NSW STATE EMERGENCY SERVICE

Port Macquarie Hastings

Local Flood Emergency Sub Plan

FloodSafe

PORT MACQUARIE HASTINGS COUNCIL

NSW STATE EMERGENCY SERVICE

PORT MACQUARIE HASTINGS FLOOD EMERGENCY SUB PLAN

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

Volume 1 of the Port Macquarie Hastings Council Flood Emergency Sub Plan

Endorsed by the Port Macquarie Hastings Council Local Emergency Management Committee

Endorsed Date 30 March 2023

AUTHORISATION

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

Authorised

Signature: _____

NSW SES Local/Unit Commander

Print Name: Carolyn Dobson

Date: 17/05/2023

Endorsed

Signature: _____

Chair, Local Emergency Management Committee

Print Name: Robert Fish

Date: 30/03/2023

VERSION HISTORY

Version Number	Description	Date
	Port Macquarie-Hastings Local Flood Plan	Nov 2013
	Port Macquarie-Hastings Local Flood Plan (Amendment)	August 2009
	Camden Haven Local Flood Plan	October 2004

AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to:

Manager Emergency Planning
NSW State Emergency Service
PO Box 6126, Wollongong NSW 2500
nswses.communityplanning@ses.nsw.gov.au

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

Amendment Number	Description	Updated by	Date
4.4.1.e	Removed - Port Macquarie Hastings Council has developed and maintains a flash flood warning system for «Community_Area».	NSW SES	9/8/2024
5.4.1.b	Removed - Councils will use the following established flash flood warning system for <Insert Community Name> to provide warnings and information to NSW SES, key stakeholders and the community. <flashfloodsystems>	NSW SES	9/8/2024
5.4.1.c	Replaced NSW SES All clear with “Emergency Warning”	NSW SES	9/8/2024
5.14.1c, 6.2.2.c, 6.2.2.f, 10. Appendix B	Update Resilience NSW to NSW Reconstruction Authority	NSW SES	9/8/2024
5.6.1.e	Replace «Ferry_Operator_Pg_14_d» with “Council contractors coordinate the operation of two vehicular ferries: Hibbard Ferry and Settlement Point Ferry.”	NSW SES	9/8/2024
9. Appendix A	Updated LGA map	NSW SES	9/8/2024
11. Appendix C	Removed rows that had no information	NSW SES	9/8/2024

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 Port Macquarie Hastings Council Local Government Area (LGA).

1.2 AUTHORITY

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

1.2.2 This plan is a sub plan to the Port Macquarie Hastings Council Local Emergency Management Plan (EMPLAN) and is endorsed by the Port Macquarie Hastings 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 Port Macquarie Hastings Council Emergency Management Plan (EMPLAN) is active at all times in anticipation of the need to coordinate support and resources requested by combat agencies, including the NSW State Emergency Service (NSW SES).

1.4 SCOPE

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

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

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

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

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

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

1.4.7 This plan outlines the local level arrangements for the management of downstream consequences of flooding due to dam failure, however it does not cover the management of flooding of an underground mine by inrush or other cause, which should be covered by the Mine Emergency Sub Plan for the respective mine.

1.5 GOALS

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

a. Protection and preservation of life.

b. Establishment and operation of flood warning systems.

c. Issuing of community information and community warnings.

d. Coordination of evacuation and welfare of affected communities.

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

f. Protection of residential property.

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

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

1.6 KEY PRINCIPLES

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

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

1.7 ROLES AND RESPONSIBILITIES

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

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

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

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

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

1.8 PLAN MAINTENANCE AND REVIEW

1.8.1 NSW SES will maintain the currency of this plan by:

a. Ensuring that all supporting emergency services and functional areas, organisations and officers mentioned in it are aware of their roles and responsibilities.

b. Conduct a minimum of one exercise every five years or within two years of the plan being reviewed.

c. Reviewing the contents of the plan:

- When there are changes which alter agreed plan arrangements.
- When changes to land use strategic plans and policies increase the population at risk.
- After a flood including recommendations from after action reviews, reports, or inquiries.
- As determined by the NSW SES Commissioner.

d. The plan is to be reviewed no less frequently than every five years or after a significant flood event.

1.9 SUPPLEMENTARY DOCUMENTS

1.9.1 Supplementary and supporting material of the Local Flood Emergency Sub Plan is maintained on the NSW SES website at: https://www.ses.nsw.gov.au/about-us/flood-storm-and-tsunami-plans/ including:

a. Flood Plan Glossary.

b. NSW SES Dam Failure Notification Flowchart.

c. NSW SES Resupply Flowchart.

2 OVERVIEW OF NSW FLOOD HAZARD AND RISK

2.1 THE FLOOD THREAT

2.1.1 NSW SES maintains information on the nature of flooding and effects of flooding on the community in the Port Macquarie Hastings Council LGA. This is outlined in Volume 2 – Hazard and Risk in Port Macquarie Hastings Council.

2.1.2 Declared dams in or upstream of the Port Macquarie Hastings Council Local Government Area.

Dam Name	Owner	High Risk Dam
Cowarra Dam	Port Macquarie Hastings Council	No
Port Macquarie Dam	Port Macquarie Hastings Council	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 Port Macquarie Hastings Council LGA are also listed in Volume 3 of this plan.

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

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

e. 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. NSW SES will collate, assess and disseminate flood information to the community.

c. Collaborate with individuals, businesses, government agencies and communities when developing flood intelligence, preparedness and response information.

d. Plan for floods collaboratively with communities through community and stakeholder participation and engagement.

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

5 RESPONSE

5.1 INTRODUCTION

5.1.1 Flood response operations will begin:

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

b. On the receipt of a Bureau Flood Watch or Flood Warning; or

c. On receipt warnings for flash flood; or

d. On receipt of a dam failure alert; or

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

5.2 INCIDENT MANAGEMENT ARRANGEMENTS

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

Actions:

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

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

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

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

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

Actions:

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

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

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

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

Actions:

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

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

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

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

Actions:

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

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

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

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

5.3 USE OF INFORMATION AND COLLECTION OF INTELLIGENCE

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

Actions:

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

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

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

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

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

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

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

5.4 PROVISION OF INFORMATION AND WARNINGS TO THE COMMUNITY

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

Actions:

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

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

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

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

- Advice;

- Watch and Act; and
- Emergency Warning.

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

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

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

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

- Local Government Council websites.
- Transport for NSW 'Live Traffic' website: www.livetraffic.com or 'Transport 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. Port Macquarie Hastings Council will coordinate the closure and reopening of council managed roads once inspections have been carried out by the relevant authority.

b. Transport for NSW will coordinate the closure and reopening of the state road network.

c. NSW Police Force may close and re-open roads but will normally only do so (if the Port Macquarie Hastings 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.

e. Council contractors coordinate the operation of two vehicular ferries: Hibbard Ferry and Settlement Point Ferry.

5.6.2 **Strategy**: Coordinate traffic control measures in flood affected areas.

a. The NSW SES Incident Controller may direct the imposition of traffic control measures into flood affected areas in accordance with the provisions of the *State Emergency Service Act, 1989* and the *State Emergency Rescue Management Act, 1989.*

b. The NSW SES Incident Controller may request the Local Emergency Operations Controller provide suitable personnel to assist with traffic coordination.

5.7 PROTECTION OF ESSENTIAL SERVICES

5.7.1 Arrangements for the protection of local assets are outlined in Volume 3 of this NSW SES local Flood Emergency Sub Plan. In addition, Local and Region EMPLAN's contain infrastructure inventories.

5.7.2 **Strategy**: Minimise disruption to the community by ensuring protection of infrastructure and supply of essential energy, utility services and lifelines.

Actions:

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

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

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

d. The Engineering Services Functional Area is to:

- Coordinate the assessment and restoration of critical public buildings for example hospitals.
- Assessment and operation of flood protection levees.
- Protection of property.
- Construction and repair of levees.
- Dam safety assessment and dam stability.
- Water supply and sewerage operations.
- Other critical infrastructure.

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

5.8 EVACUATION

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

5.8.2 **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. NSW Police Force will coordinate the provision of overall security for evacuated areas.

5.8.3 **Strategy**: Evacuate people pre-emptively from dangerous or potentially dangerous places and or locations created by the flood hazard to safe locations away from the hazard.

a. NSW SES will control and coordinate the evacuation of affected communities.

b. The NSW SES Commissioner (or delegate) will warn communities to prepare for a possible evacuation, where circumstances allow such lead time.

c. The NSW SES Commissioner (or delegate) will order any necessary evacuations and provide information to the community about when and how to evacuate.

d. Support to evacuation operations may be requested from other emergency services and supporting agencies using arrangements in the local EMPLAN and supporting plans.

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

f. School administration offices (Government and Private) will coordinate the evacuation of schools in consultation with NSW SES and Welfare Services, if not already closed.

g. Caravan Park proprietors will inform the NSW SES Incident Controller when caravan park evacuations have been completed.

h. People who are reluctant or refuse to comply with any Emergency Warning will be referred to NSW Police Force.

5.9 EVACUEE MANAGEMENT AND WELFARE

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

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

Actions:

a. NSW SES will provide initial welfare for evacuees where required but will hand the responsibility over to the Welfare Services Functional Area as soon as possible. NSW SES will brief the Welfare Services Functional Area at the earliest opportunity regarding the level of assistance required.

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

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

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

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

f. Where the expected remaining number of evacuees and the duration of evacuation is assessed to be beyond the capability and capacity of the

established evacuation centre arrangements the SEOCON may establish Major Evacuation Centres or Mass Care facilities.

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

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

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

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

Actions:

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

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

5.10 FLOOD RESCUE

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

Actions:

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

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

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

5.11 RESUPPLY

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

Actions:

a. NSW SES will advise communities and businesses if flood predictions indicate that areas are likely to become isolated, and indicative timeframes where possible.

b. Retailers should be advised to ensure sufficient stock is available for the duration of the flood.

c. When isolation occurs, NSW SES will establish loading points where retailers can instruct suppliers to deliver goods.

d. NSW SES will endeavour to support the delivery of mail to isolated communities but may not be able to do so according to normal Australia Post timetables.

e. NSW SES will assist hospitals with resupply of linen and other consumables where able.

f. NSW SES may request resupply assistance from supporting agencies.

g. NSW SES may conduct resupply operations as per the designated resupply plan for the event.

h. Where additional supplies are required Engineering Services Functional Area be requested to coordinate the supply of goods and services in response to and recovery from the emergency.

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

Actions:

a. When requested, NSW SES will establish a resupply schedule and coordinate the resupply for isolated rural properties.

b. NSW SES will provide local suppliers with designated loading points. Resupply items are to be packaged by the supplier.

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

5.12 RETURN

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

Actions:

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

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

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

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

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

5.13 END OF RESPONSE OPERATIONS

5.13.1 **Strategy**: Conclude response operations.

Actions:

a. Response operations will conclude when:

- There is a reduced likelihood of additional flooding within the Area of Operation and flood waters have receded.
- All requests for assistance related to the flood have been completed.
- The need for warning and evacuation no longer 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 Port Macquarie Hastings 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 Port Macquarie Hastings Council Council(s) on post flood data collection analysis including review of flood intelligence where necessary.

6 RECOVERY OPERATIONS

6.1 INTRODUCTION

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

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

6.2 NSW SES RECOVERY ROLE

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

6.2.2 **Actions**:

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

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

c. NSW SES will provide information to 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 NSW Reconstruction Authority.

7 ABBREVIATIONS

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

8 GLOSSARY

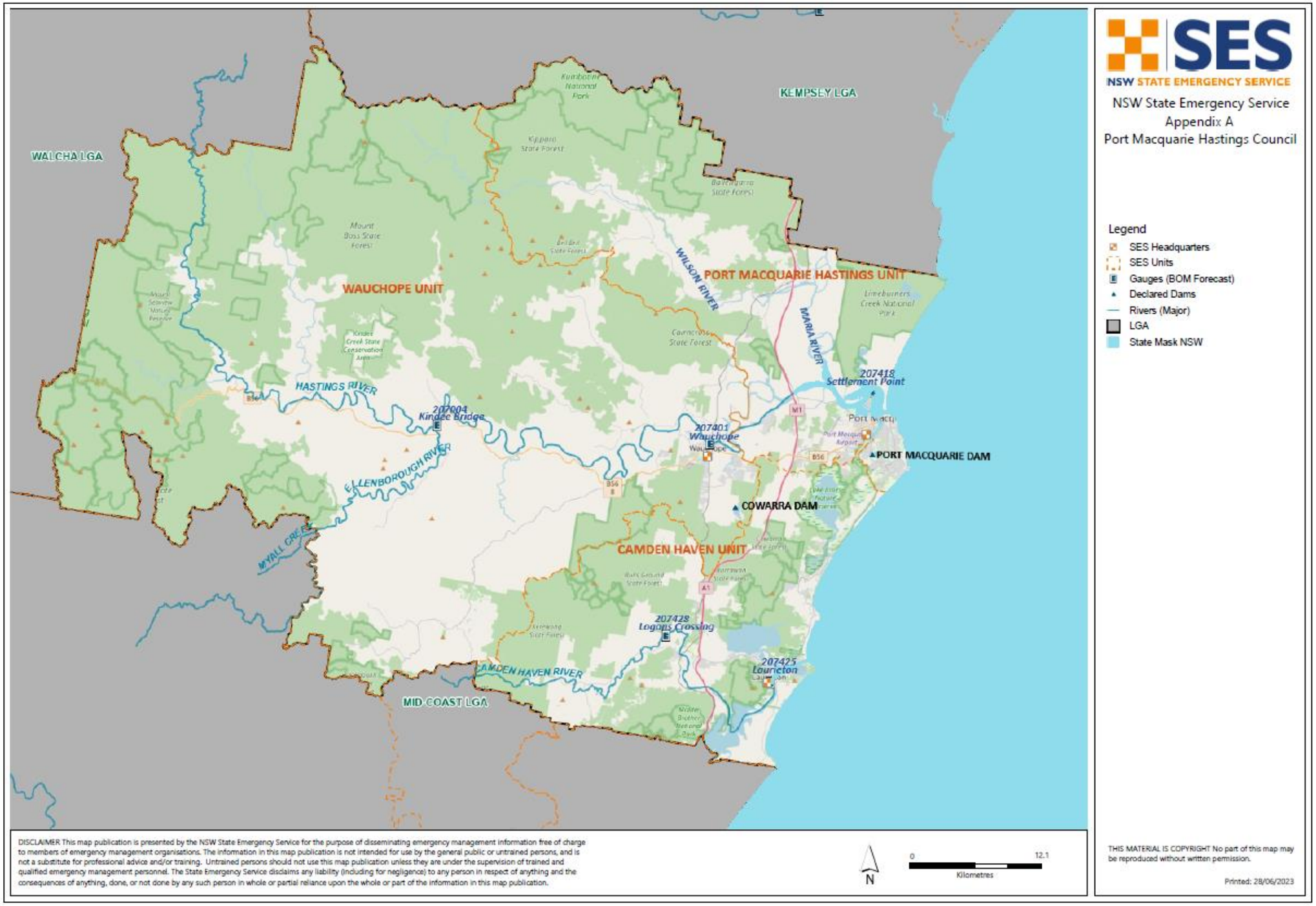
Common emergency service terminology can be found within the Australian Disaster Resilience Glossary.

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 Port Macquarie Hastings Council Area



10 Appendix B – Roles and Responsibilities

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

AGENCY	RESPONSIBILITIES
Agriculture and Animal Services Functional Area	The roles and responsibilities for Agriculture and Animal Services are outlined in the Agriculture and Animal Services Supporting Plan and NSW State Flood Plan.
Australian Government Bureau of Meteorology	The roles and responsibilities for the Australian Government Bureau of Meteorology are outlined in the NSW State Flood Plan.
Port Macquarie Hastings 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 Dam Emergency Plans for the Port Macquarie Hastings Council dams and provide copies to NSW SES. • Provide information on the consequences of dam failure to NSW SES for incorporation into planning and flood intelligence. • Coordinate the development of warning services for catchments prone to flash flooding (small catchments), where appropriate. • Maintain council-owned flood warning networks and flood mitigation works. • Participate in NSW SES-led flood emergency planning meetings, to assist in the preparation of Flood Sub Plans. • Maintain a plant and equipment resource list for the council area. • Contribute to community engagement activities. **Response** • Subject to the availability of council resources, assist NSW SES with flood operations including:

AGENCY	RESPONSIBILITIES
	– Traffic management on council managed roads. – Provision of assistance to NSW SES (plant, equipment and personnel where able and requested). – Property protection tasks including sandbagging. – Assist with the removal of caravans from caravan parks. – Warning and/or evacuation of residents and other people in flood liable areas. – Provision of back-up radio communications. – Resupply of isolated properties. – Technical advice on the impacts of flooding. – Close and reopen council roads (and other roads nominated by agreement with Transport for NSW) and advise NSW SES, NSW Police Force and people who contact the council for road information. – Assist NSW SES to provide filled sandbags and filling facilities to residents and business in areas which flooding is expected. • Assist with making facilities available for domestic pets and companion animals of evacuees during evacuations. • Operate flood mitigation works including critical structures such as detention basins and levees and advise NSW SES regarding their operation. • Manage and protect council-owned infrastructure facilities during floods. • Provide advice to NSW SES and the Health Services Functional Area during floods about key council managed infrastructure such as sewerage treatment and water supply. • Advise the Environmental Protection Authority of any sewerage overflow caused by flooding. • Work with NSW SES and NSW Department of Planning and Environment to collect flood related data during and after flood events. **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

AGENCY	RESPONSIBILITIES
	accordance with the State Recovery Plan.
Caravan Park Proprietor(s)	• Prepare a flood emergency plan for the Caravan Park. • Ensure that owners and occupiers of movable dwellings are aware that the caravan park is flood liable by providing a written notice to occupiers taking up residence and displaying this notice and emergency management arrangement within the park. • Ensure that owners and occupiers of movable dwellings are aware that if they are expecting to be absent for extended periods, they should: – Provide the manager of the caravan park with a contact address and telephone number in case of an emergency. – Leave any movable dwelling in a condition allowing it to be relocated in an emergency (i.e.: should ensure that the wheels, axles and draw bar of the caravans are not removed and are maintained in proper working order). • Ensure that occupiers are informed of Flood Information. At this time, occupiers should be advised to: – Ensure that they have spare batteries for their radios. – Listen to a local radio station for updated flood information. – Prepare for evacuation and movable dwelling (cabins) relocation. • Ensure that owners and occupiers of caravans are aware of what they must do to facilitate evacuation and movable dwelling relocation when flooding occurs. • Coordinate the evacuation of people and the relocation of movable dwellings when floods are rising and their return when flood waters have subsided. Movable dwellings will be relocated back to the caravan park(s) by owners or by vehicles and drivers arranged by the park managers. • Secure any movable dwellings that are not able to be relocated to prevent floatation. • Inform NSW SES of the progress of evacuation and/or movable dwellings relocation operations and of any need for assistance in the conduct of these tasks.
Childcare Centres and Preschools	• When notified of possible flooding or isolation, childcare centres and preschools should. – Liaise with NSW SES and arrange for the early release of children whose travel arrangements are likely to be disrupted by flooding and/or road closures. – Assist with coordinating the evacuation of preschools and childcare

AGENCY	RESPONSIBILITIES
	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.
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	The roles and responsibilities for Health Services are outlined in the

AGENCY	RESPONSIBILITIES
Area	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.
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.

AGENCY	RESPONSIBILITIES
	Plan**.**
SEOCON/SEOC	The roles and responsibilities for the SEOCON/SEOC are outlined in the NSW State Flood Plan**.**
Surf Life Saving NSW	The roles and responsibilities for Surf Life Saving NSW are outlined in the NSW State Flood Plan.
Telecommunications Services Functional Area	The roles and responsibilities for Telecommunications Services are outlined in the Telecommunications Services (TELCOPLAN) Supporting Plan.
Transport for NSW	• 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.
Service and sporting clubs	• Assist with: – Port Macquarie Hastings Council

PORT MACQUARIE HASTINGS

NSW STATE EMERGENCY SERVICE

HAZARD AND RISK IN PORT MACQUARIE - HASTINGS

Volume 2 of the Port Macquarie - Hastings Local Flood Plan

Last Update: November 2015

FloodSafe

AUTHORISATION

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

Approved

Manager Emergency Risk Management

Date: 5/11/15

Approved

A.M.DAY

NSW SES Mid North Coast Region Controller

Date:

Tabled at LEMC

17/11/16

Date:

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LIST OF TABLES

LIST OF FIGURES

VERSION LIST

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

Description	Date
Port Macquarie – Hastings Local Flood Plan (Annexes A and B)	October 2008 (as amended August 2009)
Camden Haven Local Flood Plan (Annexes A and B)	October 2004

AMENDMENT LIST

Suggestions for amendments to this Volume should be forwarded to:

The Port Macquarie - Hastings Local Controller

NSW State Emergency Service

PO Box 1139, PORT MACQUARIE NSW 2444

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

Amendment Number	Description	Updated by	Date

Document Issue: V2-28032014

1 THE FLOOD AND COASTAL EROSION THREAT

1.1 LANDFORMS AND RIVER SYSTEMS

Hastings River System

1.1.1 The Hastings River is situated about 300 kilometres north of Sydney on the mid north coast of New South Wales. The river drains an area of 3700 square kilometres and discharges to the south Pacific Ocean at its entrance located at Port Macquarie. The river extends inland for a distance of 100 kilometres to the Great Dividing Range near Mount Werrikimbe. Tidal influence extends for about 32 kilometres upstream from the river mouth to Bain's Bridge, which crosses the river about 3 kilometres to the west of Wauchope (1).

1.1.2 The topography of the area is very diverse. A large proportion is State Forest and National Park, including beaches, waterways, coastal wetlands, flood plains and rugged mountain ranges (1).

1.1.3 The major tributaries are the Maria, Wilson, Forbes and Ellenborough Rivers and Pappinbarra Creek. Other tidal tributaries include Kooloonbung, Wrights and Limeburners Creeks (1).

1.1.4 The northern boundary of the valley is formed by a well-defined ridge separating the Hastings from the Macleay River Valley. The remaining part of the northern sector is drained by the Wilson and Forbes Rivers and Pappinbarra Creek, all rising to altitudes of over 900 metres (1).

1.1.5 The western boundary is formed by the New England Tablelands' eastern fringe. This area is drained by the Doyle's River and Fenwick's, Tobin's and Ralfes Creeks, and is characterised by steep ridges running towards the coast with elevations of over 1000 metres (1).

1.1.6 The southern boundary, separating the Hastings from the Manning River Valley, is formed by the Bulga and Comboyne Plateaus and Broken Bago Range at about 600 metres elevation. This area is drained by the Ellenborough and Thone Rivers (1).

1.1.7 The northern and western sections of the Hastings River Valley consist mainly of rugged to mountainous terrain, with the central area being hilly to steep and undulating. From about six kilometres above Wauchope, where the Hastings River becomes tidal, the hills give way to open and almost entirely flat land. Downstream from Wauchope the river widens and flows through a relatively broad floodplain to the South Pacific Ocean. Most of the coastal fringe of the valley is characterised by low lying and swampy terrain, backed at intervals by extensive alluvial flats within the tidal sections of the Hastings and Wilson Rivers (1).

1.1.8 The largest town is Port Macquarie, which serves as both a major tourist destination and regional centre. The other major township is Wauchope, which serves as the regional inland centre, particularly for rural communities and associated agricultural industries.

The Camden Haven River Catchment

1.1.9 The Camden Haven River is situated approximately 365 kilometres north of Sydney and lies between the Hastings and Manning River Catchments. The river has an estimated total catchment area of 720 square kilometres, and comprises three primary streams namely the Camden Haven River, the Stewarts River and Herons Creek (2).

1.1.10 The Camden Haven River is comprised of a north arm known as Upsalls Creek and a south arm known as the Camden Haven River. Both of these arms rise in the Comboyne Plateau at altitudes in excess of 600 metres. Falling away sharply, the arms traverse narrow valleys until they join at a junction six kilometres west north west of Kendall. From 2.5 kilometres above Kendall, where the tidal limit is reached, the river widens and flows through a floodplain for about 15 kilometres, draining into Watson Taylors Lake. Here it joins its major tributary, Stewarts River, which rises in steep country to the south of the Comboyne Plateau (2).

1.1.11 The other stream, Herons Creek, located north of these rivers, flows into Queens Lake. It then joins the Camden Haven River about 500 metres downstream of Laurieton via Stingray Creek, forming Camden Haven Inlet. This confluence is about three kilometres upstream of the ocean entrance (2).

1.1.12 The Watson Taylors Lake and the Queens Lake are major hydraulic features in the Camden Haven River system. The surface areas of these lakes are approximately 12 and 11 square kilometres respectively. A third smaller feature is Gogleys Lagoon, which is located downstream of Laurieton in the North Haven area, and has a surface area of approximately 0.8 square kilometres (3).

1.2 STORAGE DAMS

1.2.1 Dam locations are shown on Map 2 and 3.

Cowarra Dam

Table 1: Prescribed Dams in Port Macquarie - Hastings LGA; summary of information (4).

Cowarra Dam	
Owner / Operator	Port Macquarie – Hastings Council
Description of Dam	Commissioned 2001. Catchment Area – 110 hectares. Capacity – 10,000Megalitres (ML) equivalent to 58.8 metres Australian Height Datum (AHD) Dam Crest 61.0 metres AHD. Off Stream storage – relying on water pumped from the Hastings River.
Location	South east of Wauchope approximately 4 kilometres south of the Oxley Highway and 3 kilometres west of the Pacific Highway in the Cowarra State Forest. Access is approximately 1 kilometre along

	Sarah's Crescent. Alternative access may be via Forestry Road in times of flooding.
Communities Downstream	The spillway discharges into an unnamed tributary of Kings Creek, through Cowarra State Forest.. A number of houses, cabins and industrial blocks are at risk are located in Jillara Drive, High Street, Arranbee Road, Old King Creek Road, King Creek Road, Weismantle Street, and Oak Ridge Road Wauchope, and Doomben Avenue Eastwood.
Monitoring System	Automatic rain gauge and water level recorder
Warning System	White, Amber and Red alerts are issued by the dam owner if damage exists or in flood conditions at dam water levels: 59.8, 60.1 and 60.7 metres AHD respectively.
Other	Minimum time to alert levels to white, orange and red alerts is 1h45m, 2h30m and 4h30m respectively, with high hazard consequence for sunny day and flood failure scenarios.

Port Macquarie Dam (Rosendale Water Supply Reservoir)

Table 2: Prescribed Dams in Port Macquarie - Hastings LGA; summary of information (5).

Port Macquarie Dam (Rosendale Water Supply Reservoir)	
Owner / Operator	Port Macquarie – Hastings Council
Description of Dam	Commissioned 1980. Catchment Area – 110 hectares. Capacity – 2,500ML (future 4,000ML). Equivalent to 23.85 metres AHD (Main Dam), 22.9 metres AHD at Saddle Dam Spillway Sill Off Creek – relying on water pumped from the Hastings River.
Location	3 kilometres south of the centre of Port Macquarie – located on Clearwater Crescent off Ocean Drive
Communities Downstream	A large number of houses, mobile homes, and an aged care facility may be at risk of failure. Most of the affected properties are predicted to be located on Col. Barney Drive, Bauhinia Place, and Pandorea Place.
Monitoring System	Monitored on Council SCADA system and manually.
Warning System	Protection Alert flood conditions: 23.7 metres AHD Red Alert flood conditions: 24.4 metres AHD No White or Amber Alert identified
Other	Low hazard for Saddle Dam failure and High hazard for Main Dam failure. Time between Protection and Red Alert levels is estimated to be 2 hours. Velocities are expected to be between 0.6 and 1.2metres per second. Inundation depths are expected to be between 0.01 and 1.29 metres.

1.3 WEATHER SYSTEMS AND FLOODING

1.3.1 The heavy rain which produces floods in the Hastings and Camden Haven Catchment tends to come from the following kinds of weather systems (2):

a. **Monsoonal low-pressure systems** moving across the Great Dividing Range from northern Australia, usually during summer and autumn months. These systems are indicated on weather maps as elongated low-pressure troughs stretching from the Northern Territory to the north coast of NSW. Flooding from them usually originates on the upper catchments of the Hastings and Camden Haven Rivers.

b. **Tropical Cyclones** moving south from the Coral Sea and the Gulf of Carpentaria may reach Port Macquarie Hastings Local Government Area (LGA) in decayed form as deep low pressure systems, causing flooding. Usually such flooding occurs in the months from January to April. High seas, large waves and storm surge conditions may occur in addition to extremely heavy rain, which may last for some days. Falls of 250 millimetres (mm) or more in 24 hours are not uncommon under these circumstances.

c. **East Coast low-pressure systems** which travel along the coast and direct moist on-shore winds over the Port Macquarie Hastings LGA. They usually occur during the cooler months (Autumn to Winter). Orographic uplift of these air masses brings heavy rain over the coast range and the higher country to the west of Laurieton. Such events are normally associated with lower river floods rather than floods originating in the western uplands sections of the catchment. Rains from these systems can persist for three to five days. Sometimes, as in 1963, there may be two or more separate rain events a few days apart.

d. **High intensity, short duration convective thunderstorms** occur frequently over the catchment, especially during the summer months. The rain from such storms can cause town drainage systems or minor creeks to surcharge, creating local flash flooding of low-lying areas and mountain gullies with little to no warning time. No rise in the main rivers is likely from such events. Intense bursts of rainfall may occur in any area, such as during the January 1968 flood when in one 24 hour period in excess of 350 mm was recorded in the Thone and Wilson River and Pappinbarra Creek systems.

1.3.2 Analysis of flood distribution indicates that the majority of floods in the catchment have occurred during late summer early autumn months. Figure 1 illustrates the average rainfall at Comboyne. The figure shows that highest rainfalls across the catchment have historically occurred between January and April, whilst the lowest rainfalls have occurred between July and September (6).

1.3.3 The Hastings River Valley as a whole receives an average annual rainfall exceeding 1150 mm, except for an area on the coastal plain between Kempsey and Telegraph Point. The highest occurs on the Comboyne Plateau, receiving

an annual average of 2000 mm, with Laurieton receiving 1550 mm, Port Macquarie 1400 mm, Telegraph Point 1300 mm, and Kindee 1200 mm (6). The rainfall in individual years varies markedly. The wettest period in the valley is experienced from December to April, continuing on the coastal fringe until June, during which time approximately 55% of the annual rainfall is received.

1.3.4 High monthly total rainfall can occur in any month of the year, with an excess of 250 mm having been recorded, even in drier months. The highest monthly total on record at an observation station in the catchment is 1230 mm at Comboyne in February 1929 (2).

