in each box are listed below.

There are a number of assumptions made in the development of this evacuation strategy:

1. The Bureau of Meteorology (the Bureau) will be able to provide accurate information to support the NSW SES with the decision to evacuate.
2. The Bureau will be able to make an accurate prediction regarding the peak height of the Hunter River at Singleton during a Major flood event 10 hours before the peak. The Bureau's Target Lead Time for provision of predictive warning for the Major Flooding at the Hunter River at Singleton is 24 hours.
3. The Hunter River's rate of rise between 10m and 14.2m could be from 9.75-18.5 hours at the Singleton Gauge.
4. The community of Singleton will be willing to evacuate when requested by the NSW SES.
5. The Singleton Township levee overtops at 14.87m at the Singleton Gauge.
6. The last evacuation route to leave Singleton Township will be submerged by floodwater at 14.20m at the Singleton Gauge.
7. The evacuation routes identified in this plan will be clear and serviceable at the time that evacuation is required.
8. NSW SES and supporting agencies will be able to provide sufficient personnel to effectively doorknock Singleton Township and the residents will have time to complete their evacuation from the time the Bureau makes a prediction that the levee will overtop to the time that the last evacuation route is cut by floodwater.

Areas covered by the NSW SES Flood Boxes

Box 1 (Glenridding/ Dunolly Sectors)

- Victoria Street, Glenridding – All addresses
- Crown Street, Glenridding – All addresses
- Putty Road, Glenridding – From the suburban fringe to the intersection with Carrington Street
- Carrington Street, Glenridding – All addresses
- Glenridding Road, Glenridding – All addresses
- Church Street, Glenridding – All addresses between Army Camp Road intersection and Victoria Street intersection
- Combo Lane, Combo – All addresses
- Darlington Road, Darlington – All addresses
- Dunolly Road, Dunolly – All addresses
- Bank Street, Dunolly – All addresses
- Phillip Street, Dunnolly – All addresses
- Newton Street, Dunnolly – All addresses between Dunnolly Bridge and Bridgman Road intersection
- Bridgman Road, Dunnolly – All addresses between Dunolly Road intersection and New England Highway intersection

Box 2 (Sub-sector Bravo)

- Andrew Street, Singleton – All addresses
- Ada Street, Singleton – All addresses
- Railway Street, Singleton – All addresses
- View Street, Singleton – All addresses
- Renshaw Avenue, Singleton – All addresses
- Rose Avenue, Singleton – All addresses
- Waddells Lane, Singleton – All addresses
- Ellen Avenue, Singleton – All addresses
- Waterhouse Avenue, Singleton – All addresses
- Townhead Crescent, Singleton – All addresses
- Bond Street, Singleton – All addresses
- Loder Avenue, Singleton – All addresses
- Deakin Avenue, Singleton – All addresses
- Tulloch Close, Singleton – All addresses
- Brittliffe Close, Singleton – All addresses
- Kelso Street, Singleton – All addresses

Box 3 (Sub-sector Delta)

- Kennedy Street, Singleton – All addresses
- Brown Close, Singleton – All addresses
- Kingston Close, Singleton – All addresses
- Boundary Street, Singleton – All addresses
- Gipp Street, Singleton – All addresses
- Percy Street, Singleton – All addresses
- Boonal Street, Singleton – All addresses
- Doyle Street, Singleton – All addresses
- Cameron Street, Singleton – All addresses
- Fitz Street, Singleton – All addresses
- Cranston Avenue, Singleton – All addresses
- Dangar Road, Singleton – All addresses
- Queen Street, Singleton – All addresses between New England Highway overpass and Redbournberry Bridge
- Raworth Street, Singleton – All addresses
- Cowley Street, Singleton – All addresses
- Bowden Street, Singleton – All addresses
- Patrick Street, Singleton – All addresses

Box 4 (Sub-sector Charlie)

- Elizabeth Street, Singleton – All addresses
- Hunter Street, Singleton – All addresses
- William Street, Singleton – All addresses
- George Street, Singleton – All addresses between the Queen Street overpass and Boundary Street intersection
- Pitt Street, Singleton – All addresses
- John Street, Singleton – All addresses between New England Highway overpass and Ryan Avenue intersection
- Macquarie Street, Singleton – All addresses
- Bourke Street, Singleton – All addresses

Box 5 (Sub-sector Delta)

- Campbell Street, Singleton – All addresses
- Cambridge Street, Singleton – All addresses
- Bishopgate Street, Singleton – All addresses
- Kent Street, Singleton – All addresses
- Market Street, Singleton – All addresses
- High Street, Singleton – All addresses
- Goulburn Street, Singleton – All addresses

Box 6 (Sub-sector Delta)

- Ardersier Drive, Singleton – All addresses
- Gaslight Place, Singleton – All addresses
- Searl Close, Singleton – All addresses
- Castlereach Street, Singleton – All addresses
- Springdale Drive, Singleton – All addresses
- Belah Place, Singleton – All addresses
- Riddles Road, Singleton – All addresses
- Myall Place, Singleton – All addresses
- Howe Street, Singleton – All addresses
- Carroll Street, Singleton – All addresses
- Brucedale Avenue, Singleton – All addresses
- Maitland Road / New England Highway, Singleton – All addresses between Boundary Street intersection and Waddells Lane intersection

- Brisbane Street, Singleton – All addresses
- Curtis Street, Singleton – All addresses

Box 7 (Sub-sector Delta)

- Mary Street, Singleton – All addresses
- Frederick Street, Singleton – All addresses
- Thomas Street, Singleton – All addresses
- Munro Lane, Singleton – All addresses
- Bathurst Street, Singleton – All addresses
- Gas Street, Singleton – All addresses
- Argyle Street, Singleton – All addresses
- York Street, Singleton – All addresses
- Dalton Avenue, Singleton – All addresses
- Greenwood Avenue, Singleton – All addresses
- Harriett Street, Singleton – All addresses
- Park Street, Singleton – All addresses
- Lesley Street, Singleton – All addresses
- Dudding Street, Singleton – All addresses
- Walter Street, Singleton – All addresses
- Bowman Street, Singleton – All addresses

Box 8 (Sub-sector Bravo)

- Buchan Avenue, Singleton – All addresses
- Albert Street, Singleton – All addresses
- Wynyard Street, Singleton – All addresses
- Rawcliffe Street, Singleton – All addresses
- Shaw Street, Singleton – All addresses
- Church Street, Singleton – All addresses
- Pelerin Avenue, Singleton – All addresses
- Collett Avenue, Singleton – All addresses
- Sussex Street, Singleton – All addresses
- King Street, Singleton – All addresses
- Edinburgh Avenue, Singleton – All addresses
- Sylvester Close, Singleton – All addresses
- Orchards Lane, Singleton – All addresses
- Flowerbank Close, Singleton – All addresses
- Barton Avenue, Singleton – All addresses
- Sturt Avenue, Singleton – All addresses

Box 9

Whittingham Streets will be added once developed.