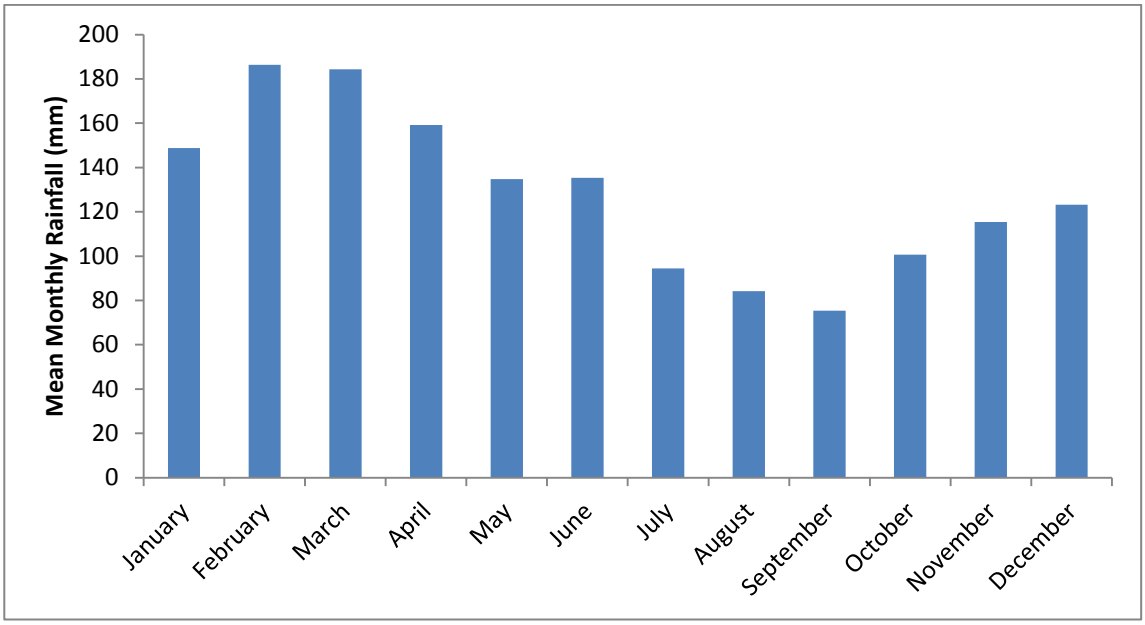


Figure 1: Average Rainfall (mm) at Laurieton by month between 1885 and 2014 (6)

1.4 CHARACTERISTICS OF FLOODING

Hastings River System

1.4.1 Because of the rugged nature and steepness of the catchment area, floods in the Hastings River are characterised by very rapid rises (1).

1.4.2 Flooding of the Hastings River downstream from Bain's Bridge is influenced by a number of natural and man-made features. These features include the North Coast Railway, the Pacific Highway and numerous geologic formations which limit the width of the floodplain, particularly in the area immediately east of Wauchope, notably around Rocks Ferry (1).

1.4.3 Upstream of Rocks Ferry, the Hastings River is generally fairly narrow. The extent of the floodplain in this area is not substantial with only limited storage afforded by the floodplain. The gradient of the floodwater surface upstream of Rocks Ferry can be quite steep reaching slopes of the order of 1 metre in 900 metres in events of the magnitude of the 1% annual

exceedence probability (AEP) flood (7.1 metres AHD at Rocks Ferry and 8.7 metres AHD at Wauchope) (1).

1.4.4 Downstream of Rocks Ferry, the floodplain widens to form a large coastal plain. Here the water surface gradients flatten out appreciably. As result, floodwaters that overtop the banks of the Hastings River discharge into a substantial flood storage area. This storage area serves to absorb the energy of floodwaters as they are discharged downstream and results in substantial flattening out of the flood gradient downstream of Rocks Ferry. In a design 1% AEP event, the gradient typically reduces to one-tenth of that which exists upstream of Rocks Ferry. This is reflected in the morphology of the river which is characterised between Sandy Point and Dennis Bridge by a series of meander bends and back channels (1).

1.4.5 The Pacific Highway crosses the Hastings River downstream of Rawdon Island. The roadway is constructed on an embankment that is elevated above the natural surface elevation of the adjoining floodplain. This southern embankment is not overtopped in events up to and including the 1% AEP flood. As a result, it forms a significant impediment to the path of flow across the floodplain. The elevated roadway embankment forces floodwaters into the main river channel so that they can discharge downstream beneath Dennis Bridge. Although the impediment to flow from the highway is significant, the large volume of storage within the floodplain upstream from the bridge ensures there is no significant increase in upstream flood level. The effect at Dennis Bridge was determined to be about 100 mm in the design 1% AEP flood (7).

1.4.6 The North Coast Railway also crosses the Hastings River at Wauchope. As with the Pacific Highway, the railway embankment is elevated above the floodplain and impedes the path of flow across the floodplain. This increases peak flood levels upstream of Wauchope (1).

1.4.7 Peak flood levels along the Lower Hastings River are also influenced by tide levels at the entrance to the river. This is particularly evident in the lower reaches in the vicinity of Port Macquarie, North Shore and Settlement Point. However, entrance conditions influence peak flood levels during large floods as far upstream as Sandy Point.

1.4.8 Major flooding of the lower Hastings River Valley typically occurs as a response to heavy rainfall occurring in the western and southern sections of the catchment over a two to three day period. Investigations confirm that the critical storm duration for the Hastings River catchment is 72 hours (*i.e. 3 days*). The peak of the flood within the lower reaches of the Hastings River generally occurs halfway through the second day of rainfall. The peak of the flood generally lasts four to five hours (7).

1.4.9 A rock reef at Sancrox Bridge results in a sudden change in depth and variation of the channel capacity. It also creates artificially high levels upstream for up-river floods. This means that the Caswell Channel (sometimes called the Anabranch) above Rawdon Island carries a larger proportion of flood flows than would otherwise be the case. It also carries the major flood

debris load. Below Rawdon Island, the runoff contributions from up-river areas have a less dominant effect on flood levels which are also affected by ocean water levels, rainfall in the estuarine areas and contributions from the Maria and Wilson Rivers (7).

1.4.10 The lower floodplain contains a number of estuarine areas along local catchment creeks and tidal backwaters. They include King, Sarah's, Carecorara, Stony, Fernbank and Limeburners Creeks as well as the lower Wilson and Maria Rivers. Low lying areas on Rawdon Island and Rawdon Island North are included also. During a major flood these areas are progressively flooded by local runoff backing up the tidal creek areas (and sometimes drains) and then by overbank flow. As major floods develop a significant flood runner develops across Settlement Point. The amount of water carried through this floodway is significant enough to give some relief to river and flood levels in the Blackman's Point area (7).

1.4.11 Peak flow velocities in 1% AEP floods are predicted to be approximately 0.5 metres per second across the lower floodplain. Peak in-channel flows in the Hastings, Maria and Wilson Rivers are generally less than 2 metres per second. Upstream of Sandy Point velocities within the channel are predicted to be between 3 and 4 metres per second (7).

1.4.12 Flood depths in 1% AEP floods are typically around 1.5 metres, classifying the floodplains a high flood hazard area. The area between Wauchope and Port Macquarie is classified as Very High or Extreme (8).

Wrights Creek

1.4.13 Wrights Creek and its major tributary, Yarranabee Creek, drain a 4.8 square kilometre catchment that extends about 4 kilometres south from Port Macquarie. It discharges to the tidal reaches of Kooloonbung Creek which drains into the Hastings River near the central business district (CBD).

1.4.14 The Wrights Creek catchment is highly urbanised. The catchment includes the southern sections of the CBD of Port Macquarie as well as schools, extensive low and medium density residential dwellings, caravan parks and holiday accommodation. The lower reaches of Wrights Creek are flanked by a relatively narrow floodplain that comprises open space, recreational areas (*e.g. Macquarie Park*) and the Macquarie Nature Reserve and Koala Hospital.

1.4.15 The Wrights Creeks catchment has experienced major floods in the past, most notably in 1962, 1963, 1974 and 1995. The most recent incidence of flooding occurred in 2002.

Maria River

1.4.16 The Maria River is a major tidal tributary and joins the Hastings River about 10 kilometres upstream from the ocean entrance. It drains the northern section of the catchment that extends along the coastal plain toward Kempsey and during periods of flood flow permits an exchange of water between the adjacent valleys via Connection Creek, and can be partially controlled through

the operation of a weir at the Kempsey and Port Macquarie Hastings LGA boundary. It is joined by the Wilson River immediately downstream of Telegraph Point which extends west to Upper Rowland's Plains (1).

1.4.17 Flooding of the Maria Rivers is largely influenced by the flood levels within the Hastings River. The floodwater gradient is typically very flat, with floodwaters "backing-up" along the Maria River from the Hastings River confluence. The flat water surface gradient can also be attributed to the substantial storage afforded by the coastal floodplain of the Maria River which extends from the Pacific Highway to the coast (1).

1.4.18 The Bureau of Meteorology do not issue a warning for the Maria River, both the Port Macquarie and Kempsey NSW SES Units monitors this (1).

The Camden Haven River Catchment

1.4.19 The Upper Camden Haven River Catchment is steep and forested, in the areas upstream of Kendall, Herons Creek and Johns River flood behaviour is characterised by the quick rise and fall of flood waters (9).

1.4.20 In the lower parts of the catchment there are low-lying, flat swampy areas. These occur particularly in the areas between Queens Lake and the coast, between Johns River and the coast, and along the Camden Haven River between Kendall, Watson Taylors Lake and the coast. Tidal influences extend to just above Kendall and Johns River, affecting Watson Taylors Lake, Queens Lake, Stingray Creek and Gogleys Lagoon. The lakes and swamps have significant storage capacity for flood waters. Therefore, flood behaviour here is affected by the complex interaction between catchment runoff, the storage effects of the lakes, tides, storm surge and wave setup effects (9).

1.4.21 The mean spring tidal ranges in Watson Taylors Lake and Queens Lake are approximately 0.37 metres and 0.12 metres respectively compared to an ocean range of 1.28 metres at the river's entrance (9).

1.4.22 The Camden Haven Catchment is the primary source of flood water to the estuary during major catchment wide rainfall events. The Herons Creek and Stewarts River catchments contribute similar flows to the estuary, but these are typically only 25% to 30% of flows entering from the Camden Haven River (9).

1.4.23 Little warning of major floods at Laurieton, Dunbogan and North Haven is available, with only approximately five hours between catchment saturation and the major flood level (1.7 metres) being reached (9). Warning times at Kendall are even less (9).

1.4.24 The 1% AEP velocities of overland flood waters in the Dunbogan, North Haven and Laurieton areas are low, ranging between 0.1 and 0.5 metres per second. The relatively low strength of these velocities is due to the attenuating effects of both lakes and elevated ocean levels in Camden Haven Inlet. However, under different circumstances, particularly lower ocean levels, appreciably higher flood velocities can be expected. Average mid-stream velocities are faster, reaching 1.7 metres per second between Dunbogan and Laurieton, and

increasing notably in Camden Haven Inlet, peaking at 3.9 metres per second near the entrance (9).

Table 3: Indicative Flow Travel Time for the Hastings and Camden Haven Rivers

Locations	Travel Time (approximate)
Logans Crossing to Kendall Road Bridge	1 hour
Kendall Road Bridge to Laurieton	4-6 hours
Laurieton to North Haven	1 hour
Redoak to North Haven	6 hours
Mt Seaview to Kindee Bridge	2-3 hours
Bundoo River D/S to Kindee Bridge	1 hour
Kindee Bridge to Wauchope	3-6 hours
Wauchope to Settlement Point	9-12 hours
Telegraph Point to Settlement Point	7-10 hours

Storm Surge

1.4.25 Flooding or coastal erosion in Camden Haven may be caused by Storm Surge.

1.4.26 Storm surge is an increase in the sea water level at the coast. The principal factors in the generation of a storm surge are:

a. The wind stress on the sea surface, piling up water.

b. The atmospheric pressure reduction in the storm area raising sea water level.

c. The net water transport shoreward due to waves and swell breaking in the shallows.

d. The local surge modification due to bottom topography, abnormally heavy rainfall and the presence of currents, tides and natural oscillations.

1.4.27 In addition to wind and barometric set-up there is an additional rise in water level on the beach due to wave set-up. The wave set-up occurs between the zone of breaking waves and the beach, and can be as much as 10 to 20 per cent of the incident wave height (1).

1.4.28 The maximum water levels from a combination of high tides, wave set-up and storm surge could be greater than 2.0 metres AHD. Of this, high tide levels and wave set-up would account for much more than storm surge, which is estimated to be able to contribute only about 0.4 metres (1).

1.5 FLOOD HISTORY

Hastings River System

1.5.1 An overview of recorded floods is provided in Table 4.

1.5.2 Flooding of the Hastings River has occurred on numerous occasions since European settlement of the valley in the part of the 19th century (1). These flood occurred between February and April, which suggest that flooding in the region is influenced by southerly dominated rainfalls system that occur in late summer and early autumn (1). Of these the march 1963 and the January 1968 floods are considered to be the most severe to have occurred in the last 70 years (1).

1.5.3 The January 1968 flood was the highest in the upper river area since 1945, reaching a height of 12.6 metres on the Ellenborough gauge (Kindee), and a 9.1 metres AHD reading at Wauchope Railway Bridge due to the high rainfall recorded in the upper catchments (in excess of 450mm in 48 hours). In the lower river area thousands of hectares of rich dairying land were inundated, homes received extensive damage as well as many crops and fencing being destroyed. The Dennis Bridge gauge recorded 3.1 metres AHD and Settlement Point gauge 2.15 metres AHD. The lack of storm surge and low tidal conditions at the river mouth allowed the floodwaters to escape freely, thereby preventing higher water levels which would have caused further damage (1).

1.5.4 The 1963 flood was different in character with lower rainfall being experienced in the upper valley, as indicated by gauge readings at Ellenborough (Kindee) of 7.6 metres and Wauchope Railway Bridge of 7.8 metres AHD. Lower river conditions however were worse, shown by the Dennis Bridge gauge being 3.6 metres AHD and Settlement Point gauge at 2.4 metres AHD, both being the highest recorded since 1945. The main cause of this flood was the coincidence of heavy local runoff due to intense coastal rain, storm surge and winds from cyclone remnants as well as high tides (1).

1.5.5 The flood in February 2009 originated in the Hastings and Wilson River areas. This flood put approximately 1.22 meters of water in eight houses on the eastern side of Maria River (1).

1.5.6 In 2013, properties in North Shore as well as the Ferry access and 30 cars were inundated from a fast rising flood. North Shore residents were isolated. Settlement Point, Clarence Street and businesses in Short Street were also inundated. A flood rescue was required at Bains Bridge and the Oxley Highway was closed (10).

Table 4: Flood History on the Hastings River (1)

DATE	Kindee Bridge Gauge 207004	Wauchope Gauge 207401 (METRES AHD)	Settlement Point Gauge 207418
August 1864	-	8.2	-
March 1875	-	7.5	-
March 1894	-	8.9	2.55
January 1895	-	7.45	2.1
March 1946	-	7.85	-
June 1950	-	8.1	-
February 1954	12.27	8.45	2.15
March 1956	10.29	6.1	1.45
November 1959	9.70	6.5	1.65
April 1962	8.53	6.5	1.95
April 1963	6.63	7.75	2.55
January 1968	12.57	9.5	2.3
March 1974	8.52	7.01	-
March 1978	10.59	7.70	-
April 1989	7.10	5.85	1.28
Feb 1990	8.50	4.84	1.22
March 1995	9.23	6	1.73
May 1996	6.31	3.10	1.10
Feb 2009	3.38	4.73	1.4
February 2013	10.99	7.2	1.72

The Camden Haven River Catchment

1.5.7 There is a shortage of gauging information, making it difficult to present a comprehensive flood history for the Camden Haven River (1).

1.5.8 The largest flood on record in the lower estuary occurred in April 1963. The flood occurred as a result of heavy rainfall across the catchment between the 26th and 29th with associated elevated ocean levels. Large areas of North Haven and Dunbogan were flooded to depths over one metre and parts of Kendall and Laurieton were also flooded. Flood waters reached a maximum height of 2.8 metres AHD at Laurieton. Elevated ocean levels as a result of cyclonic conditions worsened flooding in the lower estuary. The following photographs illustrate the severity of the flood (1).

Figure 2: 1963 flood, cnr of Bell Street and The Boulevard, Dunbogan, facing west.

Figure 3: 1963 flood, Alfred Street, North Haven

1.5.9 Unfortunately, daily rain gauges in the catchment overflowed before measurements could be taken. It is estimated that over 600 mm fell at Laurieton over the three-day period (1).

1.5.10 The 1963 flood is estimated to have an Average Recurrence Interval (ARI) of about 1 in 70 years at Laurieton (1).

1.5.11 There is evidence that a larger flood has occurred in the Camden Haven River, with records suggesting that a flood in February 1929 reached a level of 4.25 metres AHD at the Pacific Highway Bridge. No other records are available (1).

1.5.12 Other significant floods occurred in February 1956, March 1974, March 1978, March 1995 and July 1999. The following table gives the estimated heights of these floods (1).

Table 5: Historical flood heights at Laurieton

Flood Event	Flood Height at Laurieton (metres AHD)
February 1956	-
April 1963	2.8
March 1974	-
March 1978	1.6
March 1995	1.1
July 1999	1.25

1.6 FLOOD MITIGATION SYSTEMS

1.6.1 There are no known flood mitigation systems identified in the Port Macquarie-Hastings LGA.

1.7 EXTREME FLOODING

1.7.1 The Probable Maximum Flood (PMF) has been estimated to peak at 6.2 metres AHD at the Settlement Point Gauge. Such a flood would occur only very rarely, perhaps only with a chance, on average, of once in 10,000 years or more (1).

1.7.2 On rare occasions, flooding of extreme proportions must be expected. It is characteristic of extreme floods to reach much greater heights than earlier events and flood areas with no previous history of flooding. Such floods are generally both faster to rise and more dangerous in terms of depth and velocity than previous floods.

1.7.3 The Probable Maximum Flood (PMF) has been estimated to peak at 3.65 metres AHD at the Laurieton Fish Co-op Gauge. Such a flood would occur only very rarely, perhaps only once every 10,000 years or more. Floods lower than this but much higher than the record floods of 1929 and 1963 are also possible and indeed are much more likely to be experienced by current residents than the PMF (1).

Peak heights for various flood frequencies at various locations are as shown in and

1.7.4 Table 7 alongside flood classification levels.

Table 6: Predicted peak design flood levels along the Hastings River, and flood classification heights. Items in bold indicate that intelligence is held for these gauges **** Peak flood level estimates are based on a peak ocean level of 2.2 metres AHD*** **(7)**

DESCRIPTION OF LOCATION	Flood Classification			PEAK LEVEL* (*metres*) for each AEP		
	Min	Mod	Maj	5%	1%	PMF
Bain's Bridge	-	-	-	11.1	13.2	19.7
Kindee	**3**	**5.5**	**7.6**	**-**	**12.57**	**-**
Wauchope	**2.5**	**4.3**	**5.5**	**6.9**	**8.7**	**12.4**
Settlement Point	**1.2**	**1.5**	**1.75**	**2.3**	**2.7**	**6.2**
Rocks Ferry Bridge (*us*)	-	-	-	6.1	7.4	10.8
Sandy Point	-	-	-	5.8	7.1	11.0
Rawdon Island Bridge	-	-	-	3.8	4.8	8.0
Dennis Bridge	-	-	-	3.0	3.8	7.0

Table 7: Predicted peak design flood levels along the Maria/Wilson Rivers and flood classifications. Items in bold indicate the holding of intelligence for the gauges **** Peak flood level estimates are based on a peak ocean level of 2.2 metres AHD***

DESCRIPTION OF LOCATION	Flood Classifications			PEAK LEVEL* (*metres AHD*) in AEP		
	Min	Mod	Maj	5%	1%	PMF
The Hatch (*Maria River*)	**-**	**-**	**-**	**2.8**	**3.7**	**6.9**
Telegraph Point	**1.1**	**1.6**	**2.1**	**3.0**	**3.7**	**6.9**

1.7.5 The modelling identified in Table 6 incorporates a 5% AEP boundary condition of peak ocean levels to allow for storm surge and set up. This means that the 20% AEP flood model without this condition was difficult to determine, particularly near the river mouth.

1.7.6 Table 8 lists design flood heights for various locations in the Camden Haven River catchment in metres AHD.

Table 8: Design flood heights and classification heights for the Camden Haven Catchment in metres AHD (9). Items in bold indicate gauges with intelligence.

Flood Level Location	Min	Mod	Maj	5% AEP	1% AEP	PMF
Logan's Crossing	**7.0**	**-**	**-**	**7.65**	**8.2**	**9.15**
Laurieton gauge	**1.1**	**1.5**	**1.7**	**2.4**	**3.03**	**3.65**
Kendall Road Bridge gauge	**3.1**	**3.5**	**5**	**5.45**	**6.2**	**7.25**

1.8 COASTAL EROSION

1.8.1 There are seventeen open beaches, six inlet beaches and nine rocky cliffs/bluff within the Port Macquarie Hastings Council area, most having a low risk to coastal erosion (1).

1.8.2 Lake Cathie has property at risk of coastal erosion and are shown on Map 1 (11).

1.8.3 The Port Macquarie Hastings Council area is bordered by the Pacific Ocean to the east. There are three main types of beach units within the council boundaries: compartmentalised, sheltered, and exposed. The coastal areas are subject to natural coastal processes and resultant coastline hazards that include coastal erosion, oceanic inundation, and shoreline recession (1).

1.8.4 The coastal erosion and oceanic inundation problem in the Port Macquarie Hastings Area takes two forms (1):

a. Undercutting of dunes on their seaward sides, threatening the collapse of dwellings and other infrastructure.

b. The potential breaking through of the dunes by sea water, causing flooding and isolation of property on the landward side of the dunes.

1.8.5 The most severe problems of coastal erosion and inundation occur as a result of oceanic storm conditions associated with the passage of ex-tropical cyclones and temperate-zone low-pressure systems. These storms may cause temporary sea level rises with large associated waves. The worst erosion and inundation is likely when severe weather conditions occur in conjunction with high tides (1).

1.8.6 Other locations susceptible to erosion include North Beach, North Shore and Town Beach. There is heavy use of the beach for vehicular access between Point Plommer and North Shore. Lack of beach at high tide has forced vehicles on to the dunes causing extensive damage to dunal vegetation and dunal destabilisation. Severe storms can cause significant erosion of Town Beach especially towards the northern (river) end. Large quantities of sand can be lost from the beach exposing rocks at the main swimming area and eroding fill behind the southern river training wall (1).

2 EFFECTS ON THE COMMUNITY

2.1 COMMUNITY PROFILE

Table 9: Census of Housing and Population data (2011) (12)

Census Description	Port Macquarie-Hastings (A)	Port Macquarie	Camden Haven (Camden Head, North Haven to Lakewood)	Wauchope
Total Persons	**72,696**	**42,937**	**7,762**	**5,951**
Aged 0-4 yrs	3,983	2,404	288	440
Aged 5-14 yrs	8,964	5,099	680	874
Aged 65 + yrs	17,939	10,715	3,048	1,324
Of Indigenous Origin	2,417	1,295	212	445
Who do not speak English well	76	56	6	0
Have a need for assistance (profound/severe disability)	4,824	2,871	701	540
Living alone (Total)	8,019	5,104	1,159	652
Living alone (Aged 65+)	4,264	2,647	745	365
Residing in caravans, cabins or houseboats or improvised dwellings	943	541	348	16
Occupied Private Dwellings (Households)	**29,061**	**17,488**	**3,445**	**2,287**
No Motor Vehicle	2,236	1,579	328	208
Caravan, cabin, houseboat or improvised dwell	606	334	229	10
Rented via State or Housing Authority	881	705	53	141
Rented via Housing Co-Op or Community Church Group	183	128	22	48
No Internet Connection	7,509	4,345	1,210	771
Unoccupied Private Dwellings	**3,571**	**2,062**	**532**	**200**
Average persons per occup dwelling	**2.3**	**2.3**	**2.0**	**2.4**
Average vehicles per occup dwelling	**1.6**	**1.5**	**1.4**	**1.5**

Census Description	Bonny Hills	Lake Cathie	Beechwood	Kendall
Total Persons	**3,317**	**2,867**	**2,125**	**1,530**
Aged 0-4 yrs	180	194	120	95
Aged 5-14 yrs	485	455	293	227
Aged 65 + yrs	628	567	401	277
Of Indigenous Origin	77	82	79	55
Who do not speak English well	0	0	0	0
Have a need for assistance (profound/severe disability)	166	140	86	75
Living alone (Total)	165	256	122	96
Living alone (Aged 65+)	74	124	62	50
Residing in caravans, cabins or houseboats or improvised dwellings	10	0	0	3
Occupied Private Dwellings (Households)	**1,198**	**1,100**	**757**	**551**
No Motor Vehicle	39	52	11	9
Caravan, cabin, houseboat or improvised dwell	10	0	0	3
Rented via State or Housing Authority	0	0	0	0
Rented via Housing Co-Op or Community Church Group	0	0	0	0
No Internet Connection	198	255	135	131
Unoccupied Private Dwellings	**155**	**170**	**70**	**62**
Average persons per occup dwelling	**2.5**	**2.2**	**2.7**	**2.7**
Average vehicles per occup dwelling	**1.8**	**1.7**	**2.1**	**2.0**

SPECIFIC RISK AREAS - FLOOD

Hastings River Valley

2.2 PORT MACQUARIE CBD

2.2.1 Port Macquarie is a town located on the mid north coast of NSW, approximately 390 kilometres north of Sydney. It is located at the mouth of the Hastings River, on the southern bank.

2.2.2 The total population of Port Macquarie is approximately 42 900, with a large number of persons over the age of 65 (25%) and approximately 10% of persons living alone and 7% requiring assistance (12).

2.2.3 The CBD area extends west from Owen Road to Park Street and south to Table and Hill Streets (7). The estimated population within the CBD area is 4000, approximately 1600 properties (7).

Cultural and Linguistic Diversity

2.2.4 Three percent of the population are of indigenous origin (12).

2.2.5 Less than 1% of the population have identified they do not speak English well (12).

2.2.6 The most common ancestries were English (33%) and Australian (32%) (12).

Schools and childcare centres

2.2.7 The following schools and childcare centres are potentially at risk of flooding and/or isolation (8).

a. **Schools**

- North East Public School of Distance Education, School Street, Port Macquarie (at risk of isolation below the 1% AEP, approximately 2.7 metres)
- Port Macquarie Public School, Grant St, Port Macquarie (at risk of isolation below the 1% AEP, approximately 2.7 metres)
- Port Macquarie High School, Owen and Burrawan Streets, Port Macquarie (at risk of isolation below the 1% AEP, approximately 2.7 metres)
- MacKillop Senior College, Lochinvar Place (isolation below 2.7 metres)
- Tacking Point Public School, Bangalay Drive (isolation below 2.7 metres)
- Port Macquarie Adventist School, Ocean Drive (isolation below 2.7 metres)
- Hastings Public School, Waniora Parkway (isolation below 2.7 metres)
- St Pauls High School, Ocean Drive (isolation below 2.7 metres)

- St Peters Primary School, Ocean Drive (isolation below 2.7 metres)
- St Josephs Regional College (at risk of inundation below the PMF)

b. **Childcare centres**

- Bangalay Child Care and Education Centre, Cathie Rd (at risk of isolation below the 1% AEP, approximately 2.7 metres)
- A.B.C. Developmental Learning, Ocean Dr (at risk of isolation below the 1% AEP, approximately 2.7 metres)
- Lighthouse Childcare Centre, Greenmeadows Dr (at risk of isolation below the 1% AEP, approximately 2.7 metres)
- Moruya Dr Child Care Centre (at risk of isolation below the 1% AEP, approximately 2.7 metres)
- Port Macquarie Community Preschool, Bagnoo Place (at risk of isolation below the 1% AEP, approximately 2.7 metres)
- Portside Preschool, Owen Street (at risk of isolation below the 1% AEP, approximately 2.7 metres)
- Blooming Kids Early Learning Centre, Marian Drive (inundated within the 1% AEP, approximately 2.7 metres)
- Joey's House Occasional Care, Bridge Street (inundated within the 1% AEP, approximately 2.7 metres)
- Port Macquarie Community Preschool, Munster Street (inundated within the 1% AEP, approximately 2.7 metres)
- Hastings Early Intervention Program, Munster Street (inundated within the 1% AEP, approximately 2.7 metres)
- Columba Cottage Early Learning Centre (at risk of inundation between the 1% (2.7 metres) and the PMF)

Facilities for the aged and/or infirm

2.2.8 The following facilities are at risk of flooding and/or isolation (8):

a. Bethany Nursing Home, Gray Street (at risk of isolation below the 1% AEP, approximately 2.7 metres)

b. St Agnes Lodge, Lochinvar Place (at risk of isolation below the 1% AEP, approximately 2.7 metres)

c. Port Macquarie Private Hospital (at risk of isolation below the 1% AEP, approximately 2.7 metres)

d. Emmaus, Colonel Barney Dr (at risk of isolation below the 1% AEP, approximately 2.7 metres, and inundation below the PMF)

Utilities and Infrastructure

2.2.9 There are no known utilities at risk.

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

Classification of Floodplain

2.2.11 Rising Road Access, with a small High Flood Island in a PMF (6.2 metres) to the east of the CBD.

Inundation

2.2.12 This community utilises the Settlement Point Gauge (207418), with classification levels listed in Table 6. Heights referenced in this section are related to this gauge. Early warning of potential flooding can be available using the Wauchope and Kindee gauges.

2.2.13 The area between Short Street and Marine Park is the most flood prone area in the CBD area, including properties located between Home and Crisp Streets, between Flynn and Leanda Streets, near Munster Street and near Karalee Parade. During frequent (around 1.5-1.7 metres) flood events it is estimated that depths of inundation in these areas would be approximately one metre. The extent and depths do not vary significantly in this area as the flood level increases (7). Horton Street and northern end of Clarence Street properties may become inundated around 2.4 metres.

2.2.14 Back up flow from storm water may cause inundation to shops in to CBD.

2.2.15 Of the 4703 addresses in the area, the approximate number of dwellings inundated are (1) (13):

a. 5% AEP flood, approximately 2.3 metres – 11

b. 1% AEP flood, approximately 2.7 metres – 33

c. PMF (6.2 metres) – 107

Isolation

2.2.16 Waugh Street may become inundated from 2.3 metres, with alternative routes available.

2.2.17 Many roadways may be inundated at the peak of the 1% AEP flood (2.7 metres), including Grant Street, Hill Street, Herschell Street, Braemar Drive, Flynn Street, Ocean Street, Swift Street and Leanda Street. However these roadways are expected to be inundated in the order of hours (14).

2.2.18 There may be difficulty in crossing the Gordon Street Bridge in a PMF event peak.

2.2.19 Road closure information is summarised in Section 2.18.

Characteristics of flooding

2.2.20 Wrights and Kooloonbung Creeks flood regularly (1), but have limited impact of the town area.

2.2.21 Flow is influenced by tidal and storm surge conditions, as the town is located at the river mouth.

2.2.22 The peak of Wrights Creek is expected to be reached within 80 minutes after the initial onset of rain (14).

2.2.23 This area is classified as high to extreme hazard flood way, with some properties residing within the flood fringe (7) (14).

Flood Mitigation Systems

2.2.24 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.2.25 Failure of Port Macquarie Dam (Rosendahl Reservoir) can result in inundation of houses, nursing homes, offices, a child care centre and an electrical transfer station. These are located to the west of the dam, before joining with Wrights Creek, a tributary of Hastings River (5).

2.2.26 Time between Protection and Red Alert levels is estimated to be 2 hours (5).

2.2.27 Velocities are expected to be between 0.6 and 1.2 metres per second (5).

2.2.28 Inundation depths are expected to be between 0.01 and 1.29 metres (5).

Other Considerations

2.2.29 Peak tourism occurs in December and Easter School Holidays, seeing an approximate 10% increase in population (15), particularly to the Port Macquarie CBD.

2.2.30 Adding to the tourist influx the:

a. Beatles Festival is usually held in February, over 5 days;

b. Heritage Festival is held in April;

c. Ironman Triathlon is usually held in May, bringing international participants. Participation in this event during flooding may pose public health and safety risks.

2.2.31 The Ferry Services do not operate in flood and storm conditions. This restricts access between the northern suburbs and Port Macquarie (Northshore and Riverside).

2.3 SETTLEMENT POINT

2.3.1 Settlement Point is part of Port Macquarie, where there is a large number of persons over the age of 65 (25%) and approximately 10% of persons living alone and 7% requiring assistance (12).

2.3.2 The locality is situated on a peninsula, and consequently is surrounded by water.

Cultural and Linguistic Diversity

2.3.3 Settlement Point forms a part of Port Macquarie, where:

a. Three percent of the population are of indigenous origin (12).

b. Less than 1% of the population have identified they do not speak English well (12).

c. The most common ancestries were English (33%) and Australian (32%) (12).

Schools and childcare centres

2.3.4 The following schools and childcare centres are at risk of flooding and/or isolation (8).

a. **Schools**

- St Joseph's Primary School, Warlters St, Port Macquarie (above the 1% AEP, approximately 2.7 metres AHD, and within the PMF).

b. **Childcare centres**

- Hastings Family Day Care, Warlters St (inundated within the 1% AEP, approximately 2.7 metres AHD).

Facilities for the aged and/or infirm

2.3.5 No facilities are at known risk of flooding and/or isolation (8).

Utilities and Infrastructure

2.3.6 The following utilities and infrastructure are at risk of flooding:

a. Electricity supplies, water and waste disposal.

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

Classification of Floodplain

2.3.8 Low Flood Island from a 1% AEP flood (2.7 metres) (7).

Inundation

This community utilises the Settlement Point Gauge (207418), with flood classifications and design heights listed in Table 6. Heights referenced in this section are related to this gauge.

2.3.9 The estimated population at risk on Settlement Point Road is 410, and along the waterway is 450 (7).

2.3.10 The lower floors of about 10 two-story houses will be inundated from around 1.5 metres.

2.3.11 Two caravan parks on Settlement Point Road are inundated during Minor floods and a number of raised houses may have living areas flooded during Major floods (7).

2.3.12 Sails Resort and Country Comfort may become inundated from 2.3 metres and requires monitoring.

2.3.13 The Waterway area around River Park Road and Commodore Court is predominantly flood free up to a 1% AEP flood, approximately 2.7 metres. The whole community would be inundated in a PMF (7).

2.3.14 Of 901 addresses in the area, the approximate number of dwellings inundated are (1) (13):

a. 5% flood, approximately 2.3 metres – 69

b. 1% flood, approximately 2.7 metres – 81

c. PMF (6.2 metres)– 394

Isolation

2.3.15 The route into and out of Settlement Point is inundated in frequent floods (less than 20% AEP or around 1.2 - 1.45 metres) by over one metre. This restricts potential evacuation of approximately half of the estimated population. It may be beneficial to utilise the Kindee Bridge (5.5 metres) and Wauchope (Moderate flood 4.3 metres) gauges to provide additional time (approximately five and two hours respectively) (7).

2.3.16 The route servicing the Waterway area (Park Street at Panthers) may become inundated at 2.6 metres. The use of Wauchope (8.7 metres) and Kindee Bridge (14 metres) gauges may facilitate additional warning times (7).

2.3.17 Road closure information is summarised in Section 2.18.

Characteristics of flooding

2.3.18 Water flows across virtually the whole peninsula during floods with frequency of 5% AEP (approximately 2.3 metres).

2.3.19 Flow is influenced by tidal and storm surge conditions, as the town is located at the river mouth.

2.3.20 This area is classified as high to extreme hazard, with fast flowing water (7).

Flood Mitigation Systems

2.3.21 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.3.22 Port Macquarie dam failure is not expected to have any impact on Settlement Point.

Other Considerations

2.3.23 Peak tourism occurs in December and Easter School Holidays, seeing an approximate 10% increase in population (15), particularly to the Port Macquarie CBD. There are a number of tourist parks and facilities located in the area.

2.3.24 The Ferry Services do not operate in flood and storm conditions. This restricts access between the northern suburbs and Port Macquarie (Northshore and Riverside). One of these ferries runs from Settlement Point to North Shore.

2.3.25 The loss of electricity supplies, water and waste disposal may mean that consideration is to be given to relocating the affected residents.

2.4 HIBBARD

2.4.1 Hibbard is part of Port Macquarie is part of Port Macquarie, where there is a large number of persons over the age of 65 (25%) and approximately 10% of persons living alone and 7% requiring assistance (12).

2.4.2 The locality is immediately west of the Port Macquarie CBD, within the canal area.

2.4.3 This community has approximately 10% of residents without a car, equivalent to approximately 200 residents, who may require transport assistance (7).

Cultural and Linguistic Diversity

2.4.4 Settlement Point forms a part of Port Macquarie, where:

a. Three percent of the population are of indigenous origin (12).

b. Less than 1% of the population have identified they do not speak English well (12).

c. The most common ancestries were English (33%) and Australian (32%) (12).

Schools and childcare centres

2.4.5 The following schools and childcare centres are at risk of flooding and/or isolation (8).

a. **Schools**

- Newman Senior Technical College, Boundary St, Port Macquarie (above the 1% AEP, approximately 2.7 metres, within the PMF)

b. **Childcare centres**

- No Childcare centres are at known risk of flooding or isolation.

Facilities for the aged and/or infirm

2.4.6 No facilities are at known risk of flooding and/or isolation (8).

Utilities and Infrastructure

2.4.7 There are no known utilities at risk.

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

Classification of Floodplain

2.4.9 Low Flood Island along Boundary and Newport Island Roads.

2.4.10 Rising Road Access in Hibbard South and Southern Canals.

Inundation

2.4.11 This community utilises the Settlement Point Gauge (207418), with flood classifications and design heights listed in Table 6.

2.4.12 Extensive areas of the residential area in Boundary Road is directly affected by moderate flooding, equivalent to a 20% AEP (or 1.5 metres), with the majority flooded by the 1% AEP flood (2.7 metres) (7).

2.4.13 In the vicinity of Newport Island Road (Southern Canals, of approximately 190 properties), houses start to become inundated from the 1% AEP flood (2.7 metres).

2.4.14 Hibbard South (approximately 1490 properties) remains predominantly flood free up to a PMF.

2.4.15 Of 3422 addresses in the area, the approximate number of dwellings inundated (1) (13) are:

a. 5% flood, approximately 2.3 metres – 28

b. 1% flood, approximately 2.7 metres – 156

c. PMF (6.2 metres)- >990

Isolation

2.4.16 Road closure information is summarised in Section 2.18.

2.4.17 Hastings River Drive (the route servicing the area) may become inundated from around 1.8 metres on the Settlement Point gauge (approximately 20% AEP), isolating the (approximate) 1940 persons in the vicinity of Boundary Road. The use of Wauchope (5.2 metres) and Kindee Bridge (10 metres) gauges may enable additional warning time (7).

2.4.18 Hibbard Road junction with Hastings River Drive becomes inundated around 2.8 metres on the Settlement Point gauge, isolating properties (470 persons) in the vicinity of Newport Island Road (7).

2.4.19 The intersection of Kemp Street and Hastings River Drive may become inundated at around 3 metres, affecting properties located in the southern portion of the Hibbard area. Alternative routes are available.

Characteristics of flooding

2.4.20 Most of the residential area is directly affected by moderate flooding from the Hastings River main channel (1).

2.4.21 Flow is influenced by tidal and storm surge conditions, as the town is located at the river mouth.

2.4.22 This area is classified as high to extreme hazard (7).

Flood Mitigation Systems

2.4.23 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.4.24 Port Macquarie dam failure is not expected to have any impact on Hibbard.

Other Considerations

2.4.25 Peak tourism occurs in December and Easter School Holidays, seeing an approximate 10% increase in population (15), particularly to the Port Macquarie CBD. There are a number of tourist parks located in the area.

2.4.26 The Ferry Services do not operate in flood and storm conditions. This restricts access between the northern suburbs and Port Macquarie (Northshore and Riverside). One of these ferries runs from Hibbard to Riverside.

2.5 FERNBANK CREEK

2.5.1 Fernbank Creek (including Oakes Crescent and Glen Ewan Road) are located on the southern banks of the Hastings River, to the west of Port Macquarie.

2.5.2 The locality, including Thrumster, had a population of 223 in the 2011 census, with 22% of the population aged 0-14 and 16% of the population over the age of 65 (12).

Cultural and Linguistic Diversity

2.5.3 Aboriginal and Torres Strait Islander people made up 5% of the population (12).

2.5.4 The most common ancestries were Australian (38%) and English (25%) (12).

Schools and childcare centres

2.5.5 No schools or childcare centres are at known risk of flooding and/or isolation (8).

Facilities for the aged and/or infirm

2.5.6 No facilities are at known risk of flooding and/or isolation (8).

Utilities and Infrastructure

2.5.7 There are no known utilities at risk.

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

Classification of Floodplain

2.5.9 Low Flood Islands, from 1.4 metres.

2.5.10 Glen Ewan Road has Rising Road Access.

Inundation

2.5.11 This community utilises the Settlement Point Gauge (207418), with flood classifications and design heights listed in Table 6.

2.5.12 Most of the residential area is directly affected by moderate flooding.

2.5.13 Approximately 50 people are at risk in Fernbank Creek, 20 in Oakes Crescent, and 20 on Glen Ewan Road (7).

2.5.14 These residents are completely inundated in a 1% AEP flood (2.7 metres).

2.5.15 Of 122 addresses in the area, the approximate number of dwellings inundated are (1) (13):

a. 5% flood (2.3 metres) – 6

b. 1% flood (2.7 metres) –12

c. PMF (6.2 metres) – >46

Isolation

2.5.16 Road closure information is summarised in Section 2.18.

2.5.17 The main access, Hastings River Drive, is inundated in multiple locations in relatively small events (approximately 1.1-2 metres or 20% AEP) (7). An alternate route south to the Pacific Highway may be available via Fernbank Creek Road, but may also be affected by overbank flow from Fernbank Creek at similar times as Hastings River Drive. This isolates the Fernbank Creek community (7).

2.5.18 There is a critical low point on Oakes Crescent, where it becomes inundated at around 1.8 metres on the Settlement Point gauge, isolating approximately 20 residents (7).

2.5.19 Due to the limited warning time, it may be appropriate to utilise gauge reference to Wauchope (5.2 metres) and Kindee Bridge (10 metres) gauges to increase warning times (7).

Characteristics of flooding

2.5.20 Flooding occurs from the Hastings River main channel.

2.5.21 Flow is influenced by tidal and storm surge conditions, as the town is located near the river mouth.

2.5.22 This area is classified as high to extreme hazard (7).

Flood Mitigation Systems

2.5.23 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.5.24 Port Macquarie dam failure is not expected to have any impact on Fernbank Creek.

Other Considerations

2.5.25 Old Hastings Ferry ceases to operate around 1.2 metres.

2.6 NORTH SHORE AND RIVERSIDE

2.6.1 North Shore and Riverside are small communities located north of Port Macquarie, on the northern banks of the Hastings River, either side of Limeburners Creek. Riverside is at the confluence of the Maria and Hastings Rivers.

2.6.2 In the 2011 census, North Shore had a population of 380, with 23% aged between 0-14 and 12% aged over 65 (12).

2.6.3 In the 2011 census, Riverside had a population of 254, with 18% aged 0-14 and 21% aged over 65 (12).

Cultural and Linguistic Diversity

2.6.4 Aboriginal and Torres Strait Islander people made up 1.8% of the population in North Shore and 3.6% in Riverside (12).

2.6.5 The most common ancestries for North Shore and Riverside were English (36% and 35% respectively) and Australian (33% and 27% respectively) (12).

Schools and childcare centres

2.6.6 No schools or childcare centres are at known risk of flooding and/or isolation (8).

Facilities for the aged and/or infirm

2.6.7 No facilities are at known risk of flooding and/or isolation (8).

Utilities and Infrastructure

2.6.8 There are no known utilities at risk.

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

Classification of Floodplain

2.6.10 Overland Refuge in North Shore, and Riverside as a small wooded area remains flood free up to a PMF (7).

2.6.11 Maria River Road is a low flood island, becoming isolated from 1.22 – 2 metres and becomes progressively inundated.

Inundation

2.6.12 This community utilises the Settlement Point Gauge (207418) and Maria River gauge (207406), with flood classifications and design heights listed in Table 6. Unless otherwise stated, the heights in this section are related to the Settlement Point gauge.

2.6.13 Approximately 350 people are at risk in North Shore, 50 in Pacific Coast, and 350 in Riverside (7).

2.6.14 The community may become inundated by floods less than the 20% AEP (1.5 metres).

2.6.15 Of the 384 addresses in the area, the number of properties at risk of inundation are (after evacuation routes are closed) (1) (13):

a. 5% flood (2.3 metres) – 296

b. 1% flood (2.7 metres) – 296

c. PMF (6.2 metres) – 296

2.6.16 In addition, 8 properties in the Maria River community may start to become inundated from 1.22 metres on the Maria River gauge (207406). The entire area becomes inundated from 3 metres, after the Maria River Road closes.

Isolation

2.6.17 Road closure information is summarised in Section 2.18.

2.6.18 Residents in Pacific Coast may become isolated when an unnamed road becomes inundated at around 1.5 metres, prior to inundation of property (7).

2.6.19 A critical location is located at the junction of Wombat Close and Shoreline Drive, as well as the road servicing the Ferry, isolating the North Shore and Riverside residents (1.8 metres, less than the 20% AEP flood) (7).

2.6.20 It may be beneficial to utilise Wauchope (at 4.3 metres) and Kindee Bridge (at 5.5 metres) gauges as signals for these events, to provide more warning time (7).

2.6.21 The area is isolated by minor flooding which stops the operation of the Settlement Point Ferry and Hibbard Ferry (1).

2.6.22 Maria River Road closes in flash flooding, generally occurring from around 1.4 metres, isolating the communities and impacting evacuation (1).

Characteristics of flooding

2.6.23 Flooding is from the Hastings and Maria Rivers as well as Limeburners Creek, Donnelly's Creek and a northern branch of the Hastings River.

2.6.24 Flow is influenced by tidal and storm surge conditions, as the town is located at the river mouth.

2.6.25 This area is classified as high to extreme hazard (7).

Flood Mitigation Systems

2.6.26 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.6.27 Port Macquarie dam failure is not expected to have any impact on Northshore and Riverside.

Other Considerations

2.6.28 Peak tourism occurs in December and Easter School Holidays, seeing an approximate 10% increase in population (15), particularly to the Port Macquarie CBD.

2.6.29 The Ferry Service does not operate in flood and storm conditions. This restricts access between the northern suburbs and Port Macquarie (Northshore and Riverside). Alternate access may be via the Maria River road (dirt road) to the north, however this road is susceptible to inundation from local flooding.

2.7 THE HATCH AND BLACKMAN'S POINT

2.7.1 The Hatch and Blackmans Point are located on the Western Banks of the Maria River, to the north of Port Macquarie.

2.7.2 The area is sparsely populated, with a population of 264 (12). 12% of the population are aged 0-14, ad 12% over the age of 65 (12).

Cultural and Linguistic Diversity

2.7.3 Aboriginal and Torres Strait Islander people made up 2.3% of the population (12).

2.7.4 The most common ancestries were English (39%) and Australian (29%) (12).

2.7.5 No persons identified that they do not speak English well (12).

Schools and childcare centres

2.7.6 No schools or childcare centres are at known risk of flooding and/or isolation (8).

Facilities for the aged and/or infirm

2.7.7 No facilities are at known risk of flooding and/or isolation (8).

Utilities and Infrastructure

2.7.8 There are no known utilities at risk.

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

Classification of Floodplain

2.7.10 Low Flood Island from relatively small floods.

Inundation

This community utilises the Maria River gauge (207406) (

2.7.11 Table 7). Heights referred to in this section are related to this gauge.

2.7.12 Most of the residential area is inundated from 1.93 metres.

2.7.13 Approximately 20 people are at risk (approximately 10 houses) in The Hatch (7).

2.7.14 Of 141 addresses in the entire area, the approximate number of dwellings inundated is approximately (1) (13):

a. 5% flood (2.8 metres)– 12

b. 1% flood (3.7 metres) – 42

c. PMF (6.9 metres) – >60

Isolation

2.7.15 Road closure information is summarised in Section 2.18.

2.7.16 Blackmans Point Road becomes inundated at around 2.1-3 metres, isolating the 80 residents (7).

2.7.17 The Southern Hatch Road is inundated around 1.9-2.3 metres, isolating the Hatch community (7).

2.7.18 Elford Road may become inundated from around 1.7 metres, isolating residents in Hacks Ferry.

2.7.19 It may be beneficial to utilise Wauchope (at 5.2 metres) and Kindee Bridge (at 10 metres) gauges as signals for these events, to provide more warning time (7).

Characteristics of flooding

2.7.20 Flooding of this area is from the Hastings and Maria Rivers.

2.7.21 Flow is influenced by tidal and storm surge conditions, as the town is located near the river mouth.

2.7.22 This area is classified as high to very high hazard (7).

Flood Mitigation Systems

2.7.23 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.7.24 There are no known impacts of dam failure.

Other Considerations

2.7.25 There is a rise in population in the Christmas and Easter schools holidays.

2.8 TELEGRAPH POINT

2.8.1 Telegraph Point is located 20 kilometres north west of Port Macquarie, on the northern banks of the Wilson River. The Wilson River flows east, then south to form the Maria River, before joining with the Hastings River at Port Macquarie. Residential properties are located on the east and west of the Pacific Highway.

2.8.2 In the 2011 census, the population was 619, with 18% of the population aged 0-14 years, and 13% aged over 65 (12).

2.8.3 The community is mostly comprised of low-lying farm land and scattered houses south of the township, with residential areas around Moorside Drive.

Cultural and Linguistic Diversity

2.8.4 The most common ancestries were Australian (33%) and English (33%) (12).

2.8.5 Aboriginal and Torres Strait Islander people made up 3.4% of the population (12).

Schools and childcare centres

2.8.6 The following schools and childcare centres are at risk of flooding and/or isolation (8).

a. **Schools**

- Telegraph Point Public School, Pacific Hwy (at risk of inundation below the 1% AEP) .

b. **Childcare centres**

- Telegraph Point Children's Centre, Mooney St (at risk of inundation below the 1% AEP).

Facilities for the aged and/or infirm

2.8.7 No facilities are at known risk of flooding and/or isolation (8).

Utilities and Infrastructure

2.8.8 There are no known utilities at risk.

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

Classification of Floodplain

2.8.10 Rising Road Access, with approximately six rural properties becoming a Low Flood Island in the east after the closure of Hacks Ferry Road (around 1.95-2.3 metres).

Inundation

2.8.11 This community utilises the Telegraph Point Gauge (207415), classifications and design heights summarised in

2.8.12 Table 7. Heights referred to in this section are related to this gauge.

2.8.13 A small number of houses south of the village on the Old Pacific Highway are affected by backwater flooding from the Wilson River (1).

2.8.14 It is expected that farmland will become inundated prior to internal and external roads (7).

2.8.15 Of 112 addresses, the approximate number of dwellings inundated is approximately (1) (13):

a. 5% flood (3 metres) – 3

b. 1% flood (3.7 metres) – 16

c. PMF (6.9 metres) – >23 up to 36

Isolation

2.8.16 Road closure information is summarised in Section 2.18.

2.8.17 Hacks Ferry Road may become inundated from 1.95-2.3 metres (20% AEP), isolating approximately 3 rural residential properties. These properties have overland escape routes available until the 1% AEP (3.7 metres) (7).

Characteristics of flooding

2.8.18 Flooding is from the Wilson River (which flows into Maria River, and then the Hastings River).

2.8.19 This area is classified as high to extreme hazard (7).

Flood Mitigation Systems

2.8.20 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.8.21 There are no known impacts of dam failure in Telegraph Point.

Other Considerations

2.8.22 The Ski park is located within this village as a tourist attraction, affected around 2.5 metres.

2.9 RAWDON ISLAND

2.9.1 Rawdon Island is located immediately downstream of Wauchope, and upstream of Port Macquarie. It is formed by branches of the Hastings River, and as such is surrounded by water.

2.9.2 The locality had a population of approximately 620, with 19% of the population aged 0-14 years, and 14% aged over 65 (12).

Cultural and Linguistic Diversity

2.9.3 None of the population identified they do not speak English well (12).

2.9.4 The most common ancestries were English (33%) and Australian (28%) (12).

2.9.5 Less than 0.6% the population were identified as Aboriginal or Torres Strait Islander (12).

Schools and childcare centres

2.9.6 No schools or childcare centres are at known risk of flooding and/or isolation (8).

Facilities for the aged and/or infirm

2.9.7 No facilities are at known risk of flooding and/or isolation (8).

Utilities and Infrastructure

2.9.8 There are no known utilities at risk.

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

Classification of Floodplain

2.9.10 Low Flood Island within a 1% AEP flood (9.85 metres). There is an overland escape to two small refuges up to a PMF.

Inundation

This community utilises the Wauchope Gauge (207401) and Kindee Bridge gauge (207004), classifications and design heights listed in Table 6. Unless otherwise state, heights referred to in this section are related to the Wauchope gauge.

2.9.11 Low lying areas on the south-western corner of Rawdon Island may be inundated from 6.5 metres.

2.9.12 Of the 47 addresses in the area, the approximate number of dwellings inundated is approximately (1) (13):

a. 5% flood (6.9 metres) – 6

b. 1% flood (9.85 metres) – 12 up to 33

c. PMF (12.4 metres) – >16 up to 37

Isolation

2.9.13 Rawdon Island becomes isolated in moderate event, and the evacuation route is cut early (3.6 metres at Rawdon Island Road and Narrow Gut road exit and 4.2 metres at the bridge across Rawdon Island Road exit). Two high points on the Island are not affected by flood water (1).

2.9.14 Road closure information is summarised in Section 2.18.

Characteristics of flooding

2.9.15 Flooding is from the Hastings River, where branches of the river form Rawdon Island. An additional flood runner becomes active from floods exceeding the 0.5% AEP flood (approximately 9.5 metres AHD at Wauchope).

2.9.16 This area is classified as high to very high hazard (7).

Flood Mitigation Systems

2.9.17 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.9.18 There are no known impacts of dam failure in Rawdon Island.

Other Considerations

2.9.19 No other considerations have been identified.

2.10 WAUCHOPE

2.10.1 Wauchope is located on the southern bank of the Hastings River, 20 kilometres west of Port Macquarie.

2.10.2 The population is approximately 5952, with approximately 22% of persons aged over 65 (12), including the areas around Sarahs and Kings Creeks.

Cultural and Linguistic Diversity

2.10.3 None of the population identified they do not speak English well (12).

2.10.4 The most common ancestries were Australian (36%) and English (32%) (12).

2.10.5 7.4% of the population were identified as Aboriginal or Torres Strait Islander (12).

Schools and childcare centres

2.10.6 The following schools and childcare centres are at risk of flooding and/or isolation (8).

a. **Schools**

- Wauchope High School, Nelson St (at risk of inundation between the 1% AEP (9.85 metres) and PMF)

b. **Childcare centres**

- No Childcare centres are identified as at known risk of inundation and isolation.

Facilities for the aged and/or infirm

2.10.7 No hospitals or aged care facilities are identified as at known risk of inundation or isolation (8).

Utilities and Infrastructure

2.10.8 The following utilities and infrastructure are at risk of flooding:

a. North Coast Railway is at risk of inundation from a 1% AEP flood (9.85 metres) (8).

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

Classification of Floodplain

2.10.10 Rising Road Access to a High Flood Island in Yippin Creek (7).

2.10.11 Low Flood Island for residents between Wauchope Railway Station and Kings Creek from approximately 5.3 metres as well as Sarahs Creek (7).

2.10.12 Rising Road Access to a High Flood Island in Wauchope Village (7).

Inundation

2.10.13 The communities around Wauchope utilise the Wauchope Gauge (207401) and Kindee Bridge gauge (207004) (Table 6). Heights referred to in this section are related to this gauge.

2.10.14 Although generally regarded as flood free in more small frequent floods, evacuations are required in major event, particularly on the eastern side of town. Approximately 4950 people are at risk in Wauchope (7).

2.10.15 Dwellings between Wauchope Railway Station and Kings Creek are low-lying and the area is bisected centrally by a drainage channel running south-west from the North Coast Railway line (7).

2.10.16 Approximately 4 dwellings within Wauchope CBD in Cameron and Parker Street may become inundated in flood events in the order of 8.5 metres. 50 residential and commercial dwellings may become inundated around 9.5 metres, many to a shallow depth. A further 161 houses may become inundated in 1% AEP flood (9.85 metres at Wauchope) in Flobern Avenue (6), Wattle Street (5), Fairmont Drive (34), Kerewong Close (3), Cogo Close (6), Fox Crescent (10), Campbell Street (10), Webb Street (4), Hastings Street (4), Clareville Street (1), Bain Street (16), Walters Street (3), Parker Street (4), Cameron Street (10 plus numerous business houses), Bago Road (3), Wallace Street (13), Carrington Street (7) and Randall Street (22) (7).

2.10.17 Low lying farmland from Kindee Bridge to Wauchope start to become inundated by flood waters around 4 metres. 10 farm dwellings may become inundated in floods in the order of 9.5 metres (at Wauchope).

2.10.18 The majority of the properties in Yippin Creek area (with the exception of low lying rural properties) remains flood free (approximately 110 properties).

2.10.19 The number of properties inundated are approximately (1) (13):

a. 5% flood (6.9 metres) – 4

b. 1% flood (9.85 metres) – 161 up to 200

c. PMF (12.4 metres) – up to 836

Isolation

2.10.20 Wauchope may become isolated six to nine hours after the commencement of heavy rain in the catchment (1).Oxley Highway may become inundated from 5-5.3 metres on the Wauchope gauge (11 metres on the Kindee Bridge gauge) near Little Port Lane, isolating 8 Port Lane residents between Wauchope Railway Station and Kings Creek and preventing access between Wauchope, Kings Creek and Pembrooke. There are no alternative routes (7). Oxley Highway may also cut at Colonels Creek West of Wauchope and potentially at Yippin Creek 4 kilometres East of Colonels Creek. This impacts traffic flow west of Wauchope.

2.10.21 The primary access to Yippin Creek, Beechwood Road, may become inundated from 6.3 metres AHD (or equivalent to 10 metres on the Kindee Bridge gauge) (7).

2.10.22 The Kings Creek and Sarah's Creek area becomes isolated at 8.5 metres when Kings Creek Road becomes inundated at Kings Creek (approximately 200 properties).

2.10.23 Alma Street becomes inundated from around 8.5 metres, and River St becomes inundated from 7.8 metres, impacting on evacuation of approximately 52 dwellings in Alma Street (6), River Street (3), Rocks Ferry Road (20) and Princess Ave (23). A further 29 houses become isolated around 9.6m in Nelson Street (2), Park Street (4), Wallace Street (12) and King street (11 units) (16).

2.10.24 Road closure information is summarised in Section 2.18.

Characteristics of flooding

2.10.25 Flooding occurs predominantly from Yippin Creek, Sarahs Creek, Kings Creek and Hastings River. Water may backup numerous creeks and drains causing flooding in Fairmont Drive, Flobern, Wattle and King Streets, particularly around 9.6 metres.

2.10.26 This area is classified as high to extreme hazard, with velocities exceeding 6100 cubic metres per second (7).

2.10.27 The area has a number of swift water hot spots under the railway bridge and Oxley Highway (Port Lane) (16).

Flood Mitigation Systems

2.10.28 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.10.29 A number of houses, cabins and industrial blocks may at risk from Cowarra Dam failure. Properties at risk are located in Jillara Drive, High Street, Arranbee Road, Old King Creek Road, King Creek Road, Weismantle Street, and Oak Ridge Road Wauchope, and Doomben Avenue Eastwood (4).

Other Considerations

2.10.30 The high school may become surrounded by shallow flood waters around 7.5 metres (1).

2.10.31 A number of events are held within Wauchope, attracting an increase in population, including (17):

a. Timbertown Annual Steam Fair (July)

b. Lasiandra Festival (March)

c. Wauchope Show (April)

2.11 PEMBROOKE AND REDBANK

2.11.1 Pembrooke and redbank are a predominantly rural communities to the north of Wauchope, with populations of 147 and 393 respectively (12).

Cultural and Linguistic Diversity

2.11.2 None of the population identified they do not speak English well (12).

2.11.3 The most common ancestries were Australian (37%) and English (approximately 30%) (12). Fourteen (3.6%) were identified as Aboriginal or Torres Strait Islander (12).

Schools and childcare centres

2.11.4 No schools or childcare centres are at known risk of flooding and/or isolation (8).

Facilities for the aged and/or infirm

2.11.5 No hospitals or aged care facilities are identified as at known risk of inundation or isolation (8).

Utilities and Infrastructure

2.11.6 The following utilities and infrastructure are at risk of flooding:

a. North Coast Railway is at risk of inundation from a 1% AEP flood (9.85 metres) (8).

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

Classification of Floodplain

2.11.8 Pembrooke and Redbank are High Flood Islands from around 5 metres (at Wauchope) (7).

2.11.9 Ennis Road is a low flood island from 3.9 metres (at Wauchope).

Inundation

The communities utilise the Wauchope Gauge (207401) and Kindee Bridge gauge (207004) (Table 6). Unless otherwise stated, heights referred to in this section are related to the Wauchope gauge.

2.11.10 Flooding around Pembrooke affects mostly low-lying farmland, with roads and residential property becoming inundated from floods in the order of 1% AEP (8.7metres) (7).

2.11.11 Approximately seven properties utilising the Ennis Road egress/access route (Redbank) become inundated around 3.9 metres, when the access also becomes cut (it may occur as late as approximately 6.9 metres at Wauchope or 11m on the Kindee Bridge gauge) (7).