Evacuation Timeline

The NSW SES identifies six time based factors in an evacuation timeline where a warning strategy is doorknocking:

- Mobilisation Time – The time it takes from the NSW SES making the decision to evacuate to the time where doorknocking operations commence.
- Warning Time – The time it takes for the NSW SES and supporting agencies to deliver the warning message.
- Travel Time – The time it takes for members of the affected community to move from the at risk area to an area of safety.
- Warning Acceptance Factor – The time it takes for members of the community to accept that they will need to evacuate.
- Warning Lag Factor – The time it may take community members to prepare to evacuate.
- Traffic Safety Factor – The time it may take to clear evacuation routes if they become blocked.

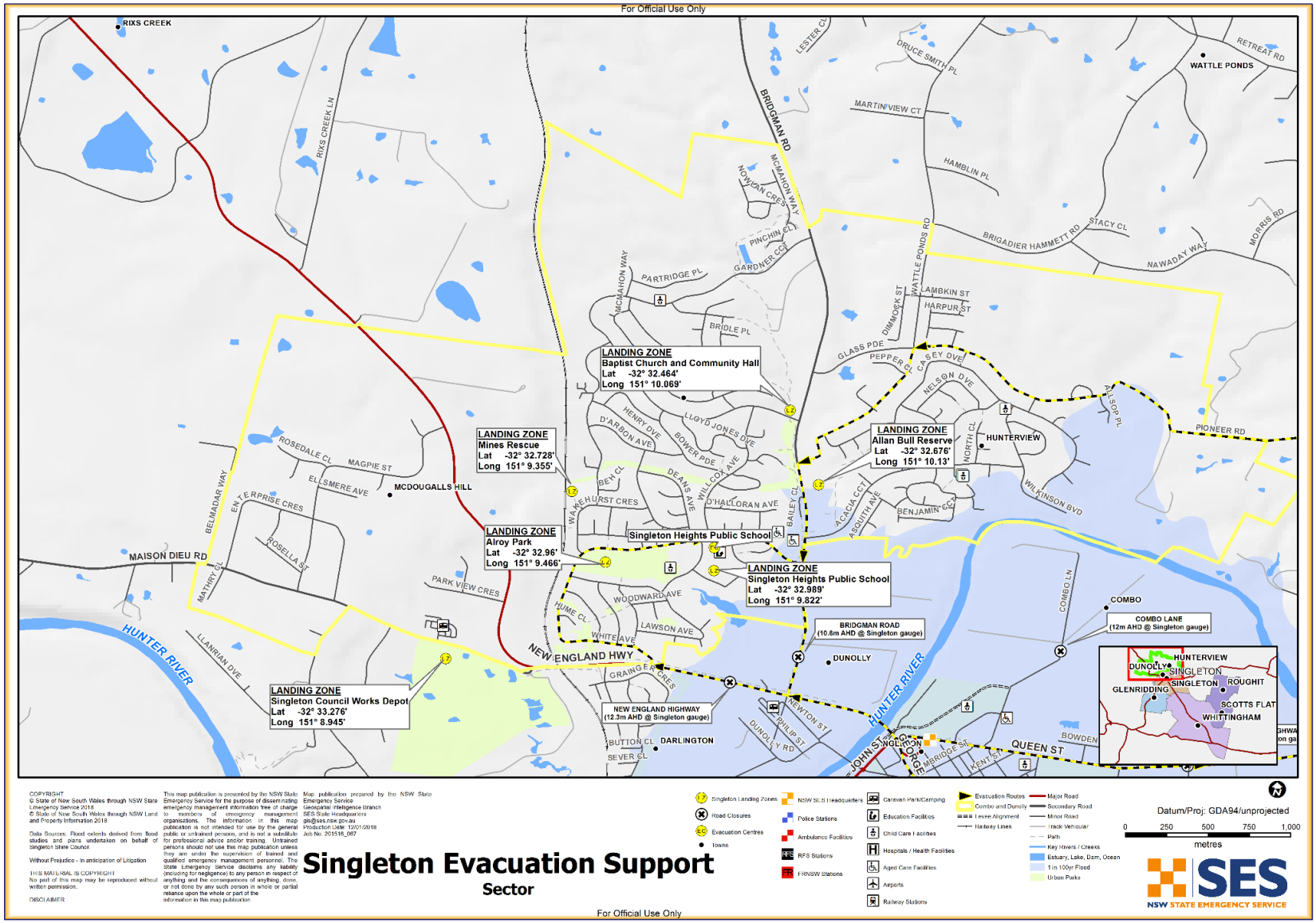
A reasonable timeframe to evacuate the Singleton Township is around 10 hours.

The key factors considered in determining this timeframe include:

- The Bureau's ability to accurately predict a Major flood peak on the Hunter River at the Singleton Gauge
- The NSW SES's ability to effectively communicate the appropriate warnings
- The evacuation routes ability to carry evacuating vehicles
- The community's time to accept and act on the warnings provided by the NSW SES.

Evacuation Timeline Rationale

Number of Teams	Time Required to doorknock 2350 properties*	Number of vehicles the evacuation route could handle in this time**	Percentage of capacity of road**	
5	42 hours	23,400 vehicles	16%	*Includes 3 hours Acceptance, Lag and Traffic Factor ** Based on 600 vehicles per hour - single lane starting at end of lag and acceptance values
10	23 hours	12,000 vehicles	31%	
15	16 hours	7,800 vehicles	48%	
20	13 hours	6,000 vehicles	62%	
25	11 hours	4,800 vehicles	78%	
30	10 hours	4,200 vehicles	89%	
35	9 hours	3,600 vehicles	104%	


For Official Use Only
RIXS CREEK
WATTLE PONDS
MCDOUGALLS HILL
MAISON DIEU RD
HUNTER RIVER
NEW ENGLAND HWY
DUNOLLY
COMBO
HUNTERVIEW
DARLINGTON
QUEEN ST
LANDING ZONE
Baptist Church and Community Hall
Lat -32° 32.464'
Long 151° 10.069'
LANDING ZONE
Mines Rescue
Lat -32° 32.728'
Long 151° 9.355'
LANDING ZONE
Allan Bull Reserve
Lat -32° 32.676'
Long 151° 10.13'
LANDING ZONE
Alroy Park
Lat -32° 32.96'
Long 151° 9.466'
Singleton Heights Public School
LANDING ZONE
Singleton Heights Public School
Lat -32° 32.989'
Long 151° 9.822'
LANDING ZONE
Singleton Council Works Depot
Lat -32° 33.276'
Long 151° 8.945'
BRIDGMAN ROAD
(10.6m AHD @ Singleton gauge)
COMBO LANE
(12m AHD @ Singleton gauge)
NEW ENGLAND HIGHWAY
(12.3m AHD @ Singleton gauge)
Singleton Evacuation Support
Sector
For Official Use Only
Datum/Proj: GDA94/unprojected
metres
SES
NSW STATE EMERGENCY SERVICE