2.11.12 Of 241 properties within the area, the following may be susceptible to inundation (1) (13):

a. 5% flood (6.9 metres) – 11

b. 1% flood (9.85 metres) – 45

c. PMF (12.4 metres) – approximately 90

Isolation

2.11.13 Bain's Bridge closes at 2.5 metres. Pembrooke Road near Loggy Creek may become cut from 3.3-5 metres (7) (16) and inundated by 0.6 metres in a 5% AEP flood (approximately 6.9m at Wauchope or equivalent to 11 metres on the Kindee Bridge gauge) preventing access north from Redbank. Pembrooke Road also closes around 5 metres at the Stoney Creek Road intersection preventing access between Pembrooke and Redbank (7). This isolates properties in the South Pembrooke area. Residents to the north of Loggy Creek in Pembrooke may still have access/egress to Telegraph Point to the north.

2.11.14 Alma Street becomes inundated from around 8.3 metres, and River Street becomes inundated from 7.8 metres, impacting on evacuation to Wauchope.

2.11.15 Ennis Road may become inundated from 3.6 metres, isolating approximately 7-11 properties which then become inundated (7).

2.11.16 Road closure information is summarised in Section 2.18.

Characteristics of flooding

2.11.17 Flooding occurs predominantly from the Hastings River.

2.11.18 Pembrooke is also impacted by flooding of the Balyngara, Loggy and Stoney Creeks which flow in south-easterly direction through the northern part of the community. Overbank flooding primary occurs at the confluence of the creeks (7).

2.11.19 This area is classified as high to extreme hazard, with velocities exceeding 6100 cubic metres per second (7).

Flood Mitigation Systems

2.11.20 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.11.21 No properties are at known risk of dam failure.

Other Considerations

2.11.22 Refer to Wauchope for other considerations (1).

2.12 BEECHWOOD

2.12.1 Beechwood is a predominantly rural community to the north-west of Wauchope, with a population of 571 (12).

Cultural and Linguistic Diversity

2.12.2 None of the population has an English language problem (12).

2.12.3 The most common ancestries were Australian (35%) and English (35%) (12).

2.12.4 Thirty-four (6%) of the population identified themselves as Aboriginal or Torres Strait Islander (12).

Schools and childcare centres

2.12.5 No schools or childcare centres are at known risk of flooding and/or isolation (8).

Facilities for the aged and/or infirm

2.12.6 No hospitals or aged care facilities are identified as at known risk of inundation or isolation (8).

Utilities and Infrastructure

2.12.7 No utilities or infrastructure are at known risk of flooding.

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

Classification of Floodplain

2.12.9 Beechwood has rising road access (7).

Inundation

2.12.10 The community utilises the Wauchope Gauge (207401) and Kindee Bridge gauge (207004) (Table 6).

2.12.11 Approximately 380 persons are at risk in Beechwood. However, it is unclear where the properties at risk are located in the sector, and potentially may only be a few. This area requires further monitoring and reconnaissance in a flood.

Isolation

2.12.12 Pembrooke Road to Telegraph Point is cut around 3.3-5 metres (on Wauchope gauge) at Loggy Creek and 5 metres at the intersection with Stoney Creek Road preventing travel to Telegraph Point.

2.12.13 Bains Bridge to Wauchope is closed around 2.5 metres, and Oxley Highway and Rocks Ferry Road become closed around 5 metres, preventing access to Wauchope.

2.12.14 Road closure information is summarised in Section 2.18.

Characteristics of flooding

2.12.15 Beechwood is impacted by flooding of the Hastings River and Mortons Creek.

2.12.16 This area is classified as high to extreme hazard, with velocities exceeding 6100 cubic metres per second (7).

Flood Mitigation Systems

2.12.17 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.12.18 No properties are at known risk of dam failure.

Other Considerations

2.12.19 Refer to Wauchope for other considerations (1).

Camden Haven River Valley

2.13 NORTH HAVEN

2.13.1 North Haven is located on the northern bank of the Camden Haven Inlet.

2.13.2 The population was 1596, with approximately 35% over the age of 65 (12).

Cultural and Linguistic Diversity

2.13.3 The most common ancestries were English (35%) and Australian (35%) (12).

2.13.4 Four percent of the population was of indigenous origin (12).

2.13.5 Less than 1% of the population identified they do not speak English well (12).

Schools and childcare centres

2.13.6 No schools or childcare centres are at known risk of flooding and/or isolation (18). However, access between North Haven Public School, Ocean Drive and Laurieton will be lost at 1.15 metres on the Laurieton Gauge (minor flood).

Facilities for the aged and/or infirm

2.13.7 No facilities are at known risk of flooding and/or isolation (18).

Utilities and Infrastructure

2.13.8 There are no known utilities at risk.

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

Classification of Floodplain

2.13.10 Low flood island.

Inundation

2.13.11 This community utilises the Laurieton Gauge (207425), with design heights and flood classification levels listed in Table 8. Heights referred to in this section are related to this gauge.

2.13.12 Over 497 properties are inundated at 2.4 metres (in a 5% AEP flood), consisting of 210 dwellings that are affected (193 homes and 17 businesses) (18). Potentially up to 591 properties may be affected with the development that has occurred since 2004 (13).

2.13.13 In a 3.03 metres (1% AEP event), 556 properties are inundated, 408 of these will have buildings inundated (43 of these will be flooded over-floor by more than 1 metres), 380 are homes and 28 are businesses (18).

2.13.14 There are over 618 properties affected in the PMF, with 554 buildings (522 of which are homes and 32 are businesses) (18). Potentially up to 1033

properties may be affected with the development that has occurred since 2004 (13).

2.13.15 There are three flood prone caravan parks in the area.

2.13.16 Over-floor flooding first commences at 1.3 metres on the Laurieton Fish Co-op Gauge in parts of Alfred, Bridge and Pioneer Streets and Eames Avenue. The following table shows the number of homes inundated by flooding at various levels. Flood levels are given in relation to the Laurieton Fish Co-op Gauge (1). In summary:

a. 1.9m – 45 properties experience over-floor flooding

b. 5% flood (2.4 metres) – 193

c. 1% flood (3.03 metres) – 380

d. PMF (3.65 metres) – 522

Table 10: Number of residences inundated over-floor by flooding in North Haven per street in relation to Laurieton gauge

Location	1.9 metres	5%AEP Event 2.4 metres	2%AEP Event 2.78 metres	1% AEP Event 3.03 metres	PMF 3.65 metres
Adeline Street	0	6	6	6	6
Alfred Street	12	50	69	71	76
Alma Street	4	25	27	27	30
Bridge Street	1	3	4	4	4
Coral Street	0	1	2	22	24
David-Campbell Street	0	0	1	3	20
Eames Avenue	14	32	34	35	37
Edith Street	0	2	8	15	32
Glen Close	0	0	0	0	23
Hillman Street	0	0	2	3	4
Jacaranda Street	0	0	1	1	3
Leighton Close	0	3	7	14	25
Lepemi Place	0	11	14	14	16
Murson Crescent	0	0	0	24	24

Location	1.9 metres	5%AEP Event 2.4 metres	2%AEP Event 2.78 metres	1% AEP Event 3.03 metres	PMF 3.65 metres
Ocean Drive	8	40	57	66	72
Ocean Street	0	0	0	0	21
Pioneer Street	6	16	16	16	19
River Street	0	0	7	7	7
Riverview Place	0	0	0	0	6
The Parade	0	0	10	43	62
Vine Street	0	4	6	7	7
Wall Street	0	0	0	0	2
Woodford Road	0	0	2	2	2

Isolation

2.13.17 Road closure information is summarised in Section 2.18.

2.13.18 Ocean Drive near Stingray Creek Bridge between Laurieton closes at 1.15 metres, preventing travel west. Alternative routes to Port Macquarie are still available. However, the Eames Avenue, Alma Street and Alfred Street area becomes isolated when these streets become flooded.

Characteristics of flooding

2.13.19 During major events, floodwaters will spread across a relatively large tract of low lying swampy land located either side of Stingray Creek. Therefore the majority of the area is subject to flooding, with almost half defined as being high risk due to relatively deep fast rising flood waters, short warning times, evacuation difficulties and the long potential duration of flooding.

2.13.20 A 1% AEP event is predicted to reach 3.03 metres AHD at the Laurieton Fish Co-op Gauge, with associated overland velocities at 0.1 metres per second. Higher velocities may be experienced between buildings. Peak average mid-stream velocities between North Haven and Laurieton at Stingray Creek Bridge are estimated at 0.7metres per second.

2.13.21 However, under different circumstances, particularly lower ocean levels, appreciably higher flood velocities can be expected. Average mid-stream velocities are faster reaching 1.7 metres per second between Dunbogan and Laurieton, and increasing notably in Camden Haven Inlet, peaking at 3.9 metres per second near the ocean entrance (8).

2.13.22 Tidal influences extend to just above Kendall and Johns River, affecting Watson Taylors Lake, Queens Lake, Stingray Creek and Gogleys Lagoon. The lakes and swamps have significant storage capacity for flood waters. Therefore, flood behaviour here is affected by the complex interaction between catchment runoff, the storage effects of the lakes, tides, storm surge and wave setup effects (8).

2.13.23 The mean spring tidal ranges in Watson Taylors Lake and Queens Lake are approximately 0.37 metres and 0.12 metres respectively compared to an ocean range of 1.28 metres at the river's ocean entrance (8).

2.13.24 The Camden Haven Catchment is the primary source of flood water to the estuary during major catchment wide rainfall events. The Herons Creek and Stewarts River catchments contribute similar flows to the estuary, but these are typically only 25% to 30% of flows entering from the Camden Haven River (8).

2.13.25 Little warning of major floods at Laurieton, Dunbogan and North Haven is available, with only approximately five hours between catchment saturation and the major flood level (1.7 metres) being reached (8).

Flood Mitigation Systems

2.13.26 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.13.27 There are no known impacts of dam failure in North Haven.

Other Considerations

2.13.28 During peak tourist season (Christmas and Easter) up to 2850 persons may be at risk including 615 residents above the age of 65.

2.14 LAURIETON, WEST HAVEN AND LAKEWOOD

2.14.1 Laurieton is located at the head of the Camden Haven Inlet, adjacent to the mountain North Brother. It has a population of 1931, with 45% above the age of 65 (12). An estimated 1110 persons may be at risk of flooding, of which approximately.

2.14.2 West Haven (population 1120) and Lakewood Village (population 1318) are located on Queens Lake, west of Laurieton (11). Approximately 40% of persons are aged 65 or over in West Haven and 30% in Lakewood (11).

Cultural and Linguistic Diversity

2.14.3 In Laurieton, the most common ancestries were Australian (34%) and English (34%). 1.9% of the population is identified as of indigenous origin (12). Less than 1% of the population identified they do not speak English well (12).

2.14.4 The most common ancestries for West Haven and Lakewood were English (36% and 38% respectively) and Australian (33% and 35% respectively) (12). Three percent of the population are of indigenous origin (12). Less than 1% of the population have identified they do not speak English well (12).

Schools and childcare centres

2.14.5 The following schools and childcare centres are at risk of flooding and/or isolation (18).

a. **Schools**

- St Joseph's Primary School, Ocean Drive, Laurieton is at risk of inundation in flood in the order of 1% AEP.

b. **Childcare centres**

- St Joseph's Early Childhood Centre, Ocean Drive, Laurieton is at risk of inundation in flood in the order of 1% AEP.
- St Joseph's Preschool, Ocean Drive, Laurieton is at risk of inundation in flood in the order of 1% AEP.

Facilities for the aged and/or infirm

2.14.6 The following facilities are at risk of flooding (18):

a. Laurieton Lakeside Aged Care Centre, Ocean Drive, Laurieton is inundated within the 1% AEP.

Utilities and Infrastructure

2.14.7 There are no known utilities at risk.

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

Classification of Floodplain

2.14.9 Laurieton is classified as having Rising Road Access.

2.14.10 West Haven and Lakewood have rising road access to overland escape route in floods in the order of or exceeding 3.03 metres on the Laurieton gauge (1% AEP flood) once Sirius Drive becomes inundated.

Inundation

2.14.11 This community utilises the Laurieton Gauge (207425), with design heights and flood classification levels listed in Table 8. Heights referred to in this section are related to this gauge.

2.14.12 In Lakewood and West Haven, 6 properties are inundated at 2.4 metres (in a 5% AEP flood), no dwellings (18).

2.14.13 In Laurieton, 77 properties are inundated at 2.4 metres (in a 5% AEP flood), consisting of 49 dwellings (48 homes and 1 business) (18). Potentially up to 133 properties may be affected with the development that has occurred since 2004 (17). Low lying areas east of Bold Street are susceptible to frequent flooding (1).

2.14.14 In Lakewood and West Haven at 3.03 metres (1% AEP event), 48 properties are inundated, 7 of these will have buildings inundated, consisting of only homes and no businesses (18).

2.14.15 In Laurieton, at 3.03 metres (1% AEP event), 106 properties are inundated, 65 of these will have buildings inundated, 61 are homes and 4 are businesses (18). During a 1% AEP event 17 of these are likely to experience over-floor flooding greater than 1 metre. Potentially up to 151 properties may be affected with the development that has occurred since 2004 (13).

2.14.16 There are over 169 properties affected in the PMF (3.65 metres) at Laurieton, with 157 buildings (148 of which are homes and 9 are businesses) (18).

2.14.17 In Lakewood and West Haven, there are over 242 properties affected in the PMF (3.65 metres), with 180 buildings (174 of which are homes and 6 are businesses) (18).

2.14.18 Over-floor flooding first commences at 1.3 metres on the Laurieton Fish Co-op gauge in parts of Haven Circuit.

2.14.19 Table 11**Error! Reference source not found.** shows the number of homes inundated by flooding of various magnitudes in Laurieton. Flood heights are given in relation to the Laurieton Fish Co-op gauge (1). In summary:

a. 1.9m – 17 properties experience over-floor flooding

b. 5% flood (2.4 metres) – 48

c. 1% flood (3.03 metres) – 61

d. PMF (3.65 metres) – 148

Table 11: Number of residences inundated over-floor by flooding in Laurieton per street in relation to Laurieton gauge

Location	1.9 metres	5%AEP Event 2.4 metres	2%AEP Event 2.78 metres	1% AEP Event 3.03 metres	PMF 3.65 metres
Arnott Street	1	3	3	4	7
Castle Street	0	3	6	6	12
George Street	0	0	0	0	11
Haven Crescent	8	20	21	21	28
Lake Street	0	0	0	1	24
Lane Street	1	4	4	4	11
Laurie Street	0	0	1	1	1
Lord Street	0	1	1	1	1
McLennan Street	0	0	0	0	9
Ocean Drive	4	12	18	18	33
Reid Street	0	0	0	0	1
Short Street	3	5	5	5	5
Wharf Street	0	0	0	0	5

2.14.20 A large majority of the area will only be affected by extreme flooding. **Error! eference source not found.**Table 12 shows the number of homes inundated in Lakewood and West Haven by flooding of various magnitudes (1). In summary:

a. 5% flood (2.4 metres) – 0

b. 1% flood (3.03 metres) – 7

c. PMF (3.65 metres) – 172

Table 12: Number of residences inundated over-floor by flooding in West Haven / Lakewood Village per street

Location	1.9 m	5%AEP Event 2.4 m	2%AEP Event 2.78 m	1% AEP Event 3.03 m	PMF 3.65 m
Blue Gum Place	0	0	0	0	4
Brotherglen Drive	0	0	0	0	1
Mountain View Road	0	0	0	0	6
Ocean Drive	0	0	0	0	23
Pelican Court	0	0	6	6	12
St Albans Way	0	0	0	0	2
The Gateway	0	0	0	0	1
The Silhouette	0	0	0	0	1
Botanic Drive	0	0	0	0	12
Cook Close	0	0	0	0	12
Honeysuckle Avenue	0	0	0	0	20
Mahogany Close	0	0	0	1	7
Mangrove Close	0	0	0	0	6
Phillip Close	0	0	0	0	11
Sirius Drive	0	0	0	0	43
Tern Close	0	0	0	0	11

Isolation

2.14.21 Once Sirius Drive becomes inundated at the roundabout at the Banks Street intersection, the residential properties in Lakewood become isolated, with an overland escape route.

2.14.22 Road closure information is summarised in Section 2.18.

Characteristics of flooding

2.14.23 The height of the 1% AEP event is estimated at 3.03 metres on the Laurieton Fish Co-op Gauge. Associated velocities are anticipated to be slight ranging

between 0.1 and 0.2 metres per second. Higher velocities can be expected between buildings.

2.14.24 However, under different circumstances, particularly lower ocean levels, appreciably higher flood velocities can be expected. Average mid-stream velocities are faster reaching 1.7 metres per second between Dunbogan and Laurieton, and increasing notably in Camden Haven Inlet, peaking at 3.9 metres per second near the ocean entrance (8).

2.14.25 During major events, floodwaters will spread across a relatively large tract of low lying swampy land located either side of Stingray Creek. Therefore the majority of the area is subject to flooding, with almost half defined as being high risk due to relatively deep fast rising flood waters, short warning times, evacuation difficulties and the long potential duration of flooding.

2.14.26 Tidal influences extend to just above Kendall and Johns River, affecting Watson Taylors Lake, Queens Lake, Stingray Creek and Gogleys Lagoon. The lakes and swamps have significant storage capacity for flood waters. Therefore, flood behaviour here is affected by the complex interaction between catchment runoff, the storage effects of the lakes, tides, storm surge and wave setup effects (8).

2.14.27 The mean spring tidal ranges in Watson Taylors Lake and Queens Lake are approximately 0.37 metres and 0.12 metres respectively compared to an ocean range of 1.28 metres at the river's ocean entrance (8).

2.14.28 The Camden Haven Catchment is the primary source of flood water to the estuary during major catchment wide rainfall events. The Herons Creek and Stewarts River catchments contribute similar flows to the estuary, but these are typically only 25% to 30% of flows entering from the Camden Haven River (8).

2.14.29 Little warning of major floods at Laurieton, Dunbogan and North Haven is available, with only approximately five hours between catchment saturation and the major flood level (1.7 metres) being reached (8).

Flood Mitigation Systems

2.14.30 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.14.31 There are no known impacts of dam failure in Laurieton.

Other Considerations

2.14.32 During peak tourist season (Christmas and Easter) the population may increase by 10%, increasing the number of persons at risk including a significant number above the age of 65.

2.15 DUNBOGAN AND CAMDEN HEAD

2.15.1 Dunbogan is located on the southern bank of the Camden Haven Inlet. The suburb had a population of 962, with approximately 30% of the population aged over 65 Less than 1% of the population identified they do not speak English well (12).

2.15.2 Camden Head is located on the south-eastern banks of Camden Haven Inlet, adjacent to Gogleys Lagoon. The population is 165, with approximately 20% of the population aged 65 year and older (12), including Dick's Hill.

Cultural and Linguistic Diversity

2.15.3 In Dunbogan, less than 1% of the population identified they do not speak English well (12). The most common ancestries were English (38%) and Australian (28%) (12). 1.8% of the population were identified as Aboriginal or Torres Strait Islander (12).

2.15.4 The most common ancestries of Camden Head were English (37%) and Australian (30%) (12). Three percent of the population are of indigenous origin (12). Less than 1% of the population have identified they do not speak English well (12).

Schools and childcare centres

2.15.5 No schools or childcare centres are at known risk of flooding and/or isolation (18).

Facilities for the aged and/or infirm

2.15.6 No facilities are at known risk of flooding and/or isolation (18).

Utilities and Infrastructure

2.15.7 There are no known utilities at risk.

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

Classification of Floodplain

2.15.9 Dunbogan and Camden Head are classified as areas with an overland escape route, isolated from approximate 1.1 metres and mostly inundated around 2.4 metres.

Inundation

2.15.10 This community utilises the Laurieton Gauge (207425), with design heights and flood classification levels listed in Table 8. Heights referred to in this section are related to this gauge.

2.15.11 In Dunbogan, 171 properties are inundated at 2.4 metres (in a 5% AEP flood), consisting of 151 dwellings (147 homes and 4 businesses) (18). Potentially up

to 306 properties may be affected with the development that has occurred since 2004 (13).

2.15.12 Around 3.03 metres (1% AEP event), 175 properties are inundated, 163 of these will have buildings inundated, 156 are homes and 7 are businesses (18). 103 of these properties will be flooded over-floor by more than one metre. There are two flood prone caravan parks in the area (1).

2.15.13 There are over 181 properties affected in the PMF, with 179 buildings (170 of which are homes and 9 are businesses) (18). Potentially up to 382 properties may be affected with the development that has occurred since 2004 (13).

2.15.14 Council are currently upgrading the Boulevarde/Dunbogan Bridge to be able to withstand floods up to the 5 % AEP flood (2.4 metres).

2.15.15 Over-floor flooding first commences at 1.3 metres on the Laurieton Fish Co-op gauge in parts of Camden Head Road, Longworth Road and The Boulevarde (1).

2.15.16 Table 13 shows the number of residential dwellings inundated at various levels in relation to the Laurieton Fish Co-op Gauge (207425), in summary:

a. 5% flood (2.4 metres) – 147

b. 1% flood (3.03 metres) – 156

c. PMF (3.65 metres) – 170

2.15.17 The majority of Camden Head is above the PMF, with some lower lying properties located near Gogleys lagoon susceptible to inundation.

Table 13: Number of residences inundated over-floor by flooding in Dunbogan per street (1)

Location	1.9 metres	5%AEP Event 2.4 metres	2%AEP Event 2.78 metres	1% AEP Event 3.03 metres	PMF 3.65 metres
Bay Street	5	13	13	13	13
Beach Street	0	0	0	3	3
Bell Street	27	38	38	38	39
Diamond Head Road	0	0	0	0	7
Longworth Road	22	31	32	32	36
River Street	3	4	4	4	4
Scarborough Way	0	0	0	0	1
The Boulevarde	29	39	43	44	45
Camden Head Road	17	22	22	22	22

Isolation

2.15.18 Dunbogan and Camden Head becomes isolated at around 1.1 metres (Laurieton gauge) when Diamond Head Road at the Dunbogan Bridge approaches become flooded.

2.15.19 Camden Head becomes isolated once The Boulevarde becomes flooded. There are no stores or facilities in the area, so resupply will be a priority. There is also no shelter for evacuees in this area (1). Camden Head Road also begins to flood between Bell Street and Scarborough Way around 1.1 metres isolating Camden Head. There are road works in progress as at July 2015 to upgrade the road to be above 2.4 metre floods (5% AEP).

2.15.20 Road closure information is summarised in Section 2.18.

Characteristics of flooding

2.15.21 A 1% AEP event (2.9 metres Laurieton Fish Co-op Gauge) is be associated with relatively low overland velocities ranging between 0.2 and 0.5 metres per second. Higher velocities may be experienced between buildings. Combined with likely depths greater than one metre; wading by adults is dangerous and light buildings (e.g. caravans) and cars will float. The combination of water depth, velocity and debris may also result in structural damage to buildings located upon the floodplain (1). Peak average mid-stream velocities between North Haven and Laurieton at Stingray Creek Bridge are estimated at 0.7 metres per second.

2.15.22 During major events, floodwaters will spread across a relatively large tract of low lying swampy land located either side of Stingray Creek. Therefore the majority of the area is subject to flooding.

2.15.23 Dunbogan is the highest hazard area in the Camden Haven Catchment. The entire village is subject to flooding and is classified as high risk due to relatively deep fast rising flood waters, short warning times, evacuation difficulties and the potential long duration of flooding (1).

2.15.24 However, under different circumstances, particularly lower ocean levels, appreciably higher flood velocities can be expected. Average mid-stream velocities are faster reaching 1.7 metres per second between Dunbogan and Laurieton, and increasing notably in Camden Haven Inlet, peaking at 3.9 metres per second near the ocean entrance (8).

2.15.25 Tidal influences extend to just above Kendall and Johns River, affecting Watson Taylors Lake, Queens Lake, Stingray Creek and Gogleys Lagoon. The lakes and swamps have significant storage capacity for flood waters. Therefore, flood behaviour here is affected by the complex interaction between catchment runoff, the storage effects of the lakes, tides, storm surge and wave setup effects (8).

2.15.26 The mean spring tidal ranges in Watson Taylors Lake and Queens Lake are approximately 0.37 metres and 0.12 metres respectively compared to an ocean range of 1.28 metres at the river's ocean entrance (8).

2.15.27 The Camden Haven Catchment is the primary source of flood water to the estuary during major catchment wide rainfall events. The Herons Creek and Stewarts River catchments contribute similar flows to the estuary, but these are typically only 25% to 30% of flows entering from the Camden Haven River (8).

2.15.28 Little warning of major floods at Laurieton, Dunbogan and North Haven is available, with only approximately five hours between catchment saturation and the major flood level (1.7 metres) being reached (8).

Flood Mitigation Systems

2.15.29 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.15.30 There are no known impacts of dam failure in Dunbogan.

Other Considerations

2.15.31 During peak tourist season (Christmas and Easter) up to 2020 persons may reside here including 270 persons over the age of 65 (1).

2.16 KENDALL AND SURROUNDING AREAS

2.16.1 Kendall is located upstream of Laurieton on the Camden Haven River. Surrounding areas include Kew, Rossglen and Logans Crossing.

2.16.2 The total population of Kendall is 1530, with 18% of the population aged 65 or over (12).

Cultural and Linguistic Diversity

2.16.3 The most common ancestries were Australian (37%) and English (33%) (12).

2.16.4 Four percent of the population are of indigenous origin (12).

2.16.5 None of the population has identified they do not speak English well (12).

Schools and childcare centres

2.16.6 The following schools and childcare centres are at risk of isolation (18).

a. **Schools**

- Kendall Public School, Logans Crossing Rd, Kendall
- Camden Haven High School, Valley View Rd, Kew

b. **Childcare centres**

- Kendall Community Preschool, Railway St, Kendall
- Kids Haven Early Learning Centre, Ocean Drive, Kew

Facilities for the aged and/or infirm

2.16.7 No facilities are at known risk of flooding and/or isolation (18).

Utilities and Infrastructure

2.16.8 There are no known utilities at risk.

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

Classification of Floodplain

2.16.10 A series of high flood islands up to the PMF.

2.16.11 Rossglen has rising road access.

Inundation

2.16.12 These communities utilise the Logans Crossing Gauge (207428) and Kendall Gauge (207912). Heights referred to in this section are related to the Kendall gauge, unless otherwise stated.

2.16.13 In Kendall (and surrounding areas), 30 properties are inundated at 5.45 metres (in a 5% AEP flood at Kendall), consisting of 23 dwellings (18 homes

and 5 businesses) (18). Properties at risk are located in Araluen Street, Lorne Road, Old Bridge Road, Railway Street and River Street.

2.16.14 At 6.2 metres (1% AEP event at Kendall), 63 properties are inundated, 56 of these will have buildings inundated, consisting of 49 homes and 7 businesses (18). It is likely that 16 of these properties will be flooded over-floor by more than one metre (1). Properties at risk are in Araluen Street, Fagans Crescent, Logan Vale Place, Lorne Road, Old Bridge Road, Railway Street and River Street. Floodwaters exceeding this height may also affect properties in Berryman Road, Foxes Creek Road, Graham Street, Kendall Road, Kingsford Road, Logans Crossing Road and River Oaks Drive.

2.16.15 There are over 118 properties affected in the PMF (7.25 metres at Kendall), with 106 buildings (92 of which are homes and 14 are businesses) (18).

2.16.16 Properties in River Street and Old Bridge Road located in eastern Kendall near the Traffic Bridge are particularly susceptible to flooding and begin to flood at 3.5 metres on the Kendall Road Bridge gauge (1).

2.16.17 Properties in Rossglen at the end of Stage Coach Road and Main Street Ross Glen (approximately 14 properties) are susceptible to inundated below the PMF (18).

Table 14: Number of properties inundated in each street, in reference to heights on the Kendall gauge

Location	5.45 metres	5.85 metres	6.2 metres	7.25 metres
Kendall				
Araluen Street	0	1	2	3
Berryman Road	0	0	0	2
Fagans Crescent	0	0	1	1
Foxes Creek Road	0	0	0	3
Graham Street	0	0	0	1
Kendall Road	0	0	0	4
Kingsford Road	0	0	0	1
Logans Crossing Road	0	0	0	4
Loganvale Place	0	0	3	3
Lorne Road	1	1	1	1
Old Bridge Road	2	2	2	2
Railway Street	0	1	3	11
River Oaks Drive	0	0	0	3
River Street	10	10	10	10
TOTAL	**13**	**15**	**22**	**49**

Location	5.45 metres	5.85 metres	6.2 metres	7.25 metres
Kew				
Ivers Road	1	1	1	1
Ocean Drive	0	0	0	2
Pacific Highway	0	0	0	2
Sunnyvale Road	0	0	1	6
Tathra Road	0	0	0	1
Valley View Road	0	0	0	2
Weeroona Place	0	0	0	2
TOTAL	**1**	**1**	**2**	**16**
Ross Glen				
Main Street	0	0	10	10
Pacific Highway	0	0	1	1
Ross Glen Road	0	0	5	5
Stage Coach Road	0	5	5	5
TOTAL	**0**	**5**	**21**	**21**

Isolation

2.16.18 Road closure information is summarised in Section 2.18.

2.16.19 Kendall Bridge on the Camden Haven River near Old Bridge Road 3.1 metres (Kendall Gauge).

2.16.20 Logans Crossing Bridge at Logans Crossing on Logans Crossing Road 3 metres (Logans Crossing Gauge).

Characteristics of flooding

2.16.21 The area is susceptible to flooding from the Camden Haven River, Upsalls Creek, Batar Creek and Black Creek.

2.16.22 Velocities in a 1% AEP flood are expected to be close to 1 metre per second.

2.16.23 Tidal influence extends just above Kendall (9).

2.16.24 Flooding occurs from the Camden Haven River and are typically confined to a relatively narrow floodplain extending across to the north of the main channel. The Pacific Highway forms a barrier to flows which can impact on the ultimate spread of floodwaters on the upstream side of the embankment (9).

2.16.25 River flow is fast to very fast due to restriction of water under the Kendall Bridge.

2.16.26 Little warning of major floods at with less than five hours between catchment saturation and the major flood level being reached (8).

Flood Mitigation Systems

2.16.27 No flood mitigation systems are identified in the Port Macquarie Hastings LGA.

Dams

2.16.28 There are no known impacts of dam failure in Kendall.

Other Considerations

2.16.29 No other considerations have been identified.

SPECIFIC RISK AREAS – COASTAL EROSION

Macquarie Coastal Waters

2.17 LAKE CATHIE

2.17.1 Lake Cathie is an identified coastal erosion hotspot (11).

2.17.2 Lake Cathie is located along Lighthouse, Lake Cathie and Rainbow Beach between Tacking Point and Grants Head. It is situated approximately 18 kilometres by road to the south of Port Macquarie.

2.17.3 The Lake itself is a component of a wider system that includes Cathie Creek and Lake Innes to the north. It is an intermittently closed and open lake or lagoon (ICOLL), with a 250 metre wide entrance. When the lake is closed, the berm at the entrance builds to approximately 2.5 metres AHD. Northward migration of the channel is restricted by underlying coffee rock (19).

2.17.4 The beach faces south-east and is 1.9 kilometres long. It is backed by residential development along Illaroo Road and Jonathon Dixon Reserve (19).

2.17.5 Erosion occurs from storms and the flow for Lake Cathie when artificially opened has resulted in erosion of the dunes immediately north of the lake mouth (1). Long term recession due to sediment loss is estimated to be 9m by 2050 and 19 metre by 2100. This is estimated to be exacerbated by sea level rise by up to 26 metre and 61 metre for 2050 and 2100 respectively (19).

2.17.6 Rock dumping for bank protection on the southern side of Lake Cathie has been undertaken since the late 1960's, and in the 1970's a culvert and causeway were constructed across Lake Cathie. The entrance has been dredged intermittently (19).

2.17.7 The total population is 2998, with a median age of 43. The majority of the population is Australian (36%) and English (34%) (12). The location is one of the three most popular location for shoulder and low season visitors to the LGA, with approximately 10 000 visitors per annum (19).

2.17.8 Assets at risk include immediate risk of Illaroo Road, preventing access to 14 dwellings and 17 dwellings at risk of structural damage due to reduced foundation capacity. In addition there may be six Caravan Parks, four Surf Clubs, one Lighthouse and one Petrol Station (1). Currently, foreshore development along Illaroo Road is a mix of modern two storey dwellings, older style two storey dwellings, and c1950 single storey cottages of mostly timber or fibro cladding (19).

ROAD CLOSURES AND ISOLATED COMMUNITIES

2.18 ROAD CLOSURES

2.18.1 Table 15 lists major roads liable to flooding in the Port Macquarie - Hastings LGA (Identified on Maps 2 and 3). Other smaller roads will also be flooded, impacting local traffic.

2.18.2 The main access routes into and out of Dunbogan, North Haven, Johns River and Kendall will be cut by floodwaters on a relatively frequent basis, and by over one metre in a 5% AEP flood. Some of these roads are flooded by nuisance floods and high spring tides e.g. The Boulevard, Diamond Head Road and Ocean Road Causeway (18). This highlights the importance of a sound evacuation strategy and the importance of early response.

Table 15: Roads liable to flooding in Port Macquarie - Hastings LGA.

Road	Closure location	Consequence of closure	Alternate Route	Indicative gauge height
Settlement Point Road	Giraween Road	Evacuation route closure for Settlement Point. Restricts the evacuation potential of around half of the estimated 400 residents.	No	1.4 – 1.5 metres (Settlement Point gauge)
Park Street	Panthers Club	Evacuation route closure for Settlement Point/canals	No	2.6 metres (Settlement Point gauge)
Hastings River Drive	Hibbard Drive (east)	Evacuation route closure for Hibbard	No	2.8 metres (Settlement Point gauge)
Hastings River Drive	Boundary Road	Evacuation route closure for Hibbard. Effects evacuation of nearly 2000 residents of the Boundary Road community	No	1.8 metres (Settlement Point gauge)
Hastings River Drive	Fernbank Creek	Evacuation route closure for Fernbank	No	2 metres (Settlement Point gauge)
Hastings River Drive	Tuffins Lane	Evacuation route closure for Fernbank	No	1.4 metres (Settlement Point gauge)
Oaks Crescent	Fernbank	Evacuation route closure for Oaks Road residents	No	1.8 metres (Settlement Point gauge)
Riverside Drive	Shoreline Drive	Evacuation route closure for North Shore/Riverside	No	1.8 metres (Settlement Point gauge)

Road	Closure location	Consequence of closure	Alternate Route	Indicative gauge height
Wombat Close	Shoreline Drive	Evacuation route closure for residents east of this location	No	1.8 metres (Settlement Point gauge)
Maria River Road	Maria River	Evacuation route closure for Maria River	No	2 metres (Maria River gauge)
Plomer Road	North Shore Drive	Evacuation route closure for Pacific Coast	No	1.5 metres (Settlement Point gauge)
North Shore Settlement Point Ferry embarkation	Ferry	Evacuation route closure via ferry	via Riverside Ferry	1.4 metres (Settlement Point gauge)
Blackmans Point Road	Hatch Road/creek crossing	Evacuation route closure for Blackmans Point	No	3.3 metres (Telegraph Point gauge)
Hatch Road	Close to the river bank	Evacuation route closure for the Hatch	No	1.9 metres (Telegraph Point gauge)
Elford Road	Hacks Ferry	Evacuation route closure for Hacks Ferry	No	1.7 metres (Telegraph Point gauge)
Hacks Ferry Road	Near the island in Wilson River	Evacuation route closure for rural residents east of the location	No	1.95 metres (Telegraph Point gauge)
Narrow Gut Road	Rawdon Island Road	Evacuation route closure for Rawdon Island north	south	3.6 metres (Wauchope gauge)
Rawdon Island Road	Southern bridge	Evacuation route closure south – isolates Rawdon Island	No	4.3 metres (Wauchope gauge)
Beechwood Road	Bains Bridge	Limits access west of Wauchope	Pembrooke Road north High road south	2.5 metres (Wauchope gauge)
Beechwood Road	Yippin Creek	Limits access west of Wauchope, isolating Yippin Creek	High Street	6.3 metres (Wauchope gauge)
Rocks Ferry Road	Railway Crossing	Prevents access east and north of Wauchope	Alternate route also likely to be inundated. Kings Creek area may still have access via Kings Creek Road to 8.6 metres. Evacuation to Wauchope for Pembrooke/Redbank residents closed	5 metres (Wauchope gauge)

Road	Closure location	Consequence of closure	Alternate Route	Indicative gauge height
Oxley Highway	Sarah's Creek	Prevents access east and north of Wauchope	Kings Creek area may still have access via Kings Creek Road to 8.6 metres	5 metres (Wauchope gauge)
Oxley Highway	Stoney Creek Road	Prevents access east and north of Wauchope	Alternate route also likely to be inundated. Evacuation to Wauchope for Pembrooke/Redbank residents closed	5 metres (Wauchope gauge)
Oxley Highway	West of Kings Creek	Prevents access east of Wauchope	Alternate route also likely to be inundated. Oxley Highway residents isolated and evacuation route closed for these residents	5.3 metres (Wauchope gauge)
Kings Creek Road	Kings Creek	Evacuation route closure for Kings Creek area – area is isolated	No	8.6 metres (Wauchope gauge)
Pembrooke Road	Loggy Creek	Prevents access north and south of this location for Pembrooke residents	No	Around 3.3- 5 metres (Wauchope gauge)
Ennis Road	Stoney Creek Road	Isolating approximately 7 properties which become inundated	No	3.9 metres (Wauchope gauge)
Pembrooke Road	Stoney Creek Road	Prevents access north and south of this location for Pembrooke residents	No	5 metres (Wauchope gauge)
Ocean Drive	Stingray Creek	Prevents access between Laurieton and North Haven	North via Port Macquarie	1.15 metres (Laurieton gauge)
Diamond Head Road	Dunbogan Bridge	Isolates Dunbogan and Camden Head	No	1.1 metres (note Council are currently upgrading the road to 2.4 metres as at April 2015)
Camden Head Road	Bell and Scarborough Way	Isolates Camden Head	Via tip road	1.1 metres (note Council are currently upgrading the road to 2.4

Road	Closure location	Consequence of closure	Alternate Route	Indicative gauge height
				metres as at April 2015)
Sirius Drive	Roundabout	Isolates Lakewood residents	No	3 metres (Laurieton gauge)
Kendall Bridge	Near Old Bridge Road	Prevents access between Kendall and the coast	No	3.1 metres (Kendall gauge)
Logans Crossing Road	Logans Crossing bridge	Prevents access north between Logans Crossing and Kendall	May be available via Kendall Road to 3.1 metres (Kendall gauge)	3 metres (Logans Crossing gauge)
Oxley Highway	Wauchope (near cemetery)		No	4.99m on Wauchope Gauge
Oxley Highway	Long Flat		No	8.71m on Kindee Bridge Gauge
River Street	Kendall. Upstream side of bridge.			Height of road is 3.83metres AHD and estimated to be inundated by 1.4m in a 5% AEP flood
Pacific Highway	John's River, Herons Creek, Stewarts River and Telegraph Point	impacting north south traffic	No	Not known
The Parade	North Haven	Impacts access and egress	No	Around 2.7 metres on the Laurieton gauge
Wharf Road	Johns River	Isolates a small number of residents to the east	No - (pedestrian access through to Bee Tree Road)	1.7 metres
Stewarts River Road (Jerusalem Road)	Lorne	Impacts access between Lorne and Stewarts River	Yes	Not known
Upsalls Creek Road	Upsall's and Black Creek Roads intersection	Isolates Swan's Crossing Camping Grounds	No	Not known
Comboyne Road	Citizens Bridge	Impacting access between Comboyne and Wauchope	Yes	Not known
Kindee Road	Kindee Bridge	Impacts access east of Kindee	Yes – Pipeclay Road	14 metres on the Kendall gauge
Houston Mitchell Drive	Lake Cathie	Impacts access and egress to Bonny Hills and Lake Cathie	No	Not known

Road	Closure location	Consequence of closure	Alternate Route	Indicative gauge height
Alfred Street	North Haven adjacent to Eames Ave	Impacts alternate route to Ocean Drive	Yes	1.4 metres Laurieton gauge
Bobs Creek Road	Herons Creek	Isolates Bobs Creek	No	Not known

2.19 SUMMARY OF ISOLATED COMMUNITIES AND PROPERTIES

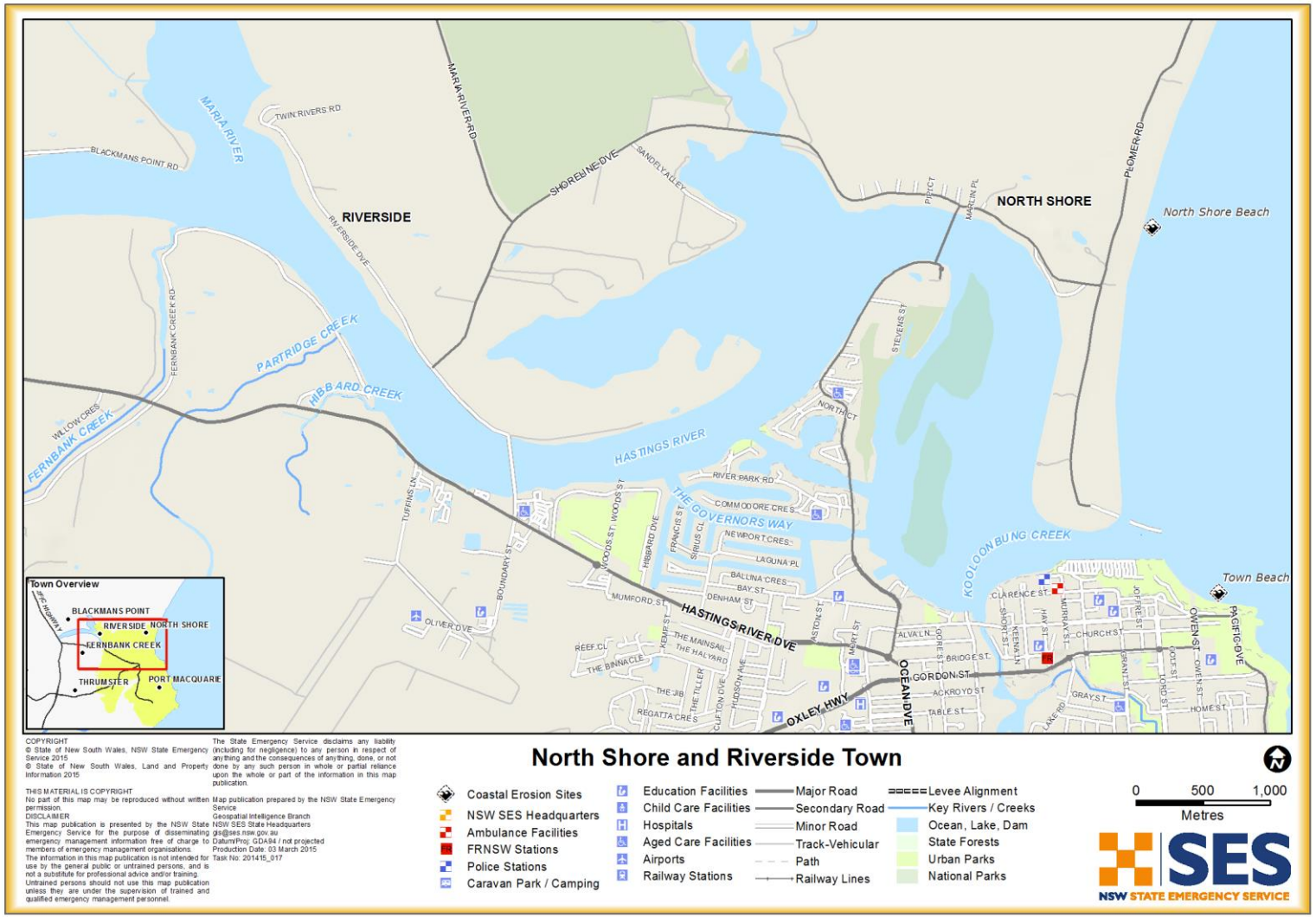
Table 16: Potential Periods of Isolation for communities in the Port Macquarie - Hastings LGA during a major flood. Note: Periods of isolation are a guide only. Liaison with the Local Controller and communities/residents involved is essential during periods of potential and actual isolation.

Town / Area (River Basin)	Dwellings	Flood Affect Classification	Approximate period (days)								NOTES
			1	2	3	4	5	6	7	8	
North Shore/ Riverside	~310	Low Flood Island									This area is on the northern banks of the Hastings, with the usual mode of transport to Port Macquarie CBD via ferry. The ferry discontinues operation in unfavourable weather conditions
Settlement Point	~394	Low Flood Island									
Hibbard	~1000	Low Flood Island									
Fernbank/Oaks	~28	Low Flood Island									
Blackmans Point/Hatch	~40	Low Flood Island									
Wauchope	~2100	Low Flood Island and High Trapped Perimeter									
Telegraph Point	~80	Some rural properties Low Flood Island and High Flood Island. Township is Rising Road Access									
Rawdon Island	~44	Low Flood Island									
Kendall	~475	High Flood Island									

Camden Head/Dunbogan	~631	Low Flood Island								

MAP 1 - HASTINGS – CAMDEN HAVEN RIVERBASIN

MAP 2 - NORTH SHORE AND RIVERSIDE



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NSW SES State Headquarters
gis@ses.nsw.gov.au
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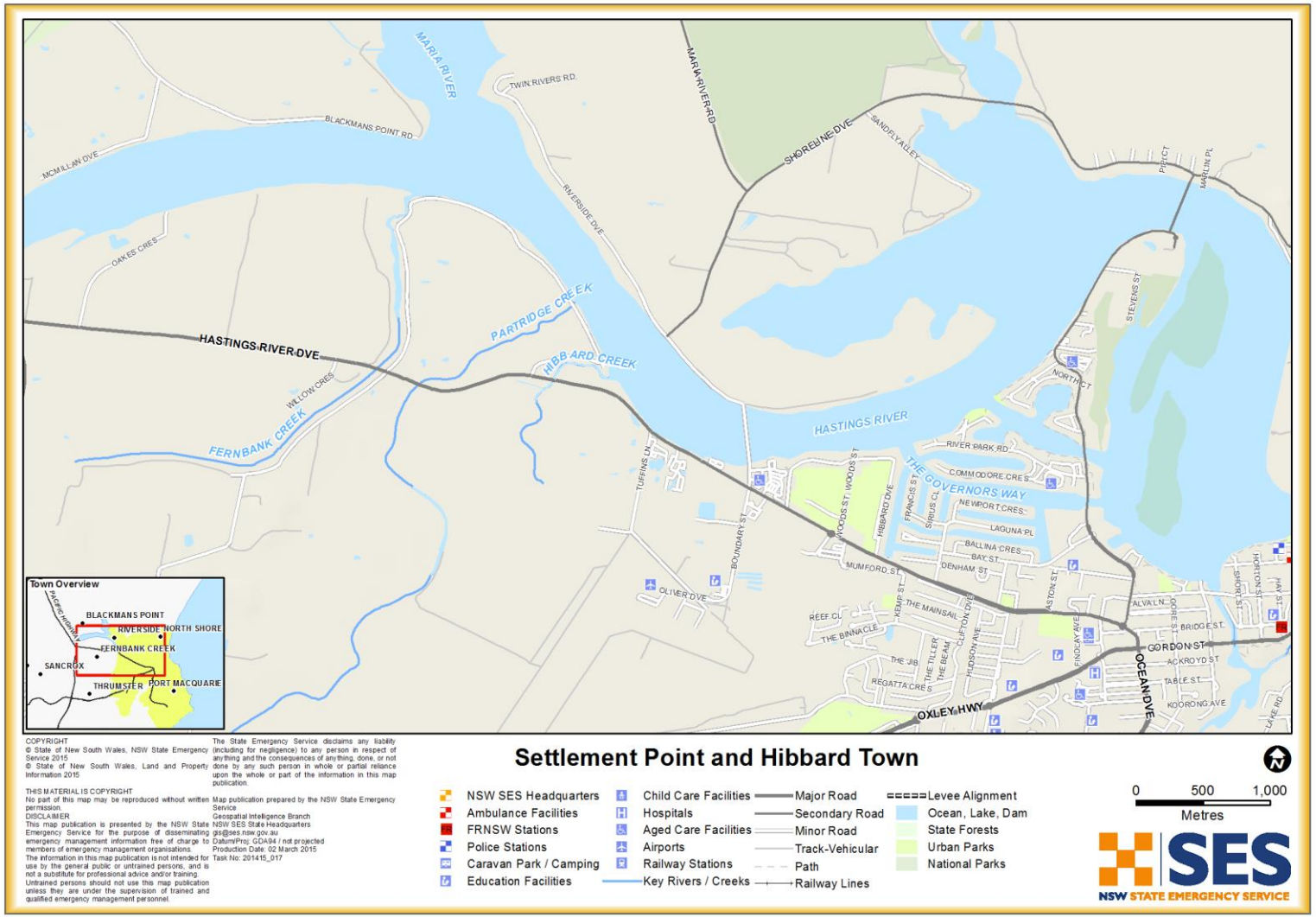
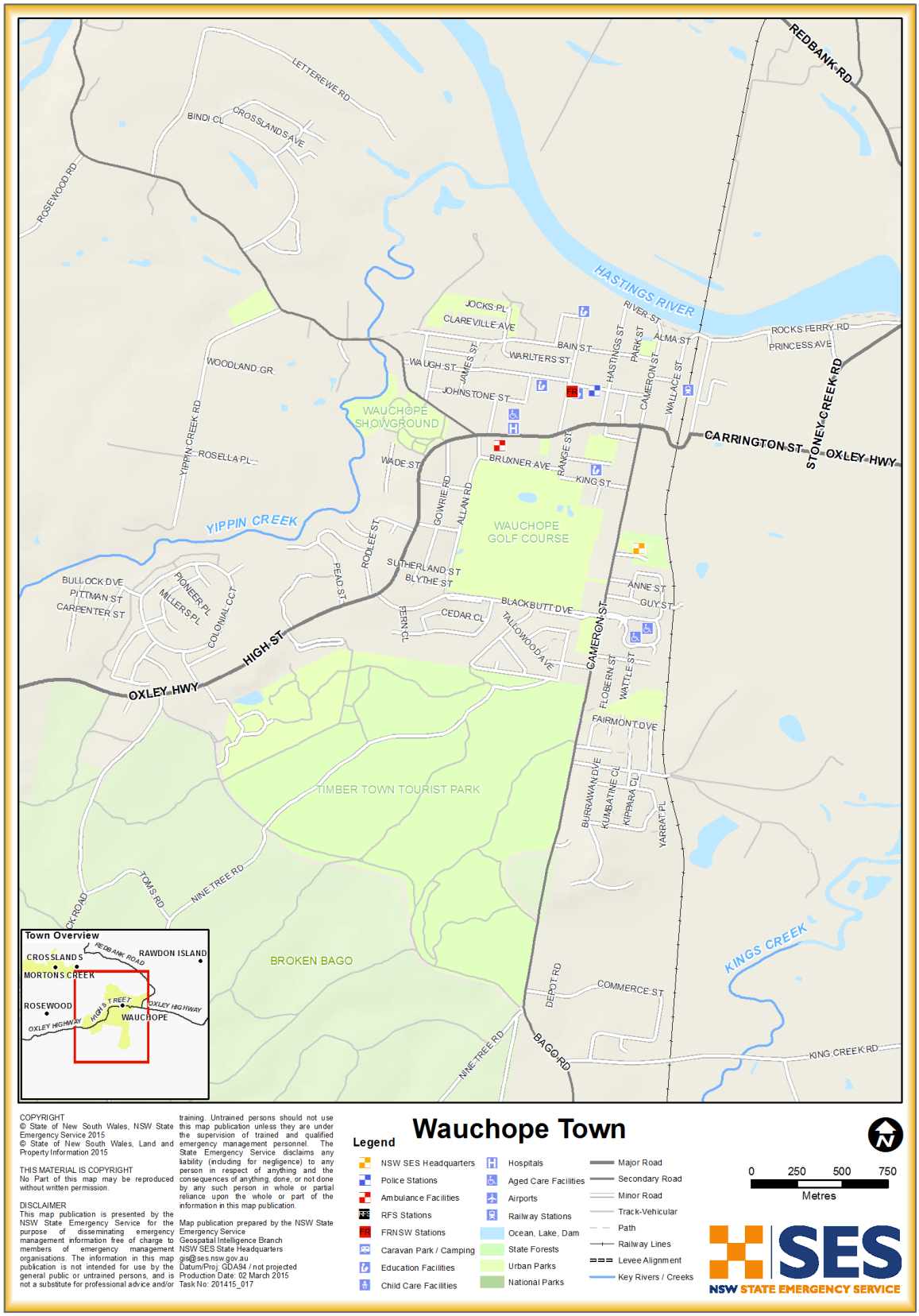
MAP 3 - PORT MACQUARIE TOWN MAP