2. COMBO AND DUNOLLY SECTOR

2.1. COMBO AND DUNOLLY RESPONSE ARRANGEMENTS

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

Sector Description	Combo and Dunolly are two separate areas. Combo is to the north of Queen Street, Singleton and comprises only one street (Combo Lane) that leads to Pigeon Point. Dunolly is bounded by the Hunter River to the south and east, the New England Highway to the north and the suburb of Darlington to the west. It includes the following streets: ▪ Bank Street ▪ Dunolly Road ▪ Newton Street ▪ Philip Street ▪ Bridgeman Road ▪ Darlington Road The sector is outside of the Singleton Levee and is subject to inundation around the 10% AEP flood level (12.94m). The sector is completely flood prone and likely to experience high hazard flooding. The residential area of Darlington is not flood affected.	
Hazard	Inundation as a result of riverine flooding from the Hunter River	
Flood Affect Classification	Combo (Pigeon Point) and Dunolly are low flood islands	
At risk properties	Combo - 4 houses; Dunolly - 27 houses, I commercial property plus caravan park (54 sites)	**Total number of properties within Sector/Community** Combo – 4 houses; Dunolly - 27 houses, I commercial property plus caravan park (54 sites)
Sector Control	**Control –** The NSW SES Incident Controller will control operations and evacuations in this sector. **Command –** The NSW SES Incident Controller will remain in command of all NSW SES assets in this sector. Agency Commanders will retain command of their own assets. **Coordination –** Where coordination of functional areas and support agencies is required, the Local Emergency Operations Controller will perform this role through the activation of and Emergency Operations Centre.	

Key Warning Gauge Name

Name	AWRC No.	Min (m)	Mod (m)	Maj (m)
Singleton (Dunolly Bridge)	210001	10.0	11.5	13.0

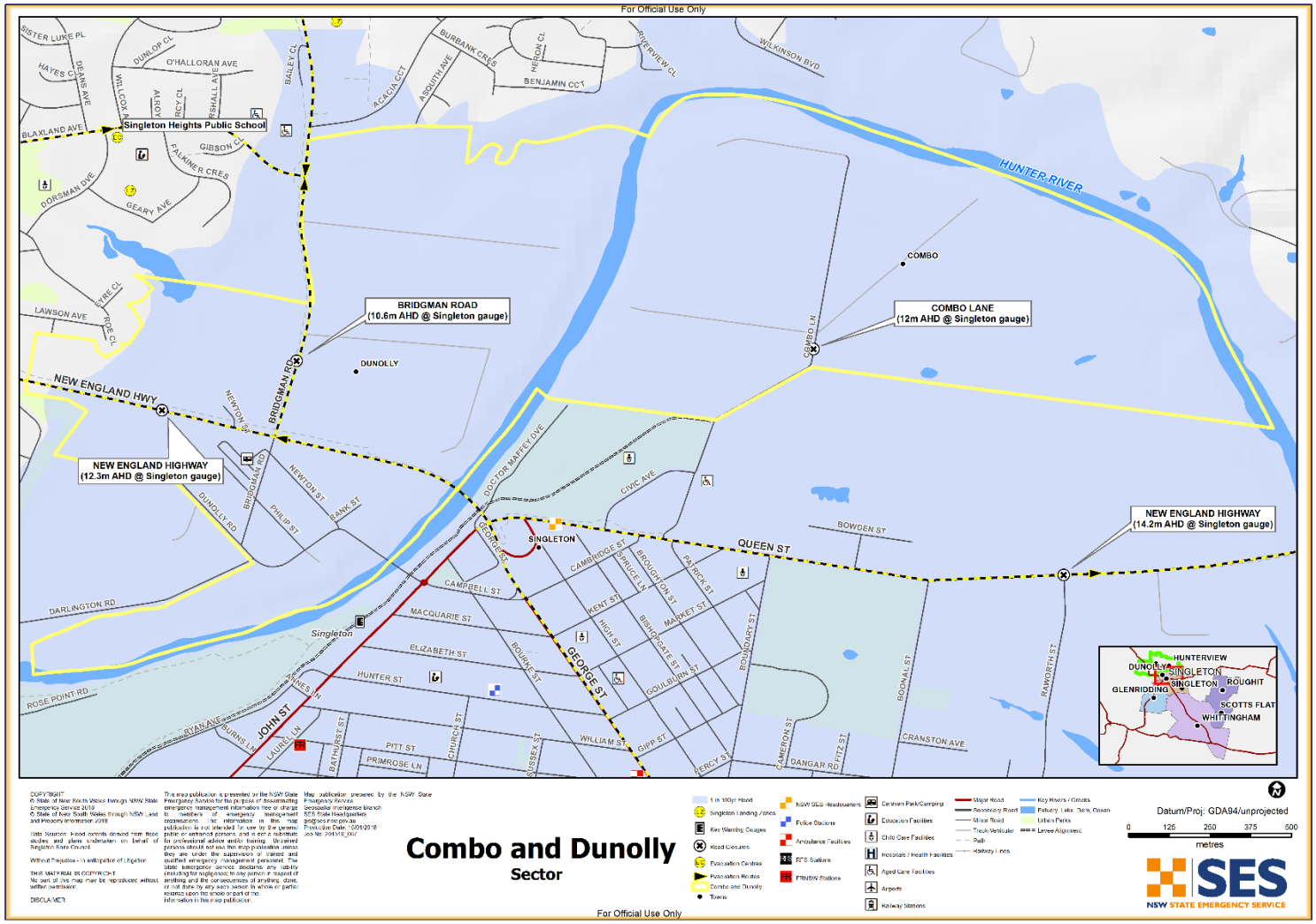
General Strategy	• Provision of flood rescue assets to the sector to ensure an appropriate standard of coverage. • Undertaking of specific actions in response to heights predicted by the Bureau, supported by Flood Intelligence and Action Cards. • Timely issuing of Flood Bulletins that inform the community of likely impacts.

	• Evacuation and registration of at risk population:
	  ○ Self-evacuation to friends/family outside of the impact area. These community members should still register at the identified Assembly Area.
	  ○ Establishment of an Assembly Area/Evacuation Centre in consultation with the Welfare Services Functional Area Coordinator.