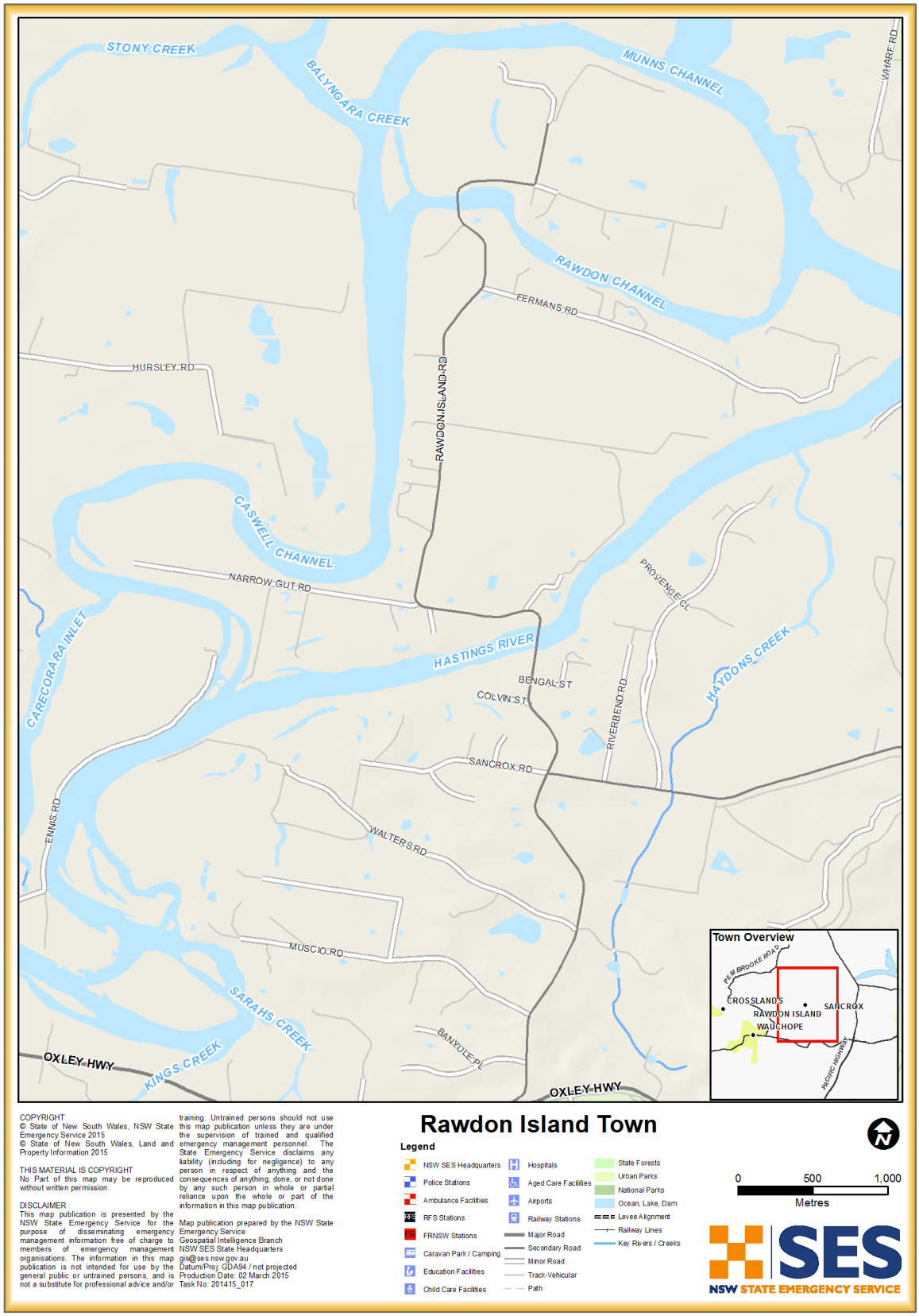
MAP 4 - SETTLEMENT POINT AND HIBBARD



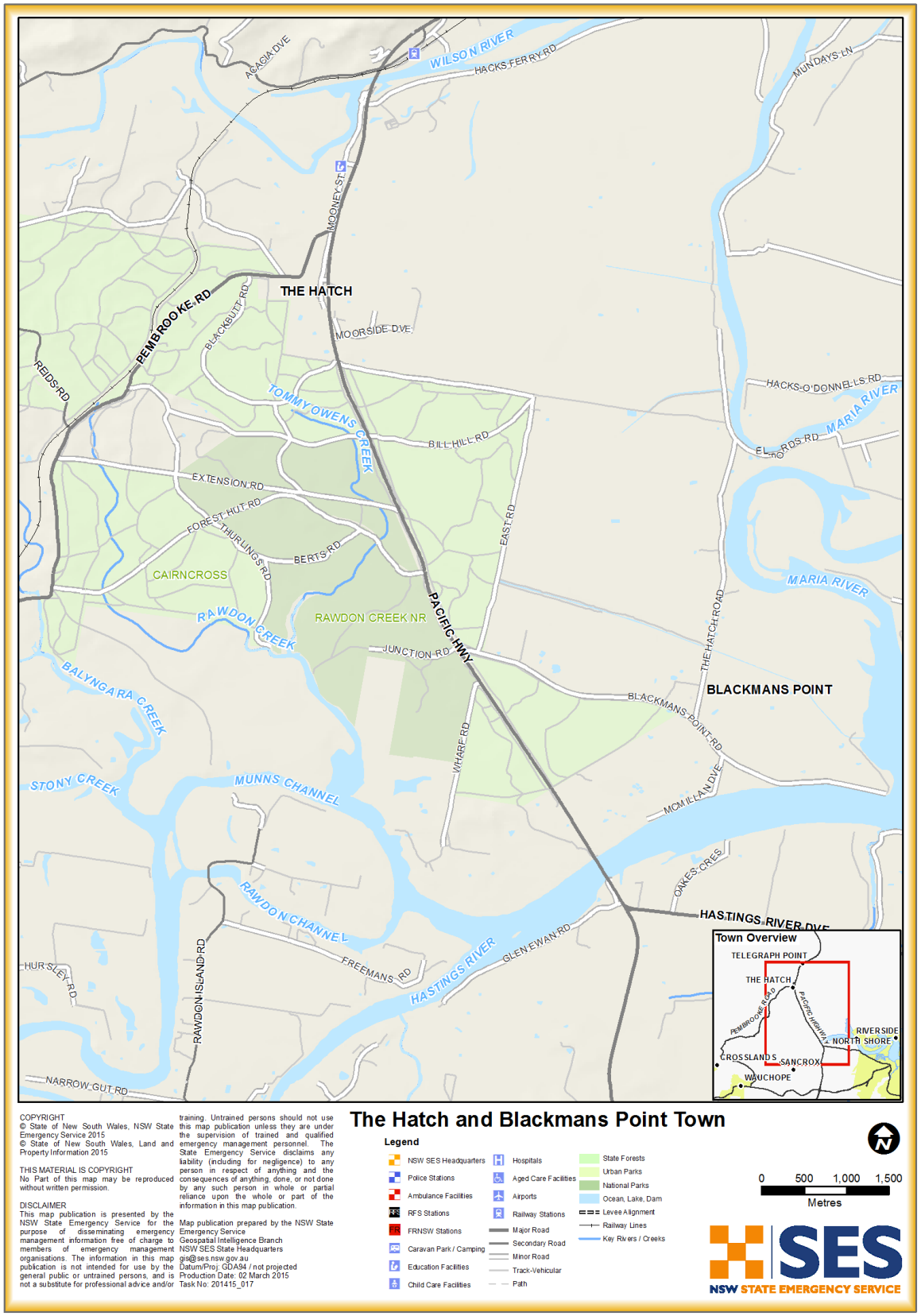
MAP 5 - WAUCHOPE



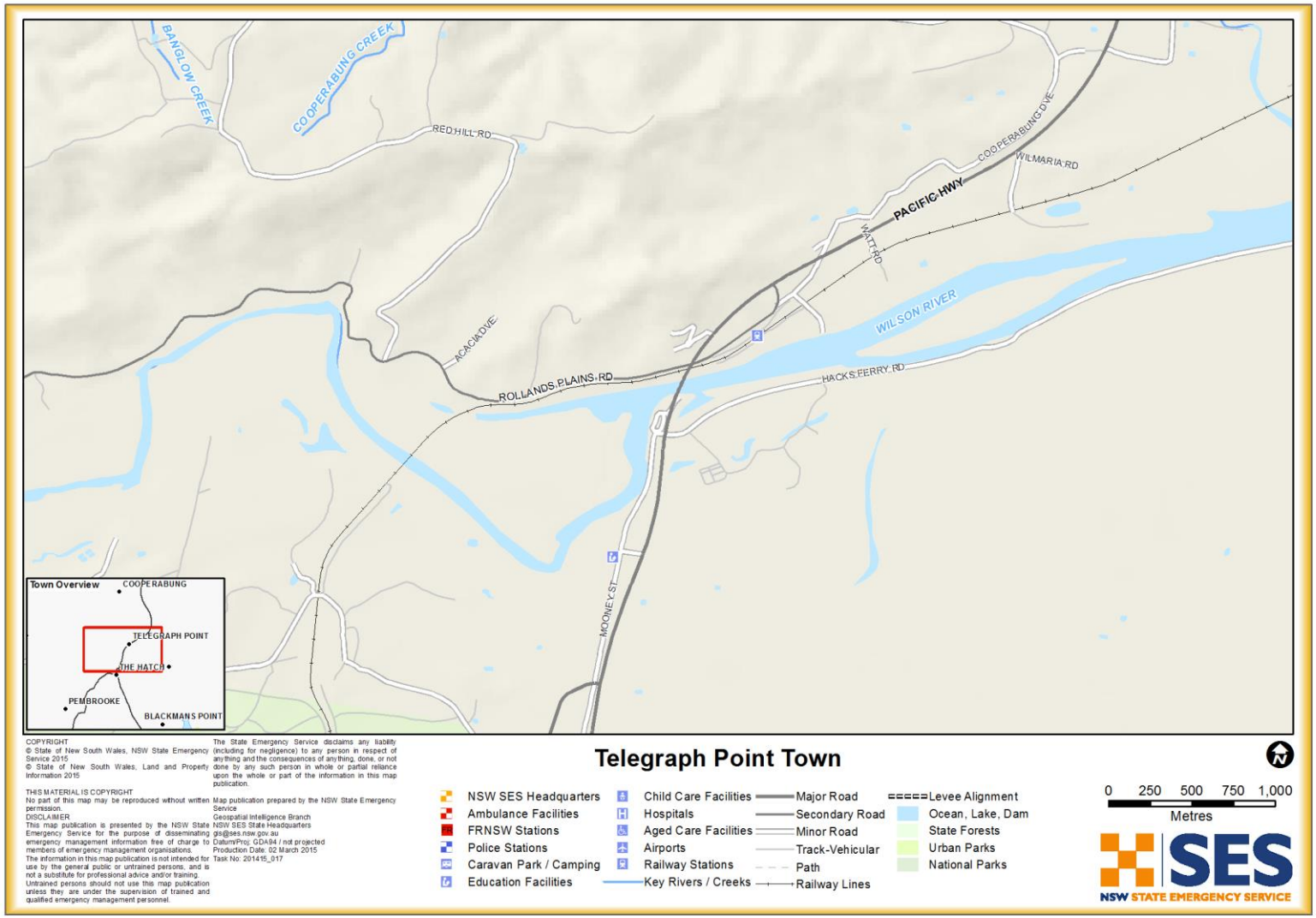
MAP 6 - RAWDON ISLAND



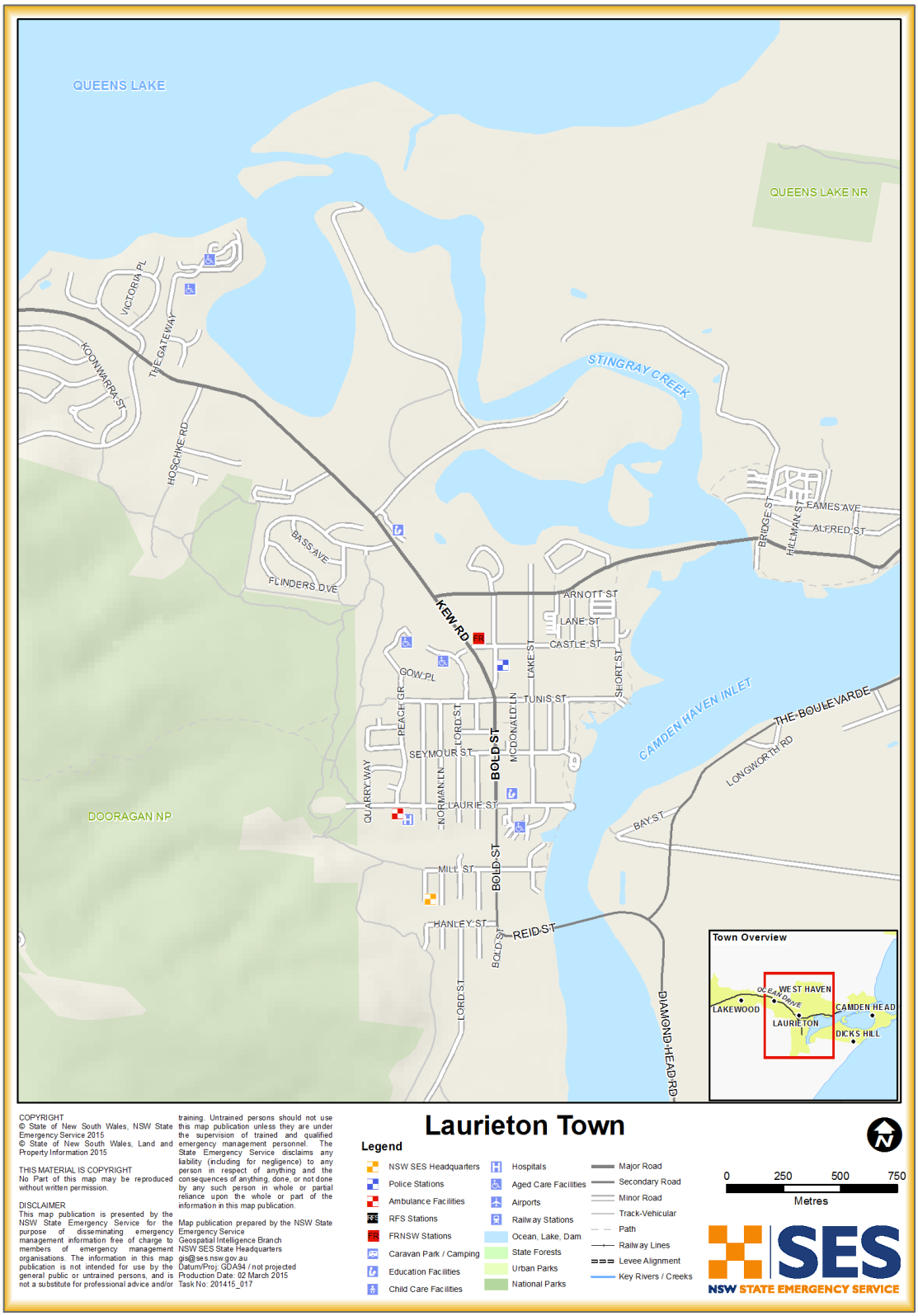
MAP 7 - THE HATCH AND BLACKMANS POINT



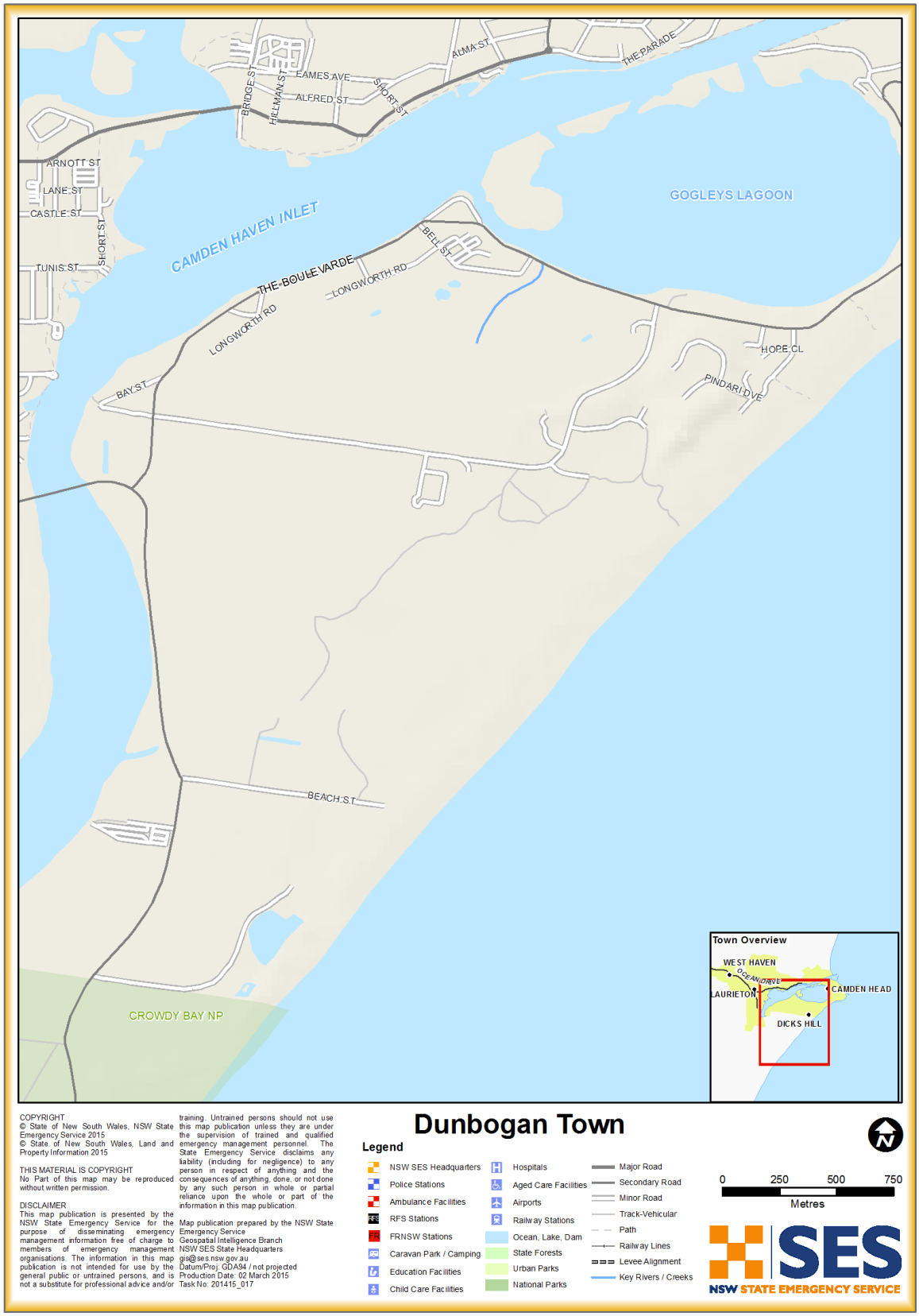
MAP 8 - TELEGRAPH POINT



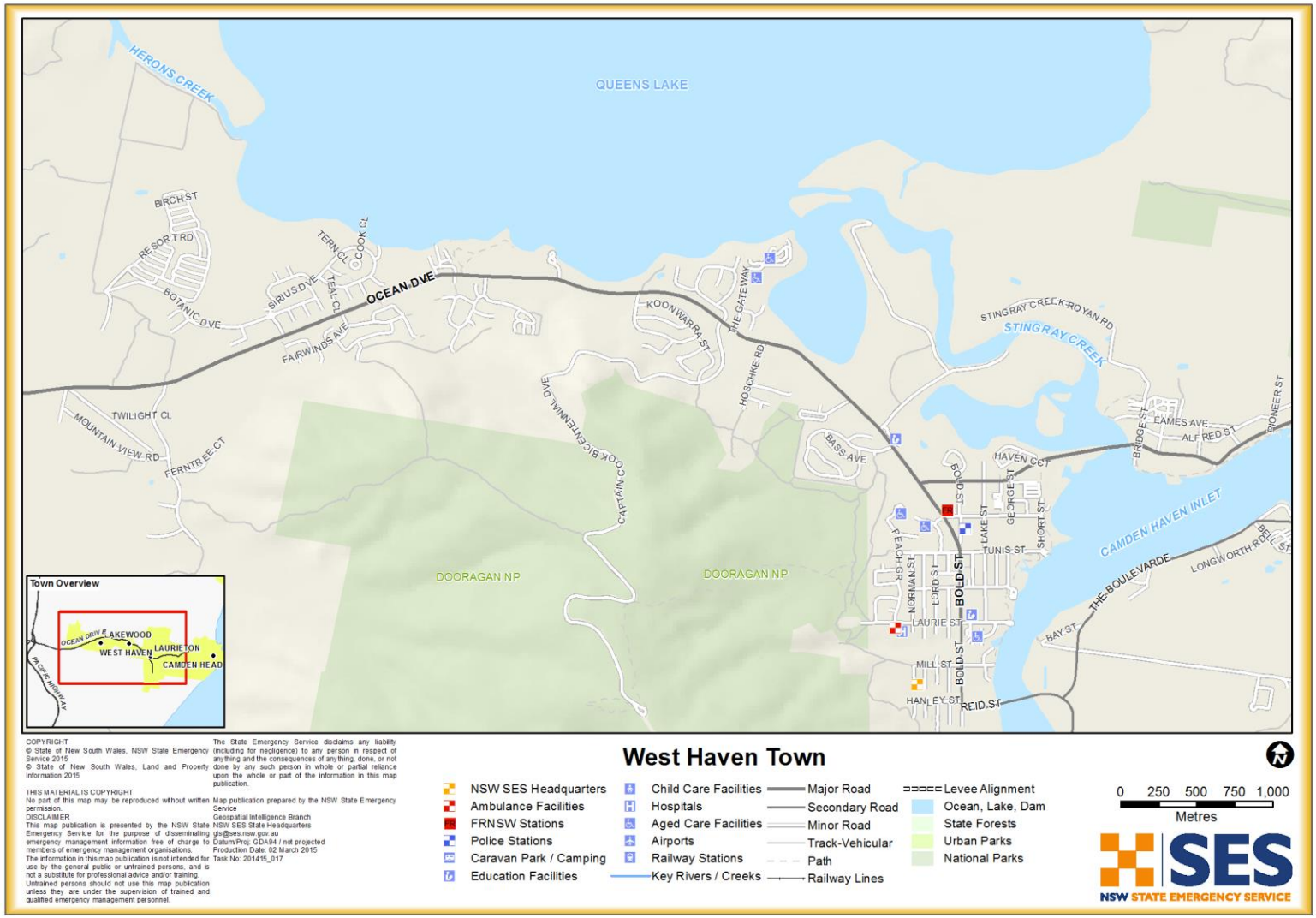
MAP 9 - LAURIETON



MAP 10 - DUNBOGAN



MAP 11 - WEST HAVEN



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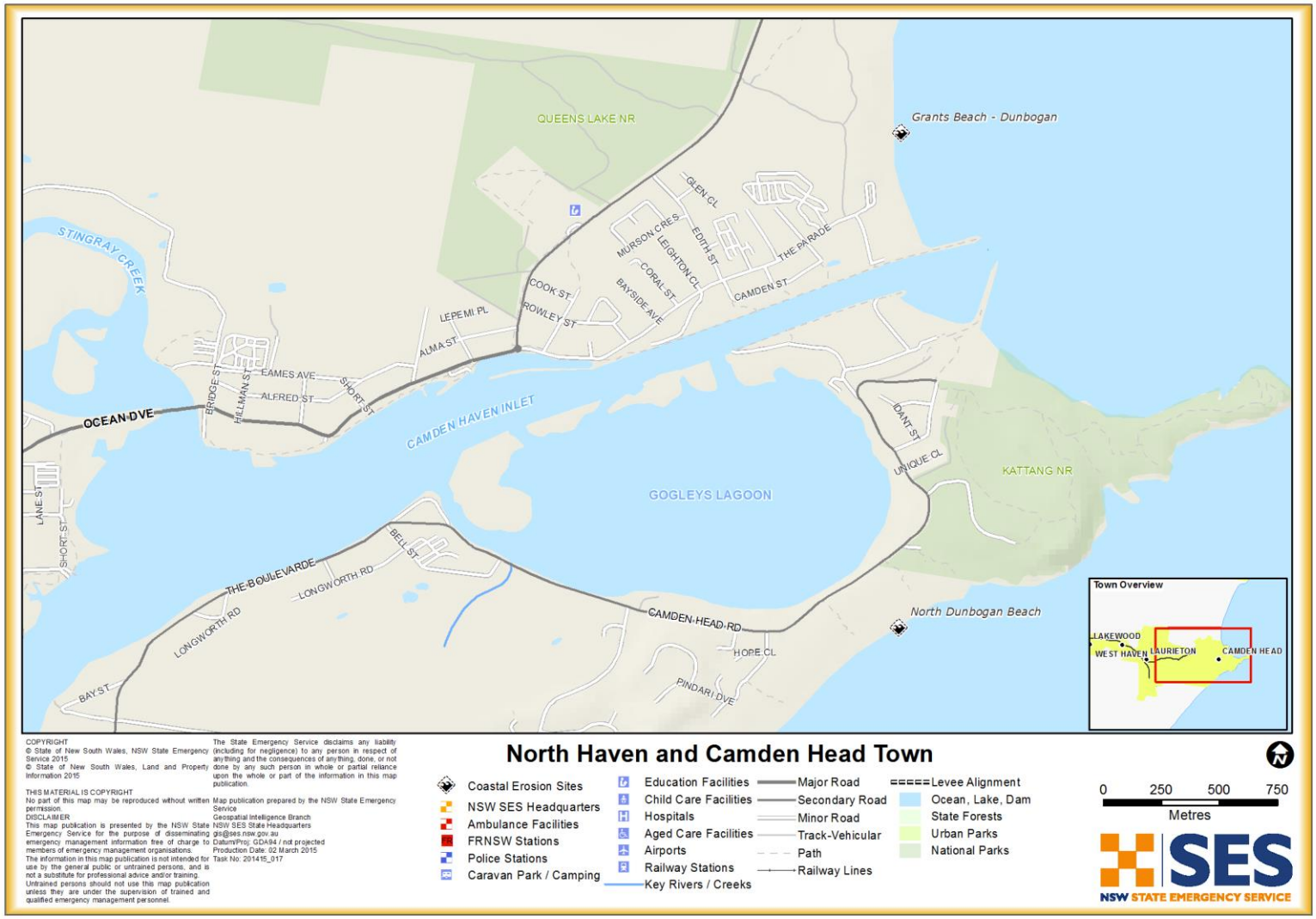
MAP 12 - CAMDEN HEAD AND NORTH HAVEN



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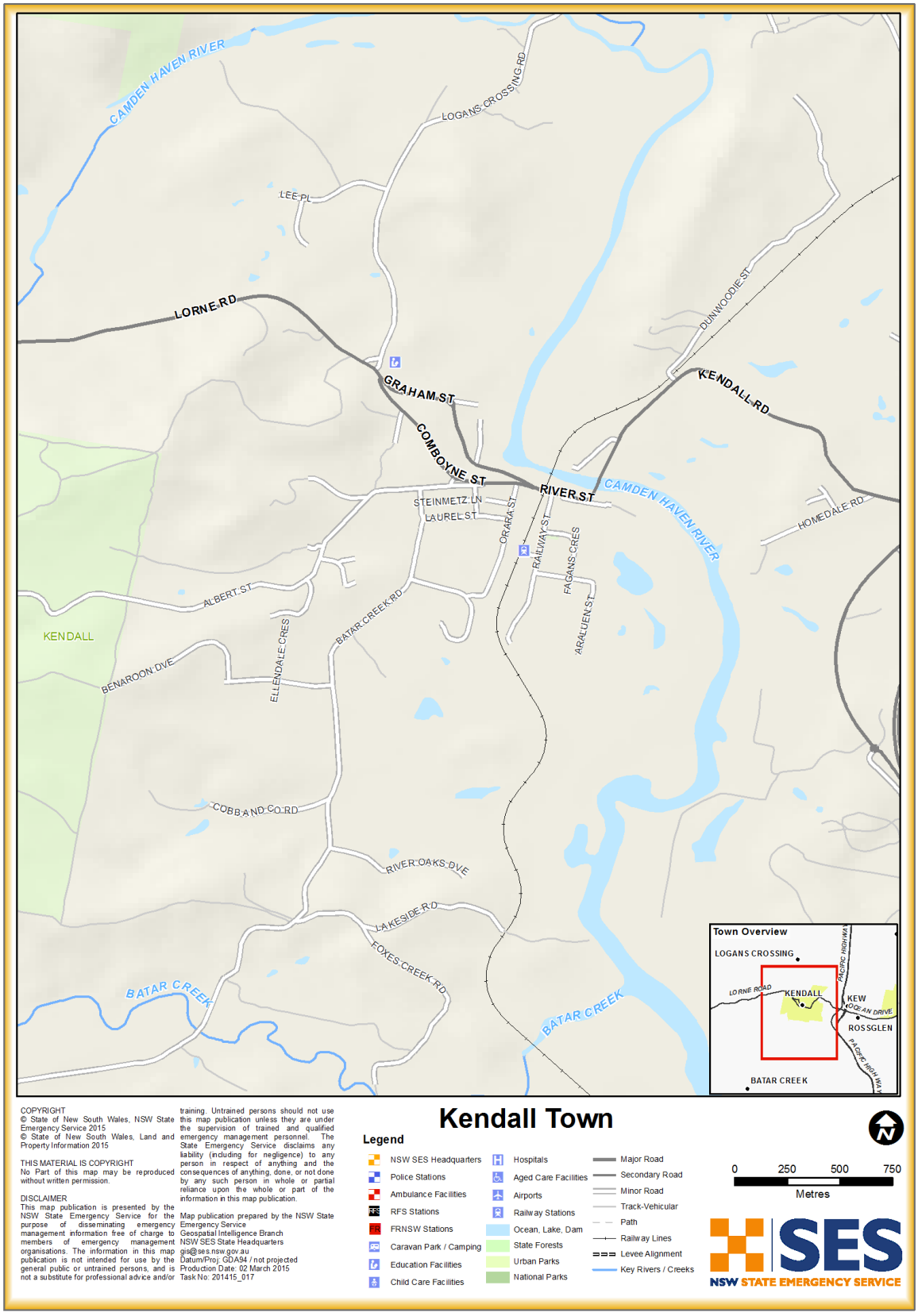
MAP 13 - KENDALL



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NSW STATE EMERGENCY SERVICE

SES RESPONSE ARRANGEMENTS FOR PORT MACQUARIE-HASTINGS

Volume 3 of the Port Macquarie – Hastings Local Flood Plan

Last Update: November 2015

FloodSafe

CONTENTS

VERSION LIST

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

Description	Date
Port Macquarie – Hastings Local Flood Plan	October 2008 as amended August 2009
Camden Haven Local Flood Plan	October 2004

AMENDMENT LIST

Suggestions for amendments to this Volume should be forwarded to:

The Port Macquarie - Hastings Local Controller

NSW State Emergency Service

PO Box 1139, PORT MACQUARIE, NSW, 2444

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

Amendment Number	Description	Updated by	Date

PORT MACQUARIE
HASTINGS

NSW STATE EMERGENCY SERVICE

PORT MACQUARIE - HASTINGS: FLOOD WARNING SYSTEMS AND ARRANGEMENTS

Chapter 1 of Volume 3 (NSW SES Response Arrangements for Port Macquarie - Hastings) of the Port Macquarie - Hastings Local Flood Plan

Last Update: November 2015

FloodSafe

AUTHORISATION

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

Approved

5/11/15

Manager Emergency Risk Management

Date:

Approved

5/10/16

NSW SES Mid North Coast Region Controller

Date:

17/11/16

Tabled at LEMC

Date:

Document Issue: 3.1-07042014

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LIST OF TABLES

1. GAUGES MONITORED BY THE NSW SES LOCAL HEADQUARTERS

Table 1: Gauges monitored by the NSW SES Port Macquarie-Hastings Local Headquarters

Gauge Name	Type	AWRC No.	Bureau Gauge No.	Stream	Flood level classification in metres			Special Reading Arrangements	Owner
					MIN	MOD	MAJ		
Mt Seaview	Telemetric	207015	560002	Hastings River	-	-	-	BOM	OEH
Birdwood	Telemetric	207006	560031	Forbes River	-	-	-	BOM	OEH
Ellenborough R D/S	Telemetric	207013	560000	Bunnoo River	-	-	-	BOM	OEH
Kindee Bridge*	Telemetric	207004	060116	Hastings River	3.0	5.5	7.6	BOM	BOM
Long Flat	Telemetric	207904	560016	Hastings River	-	-	-	BOM	PMHC
Beechwood	Telemetric	207010	060138	Pappinbarra Ck	-	-	-	BOM	OEH
Wauchope*	Telemetric	207401	060124	Hastings River	2.5	4.3	5.5	BOM	MHL
Avenal	Telemetric	207014	560033	Wilson River	-	-	-	BOM	MHL
Telegraph Pt	Telemetric	207415	560011	Wilson River	-	-	-	BOM	MHL
Telegraph Pt WTP (Water Treatment Plant)	Telemetric	-	560064	Wilson River					
Koree Isle	Telemetric	207442	560020	Hastings River	-	-	-	BOM	PMHC
Settlement Point*	Telemetric	207418	060133	Hastings River	1.2	1.5	1.75	BOM	MHL

Gauge Name	Type	AWRC No.	Bureau Gauge No.	Stream	Flood level classification in metres			Special Reading Arrangements	Owner
					MIN	MOD	MAJ		
Hastings River Breakwater (Tidal)	Telemetric	-	560050	Hastings River	-	-	-	MHL	MHL
Maria River	Telemetric	207406	560003	Maria River	-	-	-	MHL	MHL
Dennis Bridge U/S	Telemetric	207443	560043	Hastings River	-	-	-	MHL	MHL
Dennis Bridge D/S	Telemetric	207444	-	Hastings River	-	-	-	MHL	MHL
Hibbard	Manual	207999	-	Hastings River	-	-	-	NSW SES	NSW SES
Yarras	Manual	10441	-	Forbes River	-	-	-	NSW SES	NSW SES
Lake Cathie	Telemetric	207441	-	Lake Cathie	-	-	-	MHL	MHL

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 (‡)

Table 2: Gauges monitored by the NSW SES Camden Haven Local Headquarters

Gauge Name	Type	AWRC No.	Bureau Gauge No.	Stream	Flood level classification in metres			Special Reading Arrangements	Owner
					MIN	MOD	MAJ		
Upsall's Creek Bridge	Telemetric	207908	560010	Upsall's Creek					
Kendall	Telemetric	207009		Stingray Creek					OEH
Herons Creek Bridge‡	Telemetric	207909		Herons Creek					MHL
Kendall Road Bridge ‡†	Manual	207912		Camden Haven River	3.1	3.5	5.9		
Kerewong	Telemetric			Camden Haven River					
Logan's Crossing ‡#	Telemetric	207428	560017	Camden Haven River	7.0				MHL
Lorne Rural Fire Station	Telemetric	-	560025	Camden Haven River					BOM
North Haven Breakwall	Telemetric	207422		Camden Haven Inlet	1.0	1.5	1.7		MHL
Queens Lake	Manual	207424		Queens Lake					-
Red Oak	Telemetric	207906	560012	Stewart's River					-
Stewart's River	Telemetric	207008		Stewart's River					OEH
North Haven	Manual	207423	560045	Camden Haven River / Stingray Creek	1.0	1.5	1.7		MHL
Top Crossing	Manual	207910	-	Camden Haven River					-
Intersection of	Manual	207911	-	Intersection of					-

Gauge Name	Type	AWRC No.	Bureau Gauge No.	Stream	Flood level classification in metres			Special Reading Arrangements	Owner
					MIN	MOD	MAJ		
Upsall's and Black Creeks				Upsall's and Black Creeks					
West Haven #	Telemetric	207437	560047	Queens Lake					MHL
Watson Taylor Lake	Telemetric	207480	-	Watson Taylor Lake					MHL
Lake Wood	Telemetric	207475	-	Queens Lake					MHL
North Haven #	Telemetric	207422		Camden Haven Inlet					MHL
Dunbogan	Manual	207427		Camden Haven Inlet					-
Laurieton Fish Co-op ‡*#	Telemetric / Manual	207425	560018	Camden Haven Inlet to Watson Taylor's Lake	1.1	1.5	1.7		MHL

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 (‡)

River level data available through Manly Hydraulics Laboratory (Flood to Fax) www.mhl.nsw.gov.au for gauges marked with a (#)

Table 3: Rainfall Gauges – Hastings Catchment

Gauge Name	Type	AWRC No.	LONG / LAT	
Upper Rowland's Plains	Daily Read	60052	152.5806	-31.2319
Telegraph Point Post Office	Daily Read	60031	152.7839	-31.3381
Port Macquarie (Hill St)	Daily Read	60026	152.9183	-31.4392
Wauchope	Daily Read	60035	152.7300	-31.4606
Long Flat post office	Daily Read	60055	152.4900	-31.4381
Upper Pappinbarra	Daily Read	60067	152.4314	-31.2819
Comboyne Post Office	Daily Read	60005	152.4683	-31.6053
Yarra	Daily Read	60064	152.2281	-31.4731
Mt Seaview *	Pluviometer	60085	152.2481	-31.3881
Elands*	Pluviometer	60121	152.2400	-31.5667
Comboyne*	Pluviometer	60080	152.4428	-31.6272

Notes:

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

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

The NSW SES Mid North Coast 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 T.V	Port Macquarie
NBN T.V	Port Macquarie
Ten Northern	Taree
ABC TV	51 Lord St, Port Macquarie

Radio Stations:

Station	Location	Frequency	Modulation
Star FM	Port Macquarie	102.3	FM
2MC	Port Macquarie	110.7	FM
2 WAY FM	Wauchope	103.9	FM
Radio RHEMA FM	Port Macquarie	99.9	FM
Tank FM	Kempsey	103.1	FM
ABC Mid North Coast	Port Macquarie / Kempsey	756	AM
ABC Mid North Coast	Port Macquarie / Kempsey	95.5	FM

Newspapers:

Name	Location
Port Macquarie News	18 Milton Cct, Port Macquarie
Port Macquarie Express (Regional Publishers)	16-20 Milton Cct, Port Macquarie
Camden Haven Courier	Laurieton
Holiday Coast Pictorial	Port Macquarie

Other Agencies:

- Port Macquarie - Hastings Council
- Hastings Local Emergency Management Officer
- NSW Police Force – Local Emergency Operations Controller – Mid North Coast Local Area Command
- Fire and Rescue NSW – Newcastle
- NSW Ambulance – Newcastle
- Telstra – Port Macquarie
- Essential Energy – Port Macquarie
- Deptartment of Education and Communities– Port Macquarie
- Fire and Rescue NSW – Laurieton
- NSW Ambulance Service – Laurieton
- NSW Rural Fire Service – Wauchope
- NSW Department of Primary Industries – Kempsey
- Roads and Maritime Services Traffic Management Centre - Sydney
- Department of Community Services – Port Macquarie
- Marine Rescue NSW – Camden Haven
- Camden Haven Surf Life Saving Club
- Laurieton Fish Co-op
- NSW State Emergency Service – Hastings Local Controller
- Regional Emergency Operations ControllerRegional Emergency Management Officer

PORT MACQUARIE
HASTINGS

NSW STATE EMERGENCY SERVICE

PORT MACQUARIE - HASTINGS: NSW SES LOCALITY RESPONSE ARRANGEMENTS

Chapter 2 of Volume 3 (NSW SES Response Arrangements for Port Macquarie - Hastings) of the Port Macquarie - Hastings Local Flood Plan

Last Update: November 2015

FloodSafe

AUTHORISATION

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

Approved

Manager Emergency Risk Management

Date: 1 Nov 2015

Approved

5/10/16

NSW SES Mid North Coast Region Controller

Date:

17/11/16

Tabled at LEMC

Date:

Document Issue: V3.2-07042014

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SECTOR OVERVIEW

Table 1: Overview of Sectors in the Port Macquarie Hastings Local Government Area.

These Sectors provide further detail of the planned response strategies within Communities in the Port Macquarie Hastings Local Government Area.