Key Risks / Consequences	• 10.04m – Rural inundation begins around Combo and Dunolly • 11.80m – Dunolly and Bridgeman Roads (Old New England Highway) may have water on them and close to traffic. • 12.00m – Combo Lane to Pigeon Point closed isolating 3 residences. House floor levels above 14.57m (1955 flood level) • 13.00m – Floodwaters will begin to enter the residential area of Dunolly • 13.82m (5% AEP) – Almost the entire Dunolly floodplain is inundated • In an event approximating 14.50m (1% AEP) it is likely that the area would be inundated to depths of up to 2 metres.
Information and Warnings	A full description of strategies to communicate Information and Warnings is outlined in 1. Singleton Township. Specific to this sector: • Dunolly Subsector – Evacuation Warnings and Orders are communicated to the community though doorknocking. • Combo Subsector – A small telephone tree is also used.
Property Protection	**Assistance with property protection** NSW SES will monitor rising flood waters and provide the following assistance for flood-threatened properties where time and resources permit: • Relocation of personal property for at risk locations • Relocation of movable at-risk public assets • Protection of property through sandbagging • Monitoring the integrity of dwellings surrounded by flood waters Specific requests for assistance are received through the 132 500 centralised call-taking system. Property protection is limited due to the fast rising and depth of floodwater in this division. **Protection of essential infrastructure** Public infrastructure in this sector is limited to the local road network. **Operation of flood mitigation measures** There are no flood mitigations measures in this sector.
Evacuation Triggers	• If height prediction is to exceed 11.00m then an Evacuation Warning should be considered for Combo and Dunolly. • If height prediction is to reach/exceed 12.00m then an Evacuation Order is issued for Combo and Dunolly.

Sequencing of evacuation	Due to the size of the sector there is no specific sequencing of evacuation. Properties here are included in box 1 described above and evacuation has been estimated to take 1 hour.
Evacuation Routes	From Bridgeman Road to the New England Highway. **Up to 12.30m (Singleton Gauge)** proceed via the New England Highway and White Avenue to Singleton Heights. **After 12.30m and up to 14.20m** proceed via the New England Highway, John Street, Queen Street and over Redbournberry Bridge to Gresford Road, then Dyrring Road, Pioneer Road, Bridgeman Road and Blaxland Avenue to Singleton Heights
Evacuation Route Closure	New England Highway (north of Singleton Township) closes around 12.30m (Singleton Gauge). Alternative route is via Queen Street and over Redbournberry Bridge to Gresford Road, then Dyrring Road, Pioneer Road, Bridgeman Road and Blaxland Avenue to Singleton Heights The last evacuation route via Queens Street closes at 14.20m near Raworth Street.
Method of Evacuation	• Evacuations should reflect the principles outlined in the Evacuation Planning Handbook (Attorney-General's Department – Australian Emergency Management Institute) • At risk residents will be advised of Evacuation Warnings and Evacuation Orders via warnings issued and/or doorknocks from emergency services personnel advising them of the arrangements. • Self-evacuation by private transport to family/friends or an Evacuation Centre/Assembly Area is the preferred method of withdrawal. • An Evacuation Centre may be established as required. • Evacuation will be conducted by the NSW SES and can be supported by the NSW RFS and NSW Police Force, where required. • NSW Police will be responsible for security of evacuated areas.
Evacuation Centre/Assembly Point	Evacuation Centres/Assembly Areas will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential locations include: • Singleton Diggers, Dorsman Drive, Singleton Heights • Singleton Heights Sports Centre, 105 Blaxland Avenue, Singleton Heights • Singleton Heights Public School, 1 - 13 Dorsman Drive, Singleton Heights
Large scale evacuations	For the purposes of evacuation the sector is divided into two (2) doorknocking areas: • Combo Lane, Bank Street, Dunolly and Darlington Roads • Bridgeman Road, Newton and Philip Streets
Rescue	NSW SES will ensure flood rescue assets are present in this sector. These assets will be managed by the NSW SES Incident Controller.
Resupply	Resupply is unlikely to be required in this sector.
Aircraft Management	Aircraft Management is outlined in 1. Singleton Township.

2.2. COMBO AND DUNOLLY SECTOR MAP



3. GLENRIDDING SECTOR

3.1. GLENRIDDING RESPONSE ARRANGEMENTS

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

Sector Description	The Glenridding Sector is bounded by the Main Northern Railway Line to the north and by the Glenridding/Putty Roads to the west and includes the following streets: ▪ Carrington Street ▪ Glenridding Road ▪ Victoria Street ▪ Crown Street ▪ Church Street The sector is outside of the Singleton Levee and is subject to inundation around the 10% AEP flood level (12.94m). The sector is completely flood prone and likely to experience high hazard flooding.		
Hazard	Inundation as a result of riverine flooding from the Hunter River		
Flood Affect Classification	Low flood island		
At risk properties	55 houses, 5 commercial properties plus caravan park (50 sites)	**Total number of properties within Sector/Community**	55 houses, 5 commercial properties plus caravan park (50 sites)
Sector Control	**Control –** The NSW SES Incident Controller will control operations and evacuations in this sector. **Command –** The NSW SES Incident Controller will remain in command of all NSW SES assets in this sector. Agency Commanders will retain command of their own assets. **Coordination –** Where coordination of functional areas and support agencies is required, the Local Emergency Operations Controller will perform this role through the activation of and Emergency Operations Centre.		

Key Warning Gauge Name

Name	AWRC No.	Min (m)	Mod (m)	Maj (m)
Singleton (Dunolly Bridge)	210001	10.0	11.5	13.0

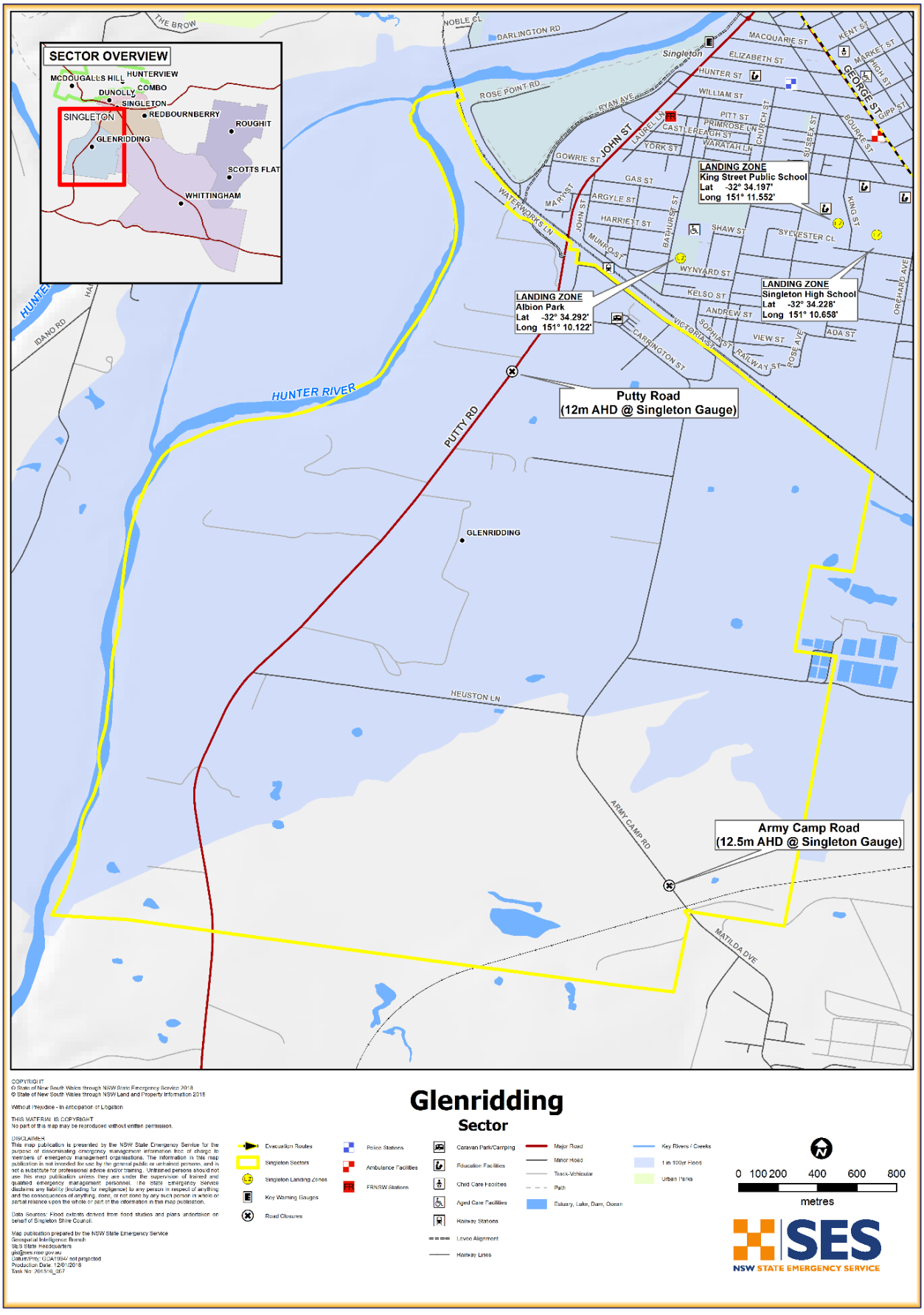
General Strategy

- Provision of flood rescue assets to the sector to ensure an appropriate standard of coverage.
- Undertaking of specific actions in response to heights predicted by the Bureau, supported by Flood Intelligence and Action Cards.
- Timely issuing of Flood Bulletins that inform the community of likely impacts.
- Evacuation and registration of at risk population:
    - Self-evacuation to friends/family outside of the impact area. These community members should still register at the identified Assembly Area.
    - Establishment of an Assembly Area/Evacuation Centre in consultation with the Welfare Services Functional Area Coordinator.

Key Risks / Consequences	▪ 10.04m – Rural inundation begins around Glenridding ▪ 13.00m – Floodwaters will begin to enter the residential area of Glenridding ▪ 13.82m (5% AEP) – Almost the entire Glenridding floodplain is inundated ▪ In an event approximating 14.50m (1% AEP) all properties are expected to be inundated above floor level.
Information and Warnings	A full description of strategies to communicate Information and Warnings is outlined in 1. Singleton Township. Specific to this sector: • Evacuation Warnings and Orders are communicated to the community though doorknocking. • A small telephone tree is also used to provide warnings.
Property Protection	**Assistance with property protection** NSW SES will monitor rising flood waters and provide the following assistance for flood-threatened properties where time and resources permit: • Relocation of personal property for at risk locations • Relocation of movable at-risk public assets • Protection of property through sandbagging • Monitoring the integrity of dwellings surrounded by flood waters Specific requests for assistance are received through the 132 500 centralised call-taking system. Property protection is limited due to the fast rising and depth of floodwater in this division. **Protection of essential infrastructure** The only public infrastructure in the sector is - ▪ the sewerage treatment works located off Army Camp Road, Glenridding ▪ Main Northern Railway Line. ▪ local road network **Operation of flood mitigation measures** There are no flood mitigations measures in this sector.
Evacuation Triggers	• If height prediction is to exceed 11.00m then an Evacuation Warning is issued • If height prediction is to reach/exceed 13.00m then an Evacuation Order is issued
Sequencing of evacuation	Due to the size of the sector there is no specific sequencing of evacuation. Information on Glenridding is contained in box 1 described above. Evacuation warnings are estimated to take 2 hours.
Evacuation Routes	From Carrington Street, Glenridding onto The Putty Road and over high level bridge into John Street Singleton. **Up to 12.30m (Singleton Gauge)** proceed via Campbell Street, the New England Highway and White Avenue to Singleton Heights. **After 12.30m and up to 14.20m** continue along John Street to Queen Street and over Redbournberry Bridge to Gresford Road, then Dyrring Road, Pioneer Road, Bridgeman Road and Blaxland Avenue to Singleton Heights

Evacuation Route Closure	New England Highway (north of Singleton Township) closes around 12.30m (Singleton Gauge). Alternative route is via Queen Street and over Redbournberry Bridge to Gresford Road, then Dyrring Road, Pioneer Road, Bridgeman Road and Blaxland Avenue to Singleton Heights The last evacuation route via Queens Street closes at 14.20m near Raworth Street.
Method of Evacuation	• Evacuations should reflect the principles outlined in the Evacuation Planning Handbook (Attorney-General's Department – Australian Emergency Management Institute) • At risk residents will be advised of Evacuation Warnings and Evacuation Orders via warnings issued and/or doorknocks from emergency services personnel advising them of the arrangements. • Self-evacuation by private transport to family/friends or an Evacuation Centre/Assembly Area is the preferred method of withdrawal. • An Evacuation Centre may be established as required. • Evacuation will be conducted by the NSW SES and can be supported by the NSW RFS and NSW Police Force where required. • NSW Police will be responsible for security of evacuated areas.
Evacuation Centre/Assembly Point	There is no evacuation centres located within this sector. Evacuation Centres/Assembly Areas will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential locations include: • Singleton Diggers, Dorsman Drive, Singleton Heights • Singleton Heights Sports Centre, 105 Blaxland Avenue, Singleton Heights • Singleton Heights Public School, 1 - 13 Dorsman Drive, Singleton Heights
Large scale evacuations	For the purposes of evacuation the sector is divided into two (2) doorknocking areas being- ▪ Victoria and Crown Streets ▪ Carrington Street, Glenridding and Putty Roads
Rescue	NSW SES will ensure flood rescue assets are present in this sector. These assets will be managed by the NSW SES Incident Controller.
Resupply	Resupply is unlikely to be required in this sector
Aircraft Management	Aircraft Management is outlined in 1. Singleton Township.

3.2. GLENRIDDING SECTOR MAP



4. WHITTINGHAM SECTOR

4.1. WHITTINGHAM RESPONSE ARRANGEMENTS

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

Sector Description	The Whittingham Sector is the area immediately south east of Singleton Township along the New England Highway. It is bound by the Main Northern Railway Line to the west and by the Hunter River to the east and includes the following streets: ▪ Far eastern ends of Dangar Road and Greenwood Avenue, Singleton ▪ White Falls Lane (west end) ▪ Newington Lane ▪ Haggarty Lane ▪ Cemetery Lane ▪ Neotsfield Lane ▪ Racecourse Lane ▪ Kanoona Lane ▪ Range Road. The sector is outside of the Singleton Levee and is subject to inundation around 11.50m. The sector is completely flood prone and likely to experience high hazard flooding.
Hazard	Inundation as a result of riverine flooding from the Hunter River
Flood Affect Classification	The majority of the sector is classified as low flood island. Range Road is a rising road access area.
At risk properties	**At Risk** Dangar Road -1 house; Greenwood Avenue – 2 houses; Whittingham – 29 houses **Total number of properties within Sector/Community** ▪ Dangar Road -1 house; ▪ Greenwood Avenue – 2 houses; ▪ Whittingham – 29 houses
Sector Control	**Control –** The NSW SES Incident Controller will control operations and evacuations in this sector. **Command –** The NSW SES Incident Controller will remain in command of all NSW SES assets in this sector. Agency Commanders will retain command of their own assets. **Coordination –** Where coordination of functional areas and support agencies is required, the Local Emergency Operations Controller will perform this role through the activation of and Emergency Operations Centre.