Sector Name	Community	Sector Basis	Population and property totals	Total properties potentially at risk
Sector 1 No Sub Sectors	Port Macquarie CBD Primary Warning Gauge- Settlement Point Secondary Warning Gauges- • Kindee • Wauchope	**The Port Macquarie CBD sector** has Rising Road Access and is progressively inundated from ~1.5 During a PMF half of the sector is progressively inundated from the Hastings River. Rising road access remains throughout the PMF. The area bounded by Short Street, William Street, Buller Street and Park Street to the Marina is the most flood prone area in the sector.	**The Port Macquarie sub sector** has ~4000 residents in ~1600 properties.	From the Settlement Point Gauge- 11 in a 5% AEP at 2.3m 33 in a 1% AEP at 2.7m 107 in a PMF at 6.2m
Sector 2 Sub Sectors - 1. Settlement Point Peninsular 2. Northern Canals	Settlement Point Primary Warning Gauge- Settlement Point Secondary Warning Gauges- • Kindee • Wauchope	**The Settlement Point Peninsular sub sector** is a Low Flood Island. Dwellings within the sector are progressively inundated from ~1.5m. The evacuation route along Settlement Point Road closes at ~1.5m. **The Northern Canals sub sector** is a Low Flood Island. Dwellings are designed above the 1% AEP at 2.7m.	**The Settlement Point sub sector** has ~410 residents in ~164 properties **The Northern Canals sub sector** has ~450 residents in ~180 properties.	From the Settlement Point Gauge- ~69 in a 5% AEP at 2.3m ~81 in a 1% AEP at 2.7m ~394 in a PMF at 6.2m

		The evacuation route for the sector along Park Street closes from 2.6m.		
Sector 3 Sub Sectors - 1. Boundary Road 2. Southern Canals 3. Hibbard South	Hibbard Primary Warning Gauge- Settlement Point Secondary Warning Gauges- • Kindee • Wauchope	**The Boundary Road sub sector** is a Low Flood Island. Dwellings within the sector are progressively inundated from ~1.5-1.8m. The evacuation route along Hastings River Drive is cut off between 1.8m and 2.3m. **The Southern Canals sub sector** has Rising Road Access. Dwellings within the sector are progressively inundated from ~2.7m. **The Hibbard South sub sector** has Rising Road Access and is almost entirely flood free during a 1% AEP at 2.7m on the Settlement Point Gauge and remains predominantly flood free during a PMF.	**The Boundary Road sub sector** has 2000 residents in ~800 properties **The Southern Canals sub sector** has 470 residents in ~190 properties **The Hibbard South sub sector** has 3710 residents in ~1490 properties	From the Settlement Point Gauge - ~28 in a 5% AEP at 2.3m ~156 in a 1% AEP at 2.7m ~990 in a PMF at 6.2m
Sector 4 Sub Sectors - 1. Fernbank Creek 2. Oakes Crescent 3. Glen Ewan Road	Fernbank Creek Primary Warning Gauge- Settlement Point Secondary Warning Gauges- • Kindee • Wauchope	**The Fernbank Creek sub sector** is a Low Flood Island. The evacuation route along Hastings River Drive is cut off between 1.4m and 2m on the Settlement Point Gauge. **The Oaks Crescent sub sector** is a Low Flood Island.	**Fernbank Creek sub sector** has 50 residents in ~20 properties **The Oaks Crescent sub sector** has 20 residents in ~8 properties	From the Settlement Point Gauge - ~6 in a 5% AEP at 2.3m ~12 in a 1% AEP at 2.7m >46 in a PMF at 6.2m

		The evacuation route on Oaks Crescent is cut off at ~1.8m. **The Glen Ewan Road sub sector** is classified as an Overland Refuge Area on a Low Flood Island. The area is totally inundated in a 1% AEP at 2.7m - evacuation is possible north on the Pacific Highway which has rising road access.	**The Glen Ewan Road sub sector** has 20 residents in ~8 properties	
Sector 5 Sub Sectors - 1. North Shore 2. Plomer Road 3. Riverside 4. Maria River Road	North Shore Primary Warning Gauge- Settlement Point Secondary Warning Gauges- • Kindee • Wauchope	Access to/from the sector can be lost when the Settlement Point and Hibbard car Ferries cease operating and road access to the north via Maria River Road is cut. The loss of these transport routes can occur at minor to moderate flood levels from 1.5mtsm on the Settlement Point Gauge. **The North Shore sub sector** is an Overland Refuge Area Dwellings in the sub sector are progressively inundated from 1.5m The Plomer Road subsector is an Overland Refuge Area Dwellings are progressively inundated from a height of 1.4m **The Riverside sub sector** is an Overland Refuge Area with the evacuation route along Shoreline	**The North Shore sub sector** has 350 residents in ~140 properties **The Plomer Road sub sector** has 50 residents in ~20 properties **The Riverside sub sector** has 350 residents in ~140 properties **The Maria River Road sub sector** has ~20 resident in ~8 properties	From the Settlement Point Gauge - ~296 in a 5% AEP at 2.3m ~296 in a 1% AEP at 2.7m ~296 in a PMF at 6.2m

		Drive inundated between 1.4m -1.8m. **The Maria River Road sub sector** is a Low Flood Island progressively inundated from 1.22m. The evacuation route along Maria River road may close from local flooding from ~1.22m to ~2m		
Sector 6 Sub Sectors - 1. Blackmans Point 2. The Hatch	Blackmans Point Primary Warning Gauge- Maria River Secondary Warning Gauges- • Kindee • Wauchope • Telegraph Point	**The Blackmans Point sub sector** is a Low Flood Island. Dwellings in the sub sector are progressively inundated from 1.93m on the Maria River Gauge, and are almost completely inundated at 3.7m. The evacuation route along Blackmans Point Road is cut off between 2.1m and 3m. **The Hatch sub sector** is a Low Flood Island. Dwellings in the sub sector are progressively inundated from 1.93m on the Maria River Gauge, and are almost completely inundated at 3.7m. The evacuation route along Elford Road is cut off from 1.7m- 2.3m on the Maria River Gauge.	**The Blackmans Point sub sector** has 80 residents in ~32 properties **The Hatch / Hacks Ferry sub sector** has 20 residents in ~ 8 properties	From the Maria River Gauge - ~12 in a 5% AEP at 2.8m ~42 in a 1% AEP at 3.7m ~>60 in a PMF at 6.9m
Sector 7 Sub Sectors -	Telegraph Point Primary Warning Gauge- Telegraph Point	**The Telegraph Point West sub sector** has Rising Road Access	**The Telegraph Point West sub sector** has 500	From the Telegraph Point Gauge -

1. Telegraph Point West 2. Telegraph Point East	Secondary Warning Gauges- • Kindee • Wauchope	The subsector is not considered to be vulnerable to flooding with only minor inundation to low lying areas in the 1% AEP from around 3.7m on the Telegraph Point Gauge. Evacuation routes north on the Pacific Highway remain flood free up to the PMF at 6.9m on the Telegraph Point Gauge. **The Telegraph Point East sub sector** is a Low Flood Island Dwellings are progressively inundated from 2.4m on the Telegraph Point Gauge. Hacks Ferry Road becomes inundated between 1.95m and 2.3m for rural properties east of Stoney Park.	residents in ~200 properties **The Telegraph East sub sector** has 200 residents in ~80 properties	3 in a 5% AEP at 3m 16 in a 1% AEP at 3.7m >23 in a PMF at 6.9
Sector 8 No Sub Sectors	Rawdon Island Primary Warning Gauge- Wauchope Secondary Warning Gauges- • Kindee	**Rawdon Island** is a Low Flood Island with two areas for overland refuge that remain flood free to the PMF. Dwellings in the sector progressively become inundated from 6.5m. The evacuation route along Rawdon Island Road is cut off from ~3.6m and ~4.2m	**The Rawdon Island sector** has 110 residents in ~44 properties	From the Wauchope Gauge - 6 in a 5% AEP at 6.9m 12 in a 1% AEP at 9.85m >16 in a PMF at 12.4
Sector 9 Sub Sectors - 1. Wauchope	Wauchope Primary Warning Gauge- Wauchope	**The Wauchope sub sector** has Rising Road Access to a High Flood Island	**The Wauchope sub sector** has ~4950 residents in ~1980	From the Wauchope Gauge - ~4 in a 5% AEP

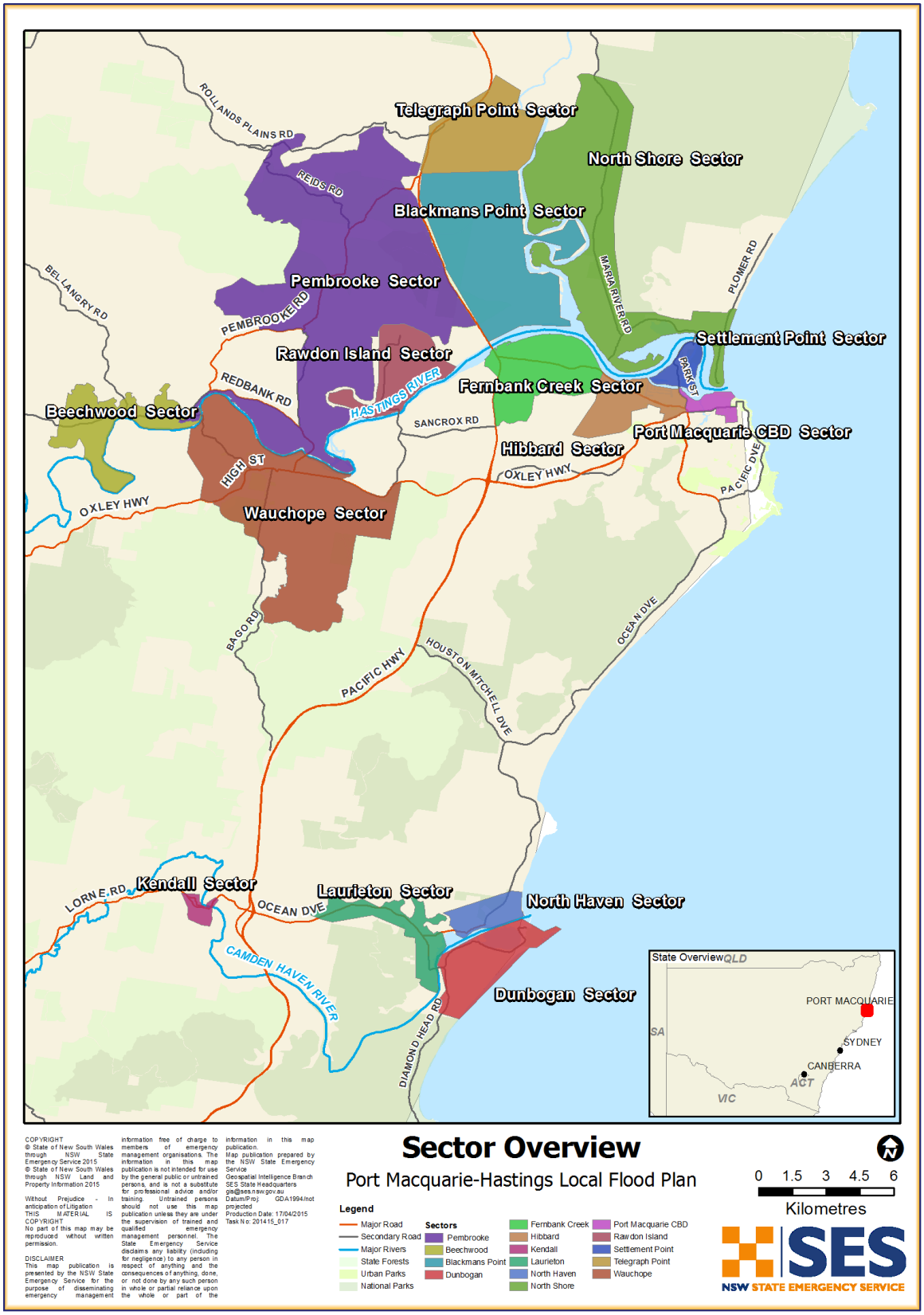
2. Yippin Creek 3. King and Sarah's Creek	Secondary Warning Gauges- • Kindee	Dwellings within the sub sector become progressively inundated from 8.5m on the Wauchope Gauge. The evacuation route into Wauchope for residents East of the Stoney Creek Road and Oxley Highway intersection closes at ~5mtsm to ~5.3mtsm. **The Yippin Creek sub sector** has Rising Road Access to a High Flood Island Low lying properties are progressively inundated from 4m. The evacuation route along the Oxley Highway to Wauchope is cut at ~6.3mtsm however alternate routes are available. The majority of dwellings in the sub sector remain flood free up to the PMF at 12.4 **The King and Sarah's Creek sub sector** is a Low Flood Island. Dwellings within the sub sector are progressively inundated from 8.6m on the Wauchope Gauge. The evacuation route along the Oxley Highway closes from ~5m and the evacuation route on Kings Creek Road closes at 8.6m.	properties. **The Yippin Creek sub sector** has ~275 residents in ~110 properties. **The King and Sarah's Creek sub sector** has ~ 500 residents in ~200 properties.	at 6.9m ~161 in a 1% AEP at 9.85m ~>160 in a PMF at 12.4m

Sector 10 Sub Sectors - 1. Pembroke 2. Redbank	Pembrooke Primary Warning Gauge- Wauchope Secondary Warning Gauges- • Kindee	**The Pembrooke sub sector** is a High Flood Island. Dwellings within the sub sector become progressively inundated from 6.9m on the Wauchope Gauge and isolated from 5m on the Wauchope Gauge. **The Redbank sub sector** is a High Flood Island progressively inundated from 6.9m and isolated from 5m on the. The Ennis Road area is inundated at 3.9m and becomes a Low Flood Island.	**The Pembrooke sub sector** has 147 residents in ~54 properties. **The Redbank sub sector** has ~393 residents in ~142 properties	From the Wauchope Gauge– ~11 in a 5% AEP at 6.9m ~45 in a 1% AEP at 9.85m
Sector 11 No Sub Sectors	Beechwood Primary Warning Gauge- Wauchope Secondary Warning Gauges- • Kindee	**The Beechwood sector** has Rising Road Access. The majority of dwellings are outside the floodplain.	**The Beechwood sector** has ~571 residents in ~ 243 properties	At the 5% AEP of 6.9m on the Wauchope Gauge a number of rural properties will be impacted
Sector 12 No Sub Sectors	North Haven Primary Warning Gauge- Laurieton Secondary Warning Gauges- • Logan's Crossing • Kendall	**The North Haven sector** is classified as a Low Flood Island Dwellings are progressively inundated from 1.30m on the Laurieton Gauge. Evacuation routes are influenced by prevailing tides and storm surge. The evacuation route north along Ocean Drive to Port Macquarie is predominantly flood free and the evacuation route south along Ocean Drive is inundated from 1.15m	**The North Haven sector** has ~1596 residents in ~ 999 properties	From the Laurieton Gauge– 497 in a 5% AEP at 2.40m 556 in a 1% AEP at 3.03m 618 in a PMF at 3.65m

		on the Laurieton Gauge.		
Sector 13 No Sub Sectors	Laurieton Primary Warning Gauge- Laurieton Secondary Warning Gauges- • Logan's Crossing • Kendall	**The Laurieton sector** has Rising Road Access Dwellings are progressively inundated from 1.30m on the Laurieton Gauge. Evacuation routes are influenced by prevailing tides and storm surge. The Evacuation route west to the Pacific Highway is predominantly flood free and the evacuation route north towards North Haven on Ocean Drive is cut at the Stingray Creek Bridge at 1.15mtsm.	**The Laurieton sector** has ~4369 residents in ~2258 properties	From the Laurieton Gauge– 83 in a 5% AEP at 2.40m 154 in a 1% AEP at 3.03m 411 in a PMF at 3.65m
Sector 14 No Sub Sectors	Dunbogan Primary Warning Gauge- Laurieton Secondary Warning Gauges- • Logan's Crossing • Kendall	**The Dunbogan sector** has an Overland Escape Route which is progressively inundated from 1.30m. Evacuation routes are influenced by prevailing tides and storm surge. The evacuation routes at the intersection of Diamond Head Road and Dunbogan Bridge and Camden Head Road between Bell and Scarborough Roads are cut at 1.10m. *Note: Works are currently underway to upgrade road levels to 2.4 m*.	**The Dunbogan sector** has ~1127 residents in ~ 631 properties	From the Laurieton Gauge– 171 in a 5% AEP at 2.40m 175 in a 1% AEP at 3.03m >181 in a PMF at 3.65m

Sector 15 No Sub Sectors	Kendall Primary Warning Gauge- Kendall Secondary Warning Gauges- • Logan's Crossing	The Kendall sector is a High Flood Island Dwellings are progressively inundated from 3.50m on the Kendall Gauge. The evacuation route east to Laurieton is cut at the Kendall Bridge from 3.1m on the Kendall Gauge and the evacuation route north is cut at Logan's Crossing from 3m on the Logan's Crossing Gauge.	**The Kendall sector** has ~1190 residents in ~ 475 properties	From the Kendall Gauge– 30 in a 5% AEP at 5.45m 63 in a 1% AEP at 6.20m >118 in a PMF at 7.25m

SECTOR OVERVIEW MAP



SECTOR 1 - PORT MACQUARIE CBD

PORT MACQUARIE CBD RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description **(No Sub Sectors)**	The Port Macquarie CBD sector is bordered by Owen Street in the East, Hill and Gordon Streets to the south and west along Park Street to the Hastings River which then borders the northern extremities of the sector. The area between Short Street, William Street, Buller Street and Park Street (Westport Park) is the most flood prone area of the sector. In events reaching 1.5m and above on the Settlement Point gauge these areas may be at risk of inundation by depths of over 1m. However there is little difference in flood extents or depths in these areas up to 2.7m which is the 1% AEP level. The sector is classified as a 'Rising Road Access' area and there are no significant constraints to evacuation during extreme events. There may be some difficulty with crossing the Gordon Street Bridge across Kooloonbung Creek at the peak of the PMF at 6.2m on the Settlement Point gauge. However the majority of the community remains flood-free during the peak of the PMF. Half of the population within the sector is situated above the PMF level. Evacuation would only be required from those areas affected and rising road access remains throughout the PMF.
Hazard	The main CBD area within the sector does not have a major riverine flooding problem, although Koolonbung and Wrights Creek flood regularly. Wrights Creek can peak early within 80 minutes after the initial onset of rain. The area in the vicinity of Wrights Creek is classified as a high to extreme hazard flow way, with properties situated on the flood fringe. Low lying properties in the vicinity of West Port Park, Koolonbung Creek and Wrights Creek initially come under threat from rising flood waters at 1.70m on the Settlement Point gauge.
Flood Affect Classification	Rising Road Access Area
At risk properties from the Settlement Point gauge	Of the 4703 addresses in the area, the number of dwellings inundated are - • 5% flood, approximately 2.3 m – 11 • 1% flood, approximately 2.7 m – 33 up to 521 • PMF (6.2 m) – 107 up to 2279
Sector Control	**Command-** The assigned NSW SES Incident Controller will Command operations in the local area.

<table>
<tr><td></td><td>

Control- The NSW SES Port Macquarie Unit Controller will control operations and evacuations in this sector.

Conduct and Coordination- The NSW SES Port Macquarie Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.

</td></tr>
<tr><td>Key Warning Gauge/s</td><td>
<table>
<tr><th>Name</th><th colspan="2">AWRC No.</th><th>Min</th><th>Mod</th><th>Maj</th></tr>
<tr><td>Settlement Point
Longitude = 152.901°E
Latitude = -31.406°S</td><td colspan="2">207418</td><td>1.2m</td><td>1.5m</td><td>1.75m</td></tr>
<tr><th>Key Flood Events</th><th>5% AEP</th><th>2% AEP</th><th>1% AEP</th><th>0.5% AEP</th><th>PMF</th></tr>
<tr><td>Settlement Point (207418)</td><td>2.3m</td><td>2.5m</td><td>2.7m</td><td>3m</td><td>6.2m</td></tr>
</table>
</td></tr>
<tr><td>General Strategy</td><td>

- Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
- Issue of early warning of flood level impacts and potential isolation.
- Evacuation of at risk population:
  - Self-evacuation to friends/family outside the impact area.
  - Establishment of an Assembly Area/Evacuation Centre in consultation with the Welfare Services Functional Area Coordinator
- Establishment of a helicopter landing zone at the Port Macquarie Airport.

</td></tr>
<tr><td>Key Risks / Consequences</td><td>

From 1.5m on the Settlement Point gauge-

- Storm water back flow will commence in Short Street
- Low lying parts of the western end of Clarence Street start to experience inundation
- Low lying properties in Short Street and west end of Clarence Street start to experience inundation
- Westport Park commences to become inundated

From 2.2m on the Settlement Point gauge-

- Low lying properties on western side of Horton Street and northern side of Clarence Street start to experience inundation
- Low lying parts of the Sundowner Caravan Park start to experience inundation
- Low lying commercial properties including Westport Bowling Club, Essential Energy in Buller Street and the Country Comfort Motel start to experience inundation

From 2.7m on the Settlement Point gauge-

- Extensive water throughout low lying parts of Port Macquarie CBD
- Approximately 33 properties inundated

</td></tr>
</table>

	Half of the sector remains flood-free during the peak of the PMF at 6.2m

Information and Warnings	NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
	• NSW SES Bulletins
	  ○ Flood Watch
	  ○ Flood Warning
	  ○ Equipment, Livestock and Aquaculture Warnings
	  ○ Media Release such as– Isolation Warnings
	• Evacuation Warning
	• Evacuation Order
	• All Clear
	• Emergency Alert
	• Standard Emergency Warning Signal (SEWS)
	• Sequenced door knocking
	• Media briefing
	• Interagency Local Emergency Management Committee (LEMC) briefings
	
	Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.

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 • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector.
Evacuation Triggers	This sector is classified as a Rising Road Access area. Water levels within the sector are influenced by prevailing tidal and storm surge influences. Evacuations in this sector are to be conducted incrementally as predicted flood heights become known and the impact extent established. **If height to reach and or exceed 1.7m on the Settlement Point gauge evacuations required for-**

	• Low lying properties in Short Street and west end of Clarence Street • Westport Bowling Club in Westport Park **If height to reach and or exceed 2.2m on the Settlement Point gauge evacuations required for-** • Low lying areas of Sundowner Caravan Park **If height to reach and or exceed 2.4m on the Settlement Point gauge evacuations required for-** • Low lying properties in on the western side of Horton Street and the northern side of Clarence Street • Country Comfort Motel in Westport Park
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	Along high ground to Gordon Street then to the nominated evacuation centre
Evacuation Route Closure	The evacuation route will stay open to the PMF at 6.2m but will need to be monitored at the Gordon Street Bridge across Koolonbung Creek which may have water on the road. Alternate routes to high ground are available.
Method of Evacuation	Evacuations should reflect the principles outlined in Evacuation Planning Handbook. Options include- • Self-evacuation by private transport to the Evacuation Centre • Where resources permit, with assistance of NSW SES or emergency services to the Evacuation Centre. • At risk residents will be advised via warnings issued (media broadcast and Emergency Alert system) and or doorknocks from emergency services personnel advising of evacuation details and arrangements.
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator. Potential locations are- • Westport High School – Finlay Ave, Port Macquarie • Port Macquarie High School – Owen Street, Port Macquarie
Large scale evacuations	In the event that evacuee numbers exceed the Port Macquarie Evacuation Centre capability, evacuees will be transported to alternate Evacuation Centres as determined by the Welfare Services Functional Area Coordinator and the NSW SES – dependent upon prevailing conditions. Evacuations will be staged incrementally as required via the rising road access.

	Assistance will be provided to evacuees prioritised by risk. Priority will be given to the elderly, infirm and families with young children. A full evacuation of the sector will not be required as the majority of the sector remains flood free to the peak of the PMF at 6.2m. NSW Police will be responsible for security of evacuated areas. The 'at risk' population within the sector would not exceed capacity of the surrounding evacuation centres and services.
Rescue	The NSW SES Port Macquarie Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	It is unlikely the sector will require resupply as the sector is classified as having rising road access to the peak of the PMF at 6.2m. Where resupply is required to the sector it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Resupply Incident Action Plan.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Oxley Oval – Pacific Drive, Port Macquarie **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge • Owner: Port Macquarie Hasting Council
Other	Port Macquarie is a popular tourist destination. Consideration should be given to the potential for large numbers of holiday makers staying at the Sundowner Caravan Park and in tourist accommodation within the sector significantly increasing the sectors population during peak holiday periods.

PORT MACQUARIE CBD SECTOR MAP

SECTOR 2 - SETTLEMENT POINT

SETTLEMENT POINT RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description **Sub Sectors-** **1. Settlement Point Peninsular** **2. Northern Canals**	This sector includes residential areas of Settlement Point Peninsular and northern parts of the Port Macquarie canal developments bordered by the Hastings River and Commodore Crescent off the Governors Way canal. There are two caravan parks in the sector (Marina Caravan Park and Jordan's Boating and Holiday Park). The sector is classified as a 'Low Flood Island'. The sector has two sub sectors for operational management- 1. Settlement Point Peninsular 2. Northern Canals The Settlement Point Peninsular is the most flood prone area of the sector subject to inundation early from 1.2m. The evacuation route south along Settlement Point Road for residents on the Peninsular is subject to inundation from 1.2m to 1.4m on the Settlement Point gauge and is cut early in events from 1.5m. The southern end of the community (Northern Canals) is designed above the 1% AEP at 2.7m and is predominantly flood free up to the PMF at 6.2m on the Settlement Point gauge. The evacuation route south along Park Street closes at 2.6m. Water flows across virtually the whole Peninsula during floods from the 5% AEP at 2.3m on the Settlement Point gauge. Flow is influenced by prevailing tidal and storm surge conditions with the area classified as a high to extreme hazard with fast flowing water. With evacuation routes closing early between 1.2m and 1.4m evacuation of the Peninsular will need to be considered early.
Hazard	**Settlement Point Peninsular sub sector -** Riverine flooding from the Hastings River causing the isolation and inundation of properties on the Settlement Point Peninsular from 1.5m on the Settlement Point gauge. **Northern Canals sub sector -** Riverine flooding from the Hastings River causing isolation of properties in the Northern Canals from 2.6m on the Settlement Point gauge and inundation from 6.2m in the PMF.

<table>
<tr><td>Flood Affect Classification</td><td>

Settlement Point Peninsular sub sector - Low Flood Island
Northern Canals sub sector – Low Flood Island

</td></tr>
<tr><td>At risk properties from the Settlement Point gauge</td><td>Of 901 addresses in the area, the number of dwellings inundated are -

5% flood, approximately 2.3m – 69
1% flood, approximately 2.7m – 81 up to 133
PMF (6.2 m)– up to 901

</td></tr>
<tr><td>Sector Control</td><td>Command- The assigned NSW SES Incident Controller will Command operations in the local area.

Control- The NSW SES Port Macquarie Unit Controller will control operations and evacuations in this sector.

Conduct and Coordination- The NSW SES Port Macquarie Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.</td></tr>
<tr><td>Key Warning Gauge Name</td><td>
<table>
<tr><th>Name</th><th colspan="2">AWRC No.</th><th>Min</th><th>Mod</th><th>Maj</th></tr>
<tr><td>Settlement Point Gauge
Longitude = 152.901°E
Latitude = -31.406°S</td><td colspan="2">207418</td><td>1.2m</td><td>1.5m</td><td>1.75m</td></tr>
<tr><th>Key Flood Events</th><th>5% AEP</th><th>2% AEP</th><th>1% AEP</th><th>0.5% AEP</th><th>PMF</th></tr>
<tr><td>Settlement Point (207418)</td><td>2.3m</td><td>2.5m</td><td>2.7m</td><td>3m</td><td>6.2m</td></tr>
</table>
</td></tr>
<tr><td>General Strategy</td><td>

Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
Issue of early warning of flood level impacts and potential isolation.
Evacuation of at risk population:

Self-evacuation to friends/family outside the impact area.
Establishment of an Assembly Area/Evacuation Centre in consultation with the Welfare Services Functional Area Coordinator

Establishment of a helicopter landing zone at the Port Macquarie Airport.

</td></tr>
<tr><td>Key Risks / Consequences</td><td>From 1.2 to 1.4m on the Settlement Point gauge-

Water commences inundating Settlement Point Road, isolating residents

From 1.5m on the Settlement Point gauge-

Water starts to flow across Settlement Point Peninsular progressively inundating properties, residents who have not evacuated are isolated and may have no access to essential services

</td></tr>
</table>

	From 2.7m on the Settlement Point gauge- • Settlement Point will be fully submerged and subject to fast flowing water and flood borne debris in a 1% Event. (~81 properties). • Port Macquarie Northern Canal sub sector isolated due to road closures (at 2.6m) **From 6.2m on the Settlement Point gauge-** • Northern Canals sub sector inundated

Information and Warnings	NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
	• NSW SES Bulletins
	  o Flood Watch
	  o Flood Warning
	  o Equipment, Livestock and Aquaculture Warnings
	  o Media Release such as– Isolation Warnings
	• Evacuation Warning
	• Evacuation Order
	• All Clear
	• Emergency Alert
	• Standard Emergency Warning Signal (SEWS)
	• Sequenced door knocking
	• Media briefing
	• Interagency LEMC briefings
	
	Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.

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 • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector.