Key Warning Gauge Name	**Name**	**AWRC No.**	**Min (m)**	**Mod (m)**	**Maj (m)**
	Singleton (Dunolly Bridge)	210001	10.0	11.5	13.0

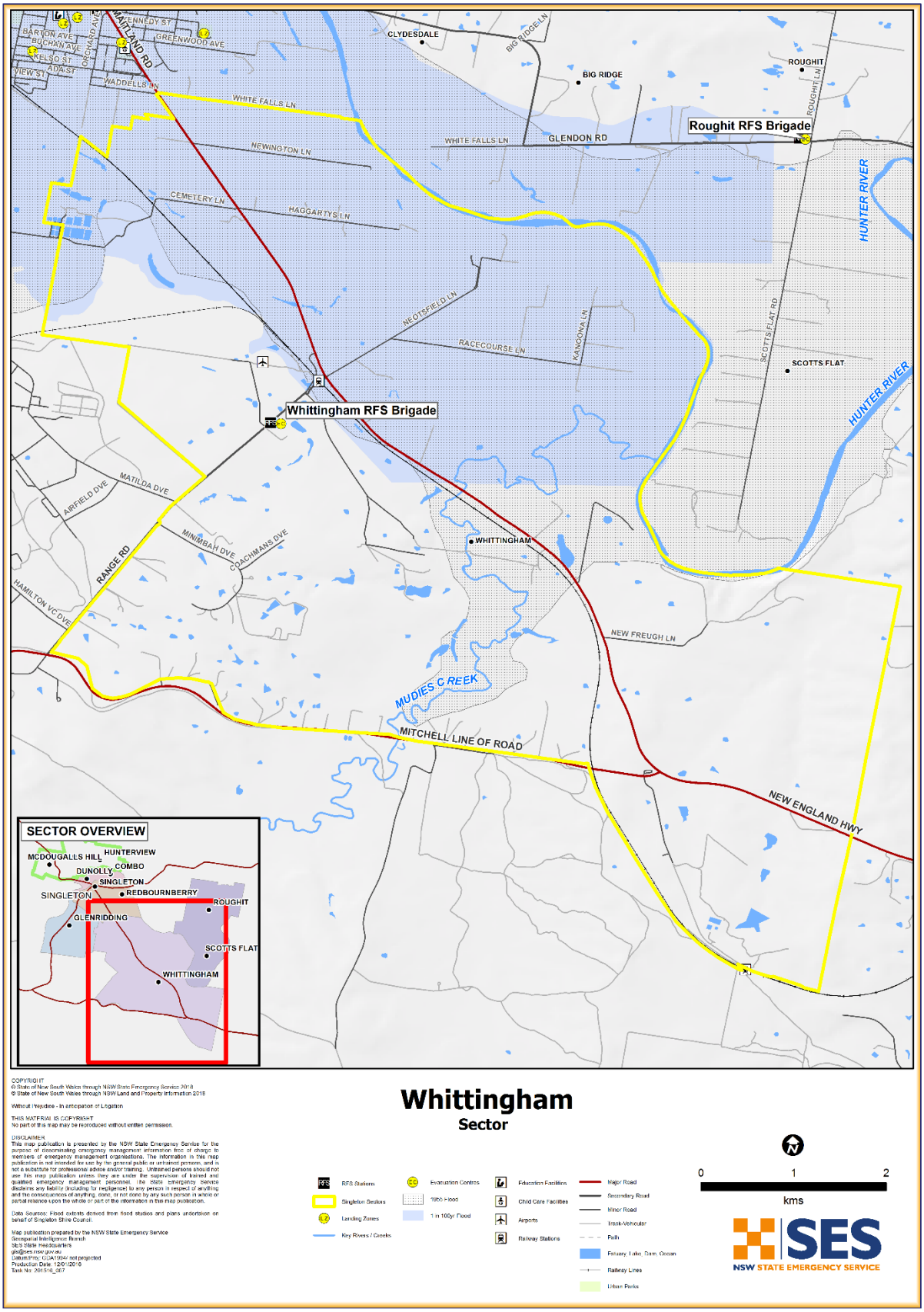
General Strategy	• Provision of flood rescue assets to the sector to ensure an appropriate standard of coverage. • Undertaking of specific actions in response to heights predicted by the Bureau,

	supported by Flood Intelligence and Action Cards.
	• Timely issuing of Flood Bulletins that inform the community of likely impacts.
	• Evacuation and registration of at risk population:
	  o Self-evacuation to friends/family outside of the impact area. These community members should still register at the identified Assembly Area.
	  o Establishment of an Assembly Area/Evacuation Centre in consultation with the Welfare Services Functional Area Coordinator.
	The Whittingham community have developed a Community Action Plan to support the evacuation of livestock to higher ground. This plan is available to the NSW SES.

Key Risks / Consequences	• 9.00m – Floodwater at eastern end of Haggartys Lane, Whittingham (June 2007). • 11.50 – Neotsfield and Kanoona Lanes, Whittingham closed with 16 residences isolated. Floodwater at eastern end of Racecourse Lane, Whittingham. • 12.00m – Racecourse Lane, Whittingham closed with about 5 residences isolated. • White Falls, Newington and Cemetery Lanes are all inundated but no height has been recorded for theses lanes. • 12.20m – Extensive flooding of farmlands around Singleton occurring at this height. • 13.70m – New England Highway (A15) likely to close at Doughboy Hollow.
Information and Warnings	A full description of strategies to communicate Information and Warnings is outlined in 1. Singleton Township. Specific to this sector: • Evacuation Warnings and Orders are communicated to the community though doorknocking. • A small telephone tree is also used to provide warnings.
Property Protection	**Assistance with property protection** NSW SES will monitor rising flood waters and provide the following assistance for flood-threatened properties where time and resources permit: • Relocation of personal property for at risk locations • Relocation of movable at-risk public assets • Protection of property through sandbagging • Monitoring the integrity of dwellings surrounded by flood waters Specific requests for assistance are received through the 132 500 centralised call-taking system. Property protection is limited due to the fast rising and depth of floodwater in this division. **Protection of essential infrastructure** The public infrastructure in this sector is - ▪ Main Northern Railway Line ▪ New England Highway and bridges ▪ Local road network **Operation of flood mitigation measures** There are no flood mitigations measures in this sector.

Evacuation Triggers	▪ If height prediction is to exceed 11.00m then an Evacuation Warning is issued ▪ If height prediction is to reach/exceed 12.00m then an Evacuation Order is issued
Sequencing of evacuation	Sequencing of evacuations will replicate the lane closures.
Evacuation Routes	Evacuation is via the local lane network in Whittingham, crossing the New England Highway (A15) and travelling to the Whittingham Public Hall in Range Road.
Evacuation Route Closure	• Neotsfield and Kanoona Lanes, Whittingham closes around 11.50m • Racecourse Lane, Whittingham closes around 12.00m
Method of Evacuation	• Residents in this sector have developed a Livestock Evacuation Plan that is enacted during times of flooding. • Evacuations should reflect the principles outlined in the Evacuation Planning Handbook (Attorney-General's Department – Australian Emergency Management Institute) • At risk residents will be advised of Evacuation Warnings and Evacuation Orders via warnings issued and/or doorknocks from emergency services personnel advising them of the arrangements. • Self-evacuation by private transport to family/friends or an Evacuation Centre/Assembly Area is the preferred method of withdrawal. • An Evacuation Centre may be established as required. • Evacuation will be conducted by the NSW SES and can be supported by the NSW RFS and NSW Police Force where required. • NSW Police will be responsible for security of evacuated areas.
Evacuation Centre/Assembly Point	Evacuation Centres/Assembly Areas will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential locations include: • The Whittingham Public Hall.
Rescue	NSW SES will ensure flood rescue assets are present in this sector. These assets will be managed by the NSW SES Incident Controller.
Resupply	Resupply is unlikely to be required in this sector
Aircraft Management	Aircraft Management is outlined in 1. Singleton Township.

4.2. WHITTINGHAM SECTOR MAP



5. SCOTTS FLAT SECTOR

5.1. SCOTTS FLAT RESPONSE ARRANGEMENTS

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

Sector Description	The Scotts Flat Sector is bounded by the Hunter River to the east, south and west and by Glendon Road to the north. Scotts Flat Road is the only street in the sector. The sector is outside of the Singleton Levee and is subject to inundation around 11.60m. The sector is completely flood prone and likely to experience high hazard flooding.		
Hazard	Inundation as a result of riverine flooding from the Hunter River		
Flood Affect Classification	Low flood island		
At risk properties	10 to 12	**Total number of properties in Sector**	10 to 12
Sector Control	**Control –** The NSW SES Incident Controller will control operations and evacuations in this sector. **Command –** The NSW SES Incident Controller will remain in command of all NSW SES assets in this sector. Agency Commanders will retain command of their own assets. **Coordination –** Where coordination of functional areas and support agencies is required, the Local Emergency Operations Controller will perform this role through the activation of and Emergency Operations Centre.		

Key Warning Gauge Name

Name	AWRC No.	Min (m)	Mod (m)	Maj (m)
Singleton (Dunolly Bridge)	210001	10.0	11.5	13.0

General Strategy

- Provision of flood rescue assets to the sector to ensure an appropriate standard of coverage.
- Undertaking of specific actions in response to heights predicted by the Bureau, supported by Flood Intelligence and Action Cards.
- Timely issuing of Flood Bulletins that inform the community of likely impacts.
- Evacuation and registration of at risk population:
    - Self-evacuation to friends/family outside of the impact area. These community members should still register at the identified Assembly Area.
    - Establishment of an Assembly Area/Evacuation Centre in consultation with the Welfare Services Functional Area Coordinator.

The Whittingham community have developed a Community Action Plan to support the evacuation of livestock to higher ground. This plan is available to the NSW SES.

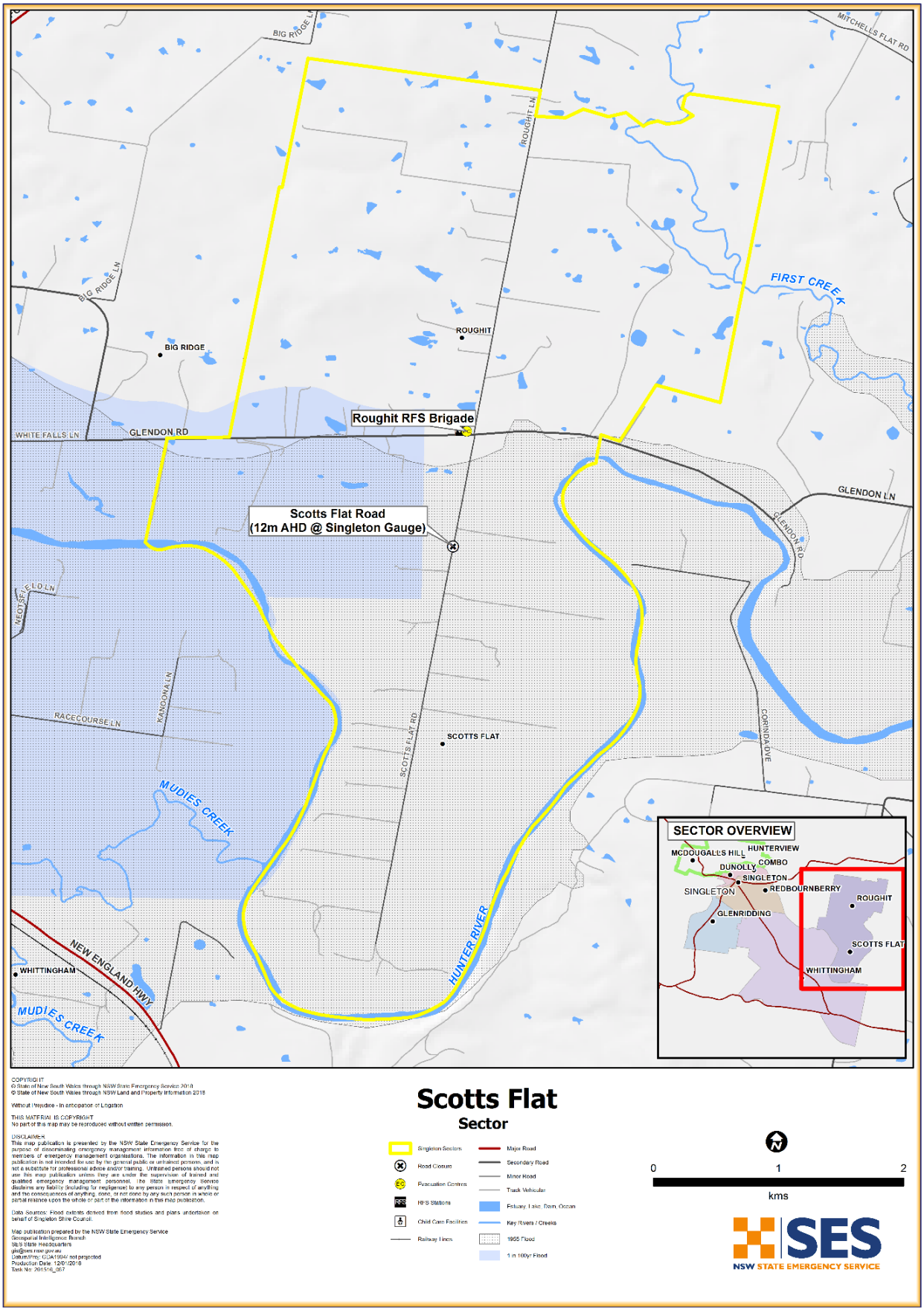
Key Risks / Consequences

- 11.60m – River breaks banks near 150 Scotts Flat Road.
- 12.00m – Scotts Flat Road closed, south of Pankhurst Bridge isolating 10 to 12 houses.
- 12.20m – Extensive flooding of farmlands around Singleton occurring at this height.

Information and Warnings	A full description of strategies to communicate Information and Warnings is outlined in 1. Singleton Township. Specific to this sector: • Evacuation Warnings and Orders are communicated to the community though doorknocking.
Property Protection	**Assistance with property protection** NSW SES will monitor rising flood waters and provide the following assistance for flood-threatened properties where time and resources permit: • Relocation of personal property for at risk locations • Relocation of movable at-risk public assets • Protection of property through sandbagging • Monitoring the integrity of dwellings surrounded by flood waters Specific requests for assistance are received through the 132 500 centralised call-taking system. Property protection is limited due to the fast rising and depth of floodwater in this division. **Protection of essential infrastructure** The Public infrastructure in this sector is limited to the local road and one bridge. **Operation of flood mitigation measures** There are no flood mitigation measures in this sector.
Evacuation Triggers	• If height prediction is to exceed 11.00m then an Evacuation Warning is issued • If height prediction is to reach/exceed 12.00m then an Evacuation Order is issued
Sequencing of evacuation	Properties with the greatest risk i.e. those closest to the river, are evacuated first.
Evacuation Routes	Scotts Flat Road to Glendon Road
Evacuation Route Closure	Scotts Flat Road closes at 12.00m
Method of Evacuation	• Evacuations should reflect the principles outlined in the Evacuation Planning Handbook (Attorney-General's Department – Australian Emergency Management Institute) • At risk residents will be advised of Evacuation Warnings and Evacuation Orders via warnings issued and/or doorknocks from emergency services personnel advising them of the arrangements. • Self-evacuation by private transport to family/friends or an Evacuation Centre/Assembly Area is the preferred method of withdrawal. • An Evacuation Centre may be established as required. • Evacuation will be conducted by the NSW SES and can be supported by the NSW RFS and NSW Police Force where required. • NSW Police will be responsible for security of evacuated areas.

Evacuation Centre/Assembly Point	Evacuation Centres/Assembly Areas will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential locations include: • Scotts Flat RFS Brigade Shed near the corner of Glendon Road and Roughit Lane.
Rescue	NSW SES will ensure flood rescue assets are present in this sector. These assets will be managed by the NSW SES Incident Controller.
Resupply	Resupply is unlikely to be required in this sector
Aircraft Management	Aircraft Management is outlined in 1. Singleton Township.

5.2. SCOTTS FLAT SECTOR MAP



SINGLETON: NSW SES
CARAVAN PARK ARRANGEMENTS

Chapter 3 of Volume 3 (NSW SES Response Arrangements for Singleton of the Singleton LGA Local Flood Plan

Last Update: February 2018

AUTHORISATION

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

Approved

NSW SES Hunter Region Controller

Date: 20/02/18

01/03/18

Tabled at LEMC Date:

Document Issue: V3.3-21102014

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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. Singleton Caracourt Caravan Park

b. Wyland Caravan Park

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

1.2 ADVISING PROCEDURES

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

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

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

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

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

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

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

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

1.3 EVACUATION OF OCCUPANTS AND RELOCATION OF MOVEABLE DWELLINGS

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

a. Isolate power to moveable dwellings.

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

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

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

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

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

1.3.3 Caravan park managers will:

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

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

c. Advise the NSW SES Incident Controller of:

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

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

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

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

1.4 RETURN OF OCCUPANTS AND MOVEABLE DWELLINGS

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

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

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

1.4.4 Where caravan parks have been inundated by floodwater, they may only be inhabited again once the appropriate authorities have confirmed that safe power, water and sewerage services are available and that key infrastructure is undamaged or has been repaired.

Table 1: Caravan Parks at risk of Inundation from Flooding.

Name/Location/Sector/Sites	Risk	Evacuation route	Evacuation route closure	Moveable dwelling relocation location	Evacuation centre
Singleton Caracourt Caravan Park Corner of Bridgeman Road and New England Highway (A15), Dunolly (Combo and Dunolly Sector) **54** sites consisting of ▪ **40** on-site cabins/caravans, ▪ **8** sites for tourist caravans and ▪ **6** sites for tents	Inundation will occur around 13.00m ▪ Evacuation Warning at 11.00m and ▪ Evacuation Order if flood level to reach or exceed 13.00m **Low flood island**	▪ **Up to 12.30m** via New England Highway and White Avenue to Singleton Heights. ▪ **After 12.30m and up to 14.20m** via New England Highway, John Street, Queen Street, over Redbournberry Bridge to Gresford Road, Dyrring Road, Pioneer Road, Bridgeman Road and Blaxland Avenue to Singleton Heights	New England Highway (A15) north closes around 12.30m. Alternative route via Queen Street closes around 14.20m	High ground in Singleton Heights	Likely Evacuation Centres at Singleton Heights are ▪ Singleton Diggers, Dorsman Drive ▪ Singleton Heights Sports Centre, 105 Blaxland Avenue ▪ Singleton Heights Public School, 1 - 13 Dorsman Drive
Wyland Caravan Park 20 Carrington Street, Glenridding (Glenridding Sector) 50 sites consisting of ▪ 12 cabins, ▪ 28 on-site caravans and ▪ 10 sites for tourist caravans	Inundation will occur around 13.00m ▪ Evacuation Warning at 11.00m and ▪ Evacuation Order if flood level to reach or exceed 13.00m **Low flood island.** **Ten permanent residents**	Putty/Glenridding Roads and high level bridge into John Street, then ▪ **Up to 12.30m** via Campbell Street, New England Highway and White Avenue to Singleton Heights. ▪ **After 12.30m and up to 14.20m** continue along John Street, Queen Street over Redbournberry Bridge to Gresford Road, Dyrring Road, Pioneer Road, Bridgeman Road and Blaxland Avenue to Singleton Heights	New England Highway (A15) north closes around 12.30m. Alternative route via Queen Street closes around 14.20m	High ground in Singleton Heights	Likely Evacuation Centres at Singleton Heights are ▪ Singleton Diggers, Dorsman Drive ▪ Singleton Heights Sports Centre, 105 Blaxland Avenue ▪ Singleton Heights Public School, 1 - 13 Dorsman Drive

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.