Isolation Triggers	This sector is classified as a Low Flood Island. Water levels within the sector are influenced by prevailing tidal and storm surge influences. Triggers for isolation/evacuation of the Settlement Point Peninsular are the Kindee gauge at 5.5m providing ~8 hours warning and 4.3m on the Wauchope gauge providing ~2 hours warning. • The Settlement Point Peninsular area can become isolated when the Settlement Point gauge exceeds 1.3m and closes Settlement Point Road Triggers for isolation/evacuation of the Northern Canals are the Kindee gauge at 14m providing ~8 hours warning and 8.7m on the Wauchope gauge providing ~6 hours warning. • The Northern Canal area can become isolated when the Settlement Point gauge exceeds 2.6m and closes Park Road. These height indicators are as a guide only, due to the distance between gauges and the additional inflows.
Evacuation Triggers	This sector is classified as a Low Flood Island. Water levels within the sector are influenced by prevailing tidal and storm surge influences. Evacuations in this sector are to be conducted incrementally as predicted flood heights become known and the impact extent established. **If height to reach and or exceed 1.7m on the Settlement Point gauge evacuations required for-** • Settlement Point *Depending upon the rate of rise additional triggers for evacuation are available for evacuation of the Settlement Point Peninsular on the Kindee gauge at 5.5m providing ~8 hours warning and 4.3m on the Wauchope gauge providing ~2 hours warning.* **If height to reach and or exceed 2.7m on the Settlement Point gauge evacuations required for-** • **Northern Canals** *Depending upon the rate of rise - additional triggers for evacuation are available for evacuation of the Northern Canals on the Kindee gauge at 14m providing ~8 hours warning and 8.7m on the Wauchope gauge providing ~6 hours warning*.
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area

	Coordinator.
Evacuation Routes	**Settlement Point Peninsular-** • Via Settlement Point Road heading south onto Park Street onto higher ground and the nominated evacuation centre **Northern Canals-** • Via River Park Road and Commodore Crescent onto Park Street and then towards higher ground and the nominated evacuation centre
Evacuation Route Closure	**Settlement Point Peninsular**- • Settlement Point Road from 1.5m on the Settlement Point gauge **Northern Canals-** • Park Street from 2.6m on the Settlement Point gauge
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the Evacuation Centre • With assistance of NSW SES or emergency services to the Evacuation Centre • At risk residents will be advised via warnings issued and or doorknocks from emergency services personnel advising of evacuation details and arrangements.
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential locations are- • Westport High School – Finlay Ave, Port Macquarie • Port Macquarie High School – Owen Street, Port Macquarie
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Assembly area and or Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area or Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 2:** Evacuation of all persons not required for emergency operations. Evacuation will by

	way of road along higher ground – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions NSW Police will be responsible for security of evacuated areas. Population densities with the sector would not exceed capacity of the surround evacuation centres and services.
Rescue	The NSW SES Port Macquarie Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	It is unlikely the sector will require resupply as the Settlement Point Peninsular will be evacuated and the Northern Canals have access up to 2.6m just below the 1% AEP. Where resupply is required to the sector it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Resupply Incident Action Plan.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Oxley Oval – Pacific Drive, Port Macquarie **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge • Owner: Port Macquarie Hasting Council
Other	• Hibbard and North Shore Ferries may cease operations at any time due to river flow and water debris. Road access to Ferries is lost from 1.5m on the

	Settlement Point gauge • Marina Holiday Park access is lost from 1.5m on the Settlement Point gauge • Jordan's Caravan Park access is lost from 3.5m on the Settlement Point gauge • Port Macquarie is a popular tourist destination. Consideration should be given to the potential for large numbers of holiday makers staying at the Marina and Jordan Caravan Parks as well as tourist accommodation within the sector significantly increasing the sectors population during peak holiday periods.

SETTLEMENT POINT SECTOR MAP

SECTOR 3 - HIBBARD

HIBBARD RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description Sub Sectors- 1. Boundary Road 2. Southern canals 3. Hibbard South	This sector comprises a mix of residential and commercial properties bordered by the Hastings River to the north, Park Street to the east, Oxley Highway to the south and extending west to include the Port Macquarie Airport and Tuffins Lane. The sector is classified as a high to extreme hazard. The sector has three sub sectors for operational management – 1. Boundary Road classified as a Low Flood Island 2. Southern Canals classified as a Rising Road Access Area 3. Hibbard South classified as a Rising Road Access Area Floodwater enters the Boundary Road sub sector from the north and west early in an event from 1.1m on the Settlement Point gauge. The evacuation route east along Hastings River Drive is cut in a number of locations from 1.8m on the Settlement Point Gauge. It is estimated 2000 people live in the sector and evacuation considerations will need to be made early if heights are to reach and or exceed 1.3m. Access to the Port Macquarie Airport is lost as Boundary Road becomes inundated between 1.8m and 2.4m. The Southern Canals sub sector encompasses the Canal developments in the north of the sector. The majority of properties in the sub sector are built to the 1% AEP level at 2.7m. Consideration should be given to evacuating the community in events higher than 2.7m due to the closure of low lying roads affecting evacuation. Internal roads within the sub sector are less affected by floodwaters than external roads in events above 2.7m which may lead to isolation if residents are not evacuated early. The Hibbard South sub sector has rising road access and remains almost entirely flood free during the peak of the 1% AEP at 2.7m on the Settlement Point gauge. The area remains predominantly flood-free during the PMF at 6.2m. The 'Le Hamel' Aged Care facility is located in the sector and is isolated from 1.70m and inundated in the PMF at 2.7m on the Settlement Point gauge. In addition there are five Caravan Parks in the sub sector that are all subject to inundation (refer Volume 3 chapter 4).
Hazard	**Boundary Road sub sector -** Riverine flooding from the main channel of the Hastings River causing the isolation and inundation of low lying properties in the sub sector from 1.1m on the Settlement Point gauge.

<table>
<tr><td></td><td>Southern Canals sub sector - Riverine flooding from the main channel of the Hastings River causing isolation of properties in the Southern Canals from 2.7m on the Settlement Point gauge and inundation from 6.2m in the PMF.

Hibbard South sub sector – Riverine flooding from the main channel of the Hastings River with Rising Road Access to the PMF at 2.7m on the Settlement Point gauge</td></tr>
<tr><td>Flood Affect Classification</td><td>• Boundary Road sub sector - Low Flood Island
• Southern Canals sub sector - High Flood Island
• Hibbard South sub sector - Rising Road Access Area</td></tr>
<tr><td>At risk properties from the Settlement Point gauge</td><td>Of 3422 addresses in the area, the number of dwellings inundated are -
• 5% flood, approximately 2.3m – 28
• 1% flood, approximately 2.7m – 156 up to 632
• PMF (6.2 m)- up to 2124</td></tr>
<tr><td>Sector Control</td><td>Command- The assigned NSW SES Incident Controller will Command operations in the local area.

Control- The NSW SES Port Macquarie Unit Controller will control operations and evacuations in this sector.

Conduct and Coordination- The NSW SES Port Macquarie Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.</td></tr>
<tr><td>Key Warning Gauge Name</td><td>
<table>
<tr><th>Name</th><th colspan="2">AWRC No.</th><th>Min</th><th>Mod</th><th>Maj</th></tr>
<tr><td>Settlement Point Gauge

Longitude = 152.901°E
Latitude = -31.406°S</td><td colspan="2">207418</td><td>1.2m</td><td>1.5m</td><td>1.75m</td></tr>
<tr><th>Key Flood Events</th><th>5% AEP</th><th>2% AEP</th><th>1% AEP</th><th>0.5% AEP</th><th>PMF</th></tr>
<tr><td>Settlement Point (207418)</td><td>2.3m</td><td>2.5m</td><td>2.7m</td><td>3m</td><td>6.2m</td></tr>
</table>
</td></tr>
<tr><td>General Strategy</td><td>• Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
• Issue of early warning of flood level impacts and potential isolation.
• Evacuation of at risk population:
o Self-evacuation to friends/family outside the impact area.
o Establishment of an Assembly Area/Evacuation Centre in consultation with the Welfare Services Functional Area Coordinator
• Establishment of a helicopter landing zone at the Port Macquarie Airport.</td></tr>
</table>

Key Risks / Consequences	**From ~1.3m on the Settlement Point gauge-** • Hastings River Drive starts to be impacted by floodwaters from 1.1m and is cut at 1.8m • Low lying residential and commercial properties along Hastings River Drive start to become inundated by floodwater • Low lying parts of Caravan Parks within the sector start to become inundated by floodwater **From 1.5m on the Settlement Point gauge-** • Low lying properties in Boundary Road sub sector start to be affected by yard flooding • 'Le Hamel' Aged Care facility impacted by rising floodwater and will need to be evacuated if height is to reach or exceed 1.7m **From 1.7m on the Settlement Point gauge-** • Low lying properties in Boundary Road sub sector start to be inundated by floodwater • 'Le Hamel' Aged Care Facility isolated by floodwater **From 1.8m on the Settlement Point gauge-** • Evacuation route along Hastings River Drive inundated isolating ~1940 persons in the vicinity of Boundary Road • Intersection of Boundary Road and Hastings River Drive commences inundation from 1.8m to 2.4m • Access to Port Macquarie Airport is impacted by floodwater and is progressively lost **From 2.7m on the Settlement Point gauge-** • Majority of Boundary Road sub sector is inundated • Southern Canals sub sector may start to become isolated **From 3m on the Settlement Point gauge-** • Low lying properties in the southern end of the Boundary Road sub sector can become isolated when the Kemp Street intersection closes – however this is Rising Road access out of the area. **From 6.2m (PMF) on the Settlement Point gauge-** • Boundary Road and Southern Canals sub sectors are inundated

Information and Warnings	NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
	• NSW SES Bulletins
	  ○ Flood Watch
	  ○ Flood Warning
	  ○ Equipment, Livestock and Aquaculture Warnings
	  ○ Media Release such as– Isolation Warnings
	• Evacuation Warning
	• Evacuation Order
	• All Clear
	• Emergency Alert
	• Standard Emergency Warning Signal (SEWS)
	• Sequenced door knocking
	• Media briefing
	• Interagency LEMC briefings
	
	Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.

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 • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector.
Isolation Triggers	The Boundary Road and Southern Canals sub sectors are classified as a Low Flood Islands. Water levels within the sectors are influenced by prevailing tidal and storm surge influences. Low lying properties in the Boundary Road sub sector can become isolated from 1.1m to 1.8m on the Settlement Point Gauge when the evacuation route along Hastings River Drive is progressively cut. Some properties in the southern portion of the Boundary Road sub sector can become isolated when Settlement Point Gauge is at 3m and closes the Kemp Street intersection – however this area has Rising Road access. Properties in the Southern Canals sub sector can become isolated from 2.7m on the Settlement Point Gauge when the evacuation route along Hastings River Drive is progressively cut.

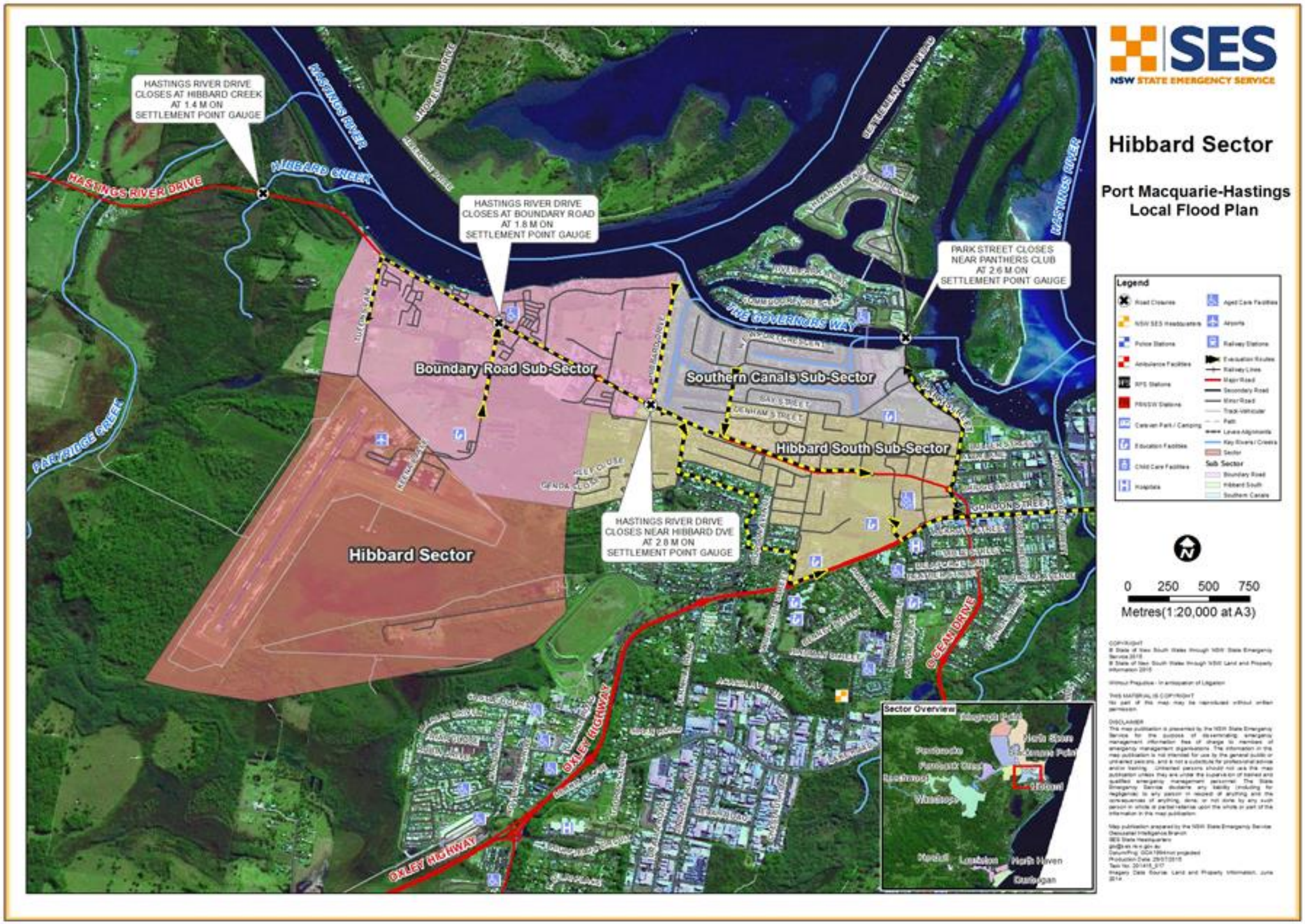
Evacuation Triggers	The Boundary Road and Southern Canals sub sectors are classified as a Low Flood Islands. Water levels within the sectors are influenced by prevailing tidal and storm surge influences. **If height to reach and or exceed 1.7m on the Settlement Point gauge evacuations required for-** • Low lying properties in the Boundary Road sub sector **If height to reach and or exceed 2.7m on the Settlement Point gauge evacuations required for-** • Southern Canals sub sector *Depending upon the rate of rise - additional triggers for evacuation are available for evacuation of the Southern Canals on the Kindee gauge at 14m providing ~14 hours warning and 8.7m on the Wauchope gauge providing ~8 hours warning* **If height to reach and or exceed 3m on the Settlement Point gauge evacuations required for-** • Low lying properties in the southern end of the Boundary Road sub sector *Depending upon the rate of rise - additional triggers for evacuation are available for low lying properties in the southern end of the Boundary Road sub sector on the Kindee gauge at 14m providing ~14 hours warning and 8.7m on the Wauchope gauge providing ~8 hours warning*
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	**Boundary Road sub sector-** • Via Hastings River Drive heading east to higher ground and the nominated evacuation centre **Southern Canals sub sector-** • Via Newport Island Road then east on Hastings River Drive to higher ground and the nominated evacuation centre **Hibbard South sub sector-** • Via Hastings river Drive heading east to high ground and the nominated evacuation centre
Evacuation Route Closures	**Boundary Road sub sector-** • Hastings River Drive from 1.5m to 1.8m on the Settlement Point gauge

	Southern Canals sub sector- • Hastings River Drive from 2.7m on the Settlement Point gauge **Hibbard South sub sector-** • Remains predominantly flood free during the PMF at 6.2m on the Settlement Point gauge
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the Evacuation Centre • With assistance of NSW SES or emergency services to the Evacuation Centre • At risk residents will be advised via warnings issued and or doorknocks from emergency services personnel advising of evacuation details and arrangements.
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential locations are- • Westport High School – Finlay Ave, Port Macquarie • Port Macquarie High School – Owen Street, Port Macquarie
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Assembly area and or Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area or Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions **Stage 2:** Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. NSW Police will be responsible for security of evacuated areas.

	Population densities with the sector would not exceed capacity of the surround evacuation centres and services.
Rescue	The NSW SES Port Macquarie Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	It is unlikely the sector will require resupply as the Boundary Road sub sector will be evacuated, the Southern Canals have access up to 2.7m at 1% AEP on the Settlement Point gauge and the Hibbard South sub sector is flood free to the PMF at 6.2m. Where resupply is required to the sector it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Resupply Incident Action Plan.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Oxley Oval – Pacific Drive, Port Macquarie **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge • Owner: Port Macquarie Hasting Council
Other	• The Hibbard Ferry may cease operations at any time due to river flow and water debris. Road access to the Ferry is lost from ~1.3 to 1.5m on the Settlement Point gauge. • Port Macquarie is a popular tourist destination. Consideration should be given to the potential for large numbers of holiday makers in Caravan Parks as well as tourist accommodation within the sector significantly increasing the sectors population during peak holiday periods. • The following Caravan Parks within the sector are impacted from the indicated heights off the Settlement Point gauge- o Aquatic Caravan Park - 1.3m o Hasting River Caravan Park - 1.5m

	○ Edgewater Holiday Park – 2m ○ Leisure Caravan Park – 2m ○ Melaleuca (Top Tourist) Caravan Park – 2.5m

HIBBARD SECTOR MAP



SECTOR 4 - FERNBANK CREEK

FERNBANK CREEK RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description	This sector is comprised of mainly rural residential properties bordered by the Hastings River to the north, the Pacific Highway to the West and open rural land to the south and east. The entire sector is inundated in a 1% AEP event at 2.7m on the Settlement Point gauge and is classified as a high to extreme hazard area. The sector has three sub sectors for operational management- 1. Fernbank Creek 2. Oaks Crescent 3. Glen Ewan Road The Fernbank Creek sub sector is classified as a Low Flood Island'. The main access route, Hastings River Drive is affected by flooding early and in multiple places from 1.1m on the Settlement Point gauge. There are approximately 50 residents at risk in this sub sector. Evacuation should take place along Hastings River Drive and then south on the Pacific Highway – the evacuation route closes between 1.4m and 2m on the Settlement Point gauge. The Oaks Crescent sub sector is classified as 'Overland Refuge on a Low Flood Island'. The evacuation route on Oaks Crescent is affected by flooding early and is cut off at 1.8m on the Settlement Point gauge. Inundation of the sub sector lasts for the entirety of the flood event leaving the community isolated. There are approximately 20 residents as risk in the sub sector. Evacuation should take place along Oaks Crescent and Hastings River Drive and then south on the Pacific Highway. The Glen Ewan Road sub sector comprises a small number of houses off the Pacific Highway near the Dennis Bridge on the Hastings River. The sub sector is classified as 'Low Flood Island'. There are approximately 20 residents at risk in this sub sector. Although the sub sector is completely inundated at 2.7m on the Settlement Point gauge the evacuation route via the Pacific Highway remains open.
Hazard	Riverine flooding from the Hastings River and inundation from Fernbank Creek
Flood Affect Classification	The entire sector is classified as a 'Low Flood Island'
At risk properties from the Settlement Point gauge	Of 122 addresses in the area, the number of dwellings inundated are - • 5% flood (2.3 metres) – 6 • 1% flood (2.7 metres) –12 up to 64 • PMF (6.2 metres) – up to 84

<table>
<tr><td>Sector Control</td><td colspan="6">Command- The assigned NSW SES Incident Controller will Command operations in the local area.

Control- The NSW SES Port Macquarie Unit Controller will control operations and evacuations in this sector.

Conduct and Coordination- The NSW SES Port Macquarie Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.</td></tr>
<tr><td rowspan="5">Key Warning Gauge Name</td><td>Name</td><td colspan="2">AWRC No.</td><td>Min</td><td>Mod</td><td>Maj</td></tr>
<tr><td>Settlement Point
Longitude = 152.901°E
Latitude = -31.406°S</td><td colspan="2">207418</td><td>1.2m</td><td>1.5m</td><td>1.75m</td></tr>
<tr><td>Dennis Bridge</td><td colspan="2">207443</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td>Key Flood Events</td><td>5% AEP</td><td>2% AEP</td><td>1% AEP</td><td>0.5% AEP</td><td>PMF</td></tr>
<tr><td>Settlement Point (207418)</td><td>2.3m</td><td>2.5m</td><td>2.7m</td><td>3m</td><td>6.2m</td></tr>
<tr><td></td><td>Dennis Bridge (207433)</td><td>3m</td><td>3.5m</td><td>3.8m</td><td></td><td></td></tr>
<tr><td>General Strategy</td><td colspan="6">• Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
• Issue of early warning of flood level impacts and potential isolation.
• Evacuation of at risk population:
o Self-evacuation to friends/family outside the impact area.
o Establishment of an Assembly Area/Evacuation Centre in consultation with the Welfare Services Functional Area Coordinator
• Establishment of a helicopter landing zone at the Port Macquarie Airport.</td></tr>
<tr><td>Key Risks / Consequences</td><td colspan="6">From 1.1m on the Settlement Point gauge-
• Hastings River Drive starts to be inundated by floodwaters in multiple locations
• Floodwater starts to impact low lying properties, roads and areas throughout the sector

From 1.4m to 2m on the Settlement Point gauge-
• Hastings River Drive is inundated

From 1.7m on the Settlement Point gauge-
• Evacuations from Fernbank Creek sub sector and Oaks Crescent sub sector required

From 1.8m on the Settlement Point gauge-
• Oaks Crescent is inundated</td></tr>
</table>

	From 2.7m on the Settlement Point gauge- • Entire sector is inundated

Information and Warnings	NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
	• NSW SES Bulletins
	  o Flood Watch
	  o Flood Warning
	  o Equipment, Livestock and Aquaculture Warnings
	  o Media Release such as– Isolation Warnings
	• Evacuation Warning
	• Evacuation Order
	• All Clear
	• Emergency Alert
	• Standard Emergency Warning Signal (SEWS)
	• Sequenced door knocking
	• Media briefing
	• Interagency LEMC briefings
	
	Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.

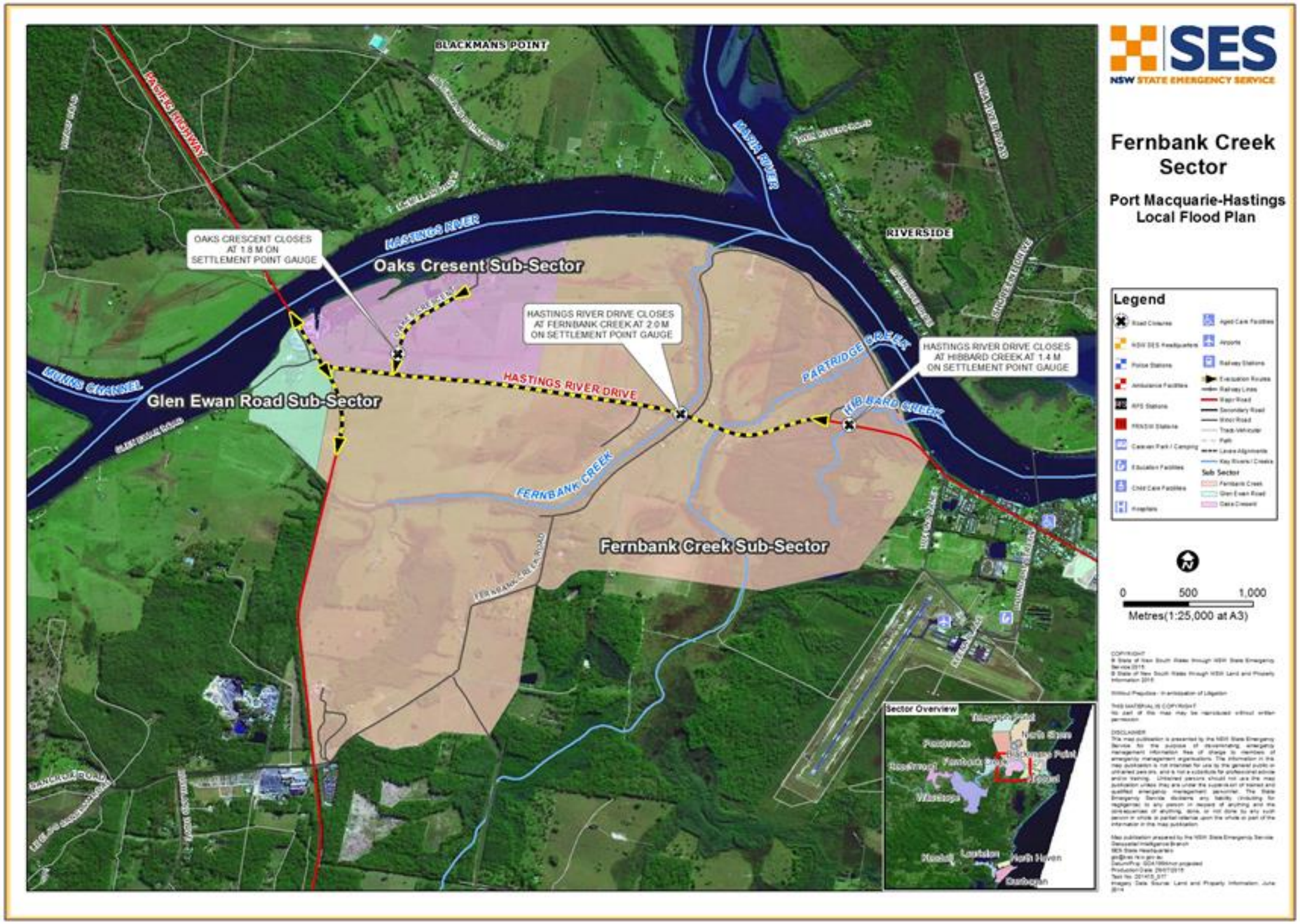
Property Protection	**Assistance with property protection:** NSW SES will monitor rising flood waters and provide the following assistance for flood-threatened properties where time and resources permit - • Relocation of personal property for at risk locations • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector.
Evacuation and/or Isolation Triggers	Due to the limited warning time, it may be appropriate to utilise gauge reference to Wauchope (5.2m) and Kindee Bridge (10m) gauges to increase warning times for this sector. The sector is classified as an 'Overland Refuge Area on a Low Flood Island'. The sector is impacted early, from 1.1m on the Settlement Point gauge in flood events. Evacuation routes close incrementally as river levels rise with Hastings River Drive closing between

	1.4m and 2m and Oaks Crescent closing from 1.8m. **If height to reach and or exceed 1.70m on the Settlement Point gauge evacuation required for-** • Fernbank Creek and Oaks Crescent **If height to reach 2.70m on the Settlement Point gauge evacuation required for Glen Ewan Road community**
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	**Fernbank Creek sub sector-** • Via Hastings River Drive heading west to the Pacific Highway **Oaks Crescent sub sector-** • Via Oaks Crescent and Hastings River Drive to the Pacific Highway Glen Ewan Road sub sector- • Overland Rising Road Access to the Pacific Highway
Evacuation Route Closure	**Fernbank Creek sub sector-** • Hastings River Drive east at Big Oyster from 1.4m on the Settlement Point gauge • Hastings River Drive west at multiple locations from 1.4m to 2m on the Settlement Point gauge **Oaks Crescent sub sector-** • Oaks Crescent at 1.8m on the Settlement Point gauge **Glen Ewan Road sub sector-** • Overland Rising Road Access to Pacific Highway up to 2.7m on the Settlement Point gauge
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the Evacuation Centre • With assistance of NSW SES or emergency services to the Evacuation Centre • At risk residents will be advised via warnings issued and or doorknocks from emergency services personnel advising of evacuation details and arrangements.

Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential Assembly Area locations are- • Dennis Bridge • Wilsons River Sportsground Potential Evacuation Centre locations are- • Westport High School – Finlay Avenue, Port Macquarie • Port Macquarie High School – Owen Street, Port Macquarie
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Assembly area and or Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area or Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 2:** Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. NSW Police will be responsible for security of evacuated areas. Population densities with the sector would not exceed capacity of the surround evacuation centres and services.
Rescue	The NSW SES Port Macquarie Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.

Resupply	It is unlikely the sector will require resupply as the sector will be evacuated. Where resupply is required to the sector it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Resupply Incident Action Plan.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Oxley Oval – Pacific Drive, Port Macquarie **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge • Owner: Port Macquarie Hasting Council
Other	• The sector is impacted early in event from 1.1m on the Settlement Point gauge with evacuation routes cut incrementally in multiple locations • The entire sector is inundated at the 1% AEP at 2.7m on the Settlement Point gauge

FERNBANK CREEK SECTOR MAP



SECTOR 5 - NORTH SHORE

NORTH SHORE RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description	This sector comprises residential and rural properties north of the Hastings River at Port Macquarie. The sector is bordered by the Wilsons and Maria Rivers to the northeast, the Hastings River to the south and the Pacific Ocean to the west. The area is classified as a high to extreme hazard and is impacted by floodwaters early in events from ~1.40m on the Settlement Point gauge with evacuation routes closing from ~1.5m. Access to and from the sector can be lost when the Settlement Point and Hibbard Ferries cease operating and road access to the north via Maria River Road is cut from 1.4m. The sector has four sub sectors- 1. North Shore classified as an Overland Refuge Area on a Low Flood Island 2. Plomer Road classified as an Overland Refuge Area on a Low Flood Island 3. Riverside classified as an Overland Refuge Area 4. Maria River Road classified as a Low Flood Island The North Shore sub sector covers the urban area of North Shore, including the area west of Donnelly's Creek. There is a small wooded area to the eastern corner of North Shore Drive that remains flood free to the PMF for use as a refuge area in exigent circumstances. The sub sector is inundated from 1.5m although many properties are designed to accommodate flooding. The evacuation route is north east along Shoreline Drive to high ground in the vicinity of the Rural Fire Service building – the evacuation route closes from 1.4m to 1.8m on the Settlement Point gauge. The Plomer Road sub sector covers a small number of houses located to the northeast near the coastline. Evacuation is through the North Shore sub sector via Shoreline Drive to high ground in the vicinity of the Rural Fire Service building - the evacuation route closes from 1.4m to 1.8m on the Settlement Point gauge. The Riverside sub sector is centred on Riverside Drive. Much of the community will remain flood free in events to the 1% AEP at 2.7m on the Settlement Point gauge. There is a small area of high ground to the east at Twin Rivers Road that remains flood free in the PMF at 6.2m. Evacuation is east along Shoreline Drive to high ground in the vicinity of the Rural Fire Service building – the evacuation route closes from 1.8m The Maria River Road sub sector covers rural properties off the Maria River Road. Dwellings in the sub sector progressively become inundated from 1.22m on the Maria River gauge with the evacuation route along the Maria River Road closing from local flooding between 1.22m to 2m on the Maria River gauge, the entire sub sector becomes inundated from 3m.

<table>
<tr><td>Hazard</td><td>Riverine and overland flooding influenced by the confluence of the Maria, Wilsons and Hastings River as well as Limeburner's Creek and Donnelly's Creek.</td></tr>
<tr><td>Flood Affect Classification</td><td>

North Shore sub sector - Overland Refuge Area on a Low Flood Island
Plomer Road sub sector - Overland Refuge Area on a Low Flood Island
Riverside sub sector - Overland Refuge Area
Maria River Road sub sector - Low Flood Island

</td></tr>
<tr><td>At risk properties from the Settlement Point gauge</td><td>Of the 384 addresses in the area, the number of properties at risk of inundation are (after evacuation routes are closed) -

5% flood (2.3 metres) – 288
1% flood (2.7 metres) – up to 310
PMF (6.2 metres) – up to 373

In addition, 8 properties in the Maria River community may start to become inundated from 1.22 metres on the Maria River gauge (207406). The entire area becomes inundated from 3 metres, after the Maria River Road closes.</td></tr>
<tr><td>Sector Control</td><td>Command- The assigned NSW SES Incident Controller will Command operations in the local area.

Control- The NSW SES Port Macquarie Unit Controller will control operations and evacuations in this sector.

Conduct and Coordination- The NSW SES Port Macquarie Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.</td></tr>
<tr><td>Key Warning Gauge Name</td><td>
<table>
<tr><th>Name</th><th colspan="2">AWRC No.</th><th>Min</th><th>Mod</th><th>Maj</th></tr>
<tr><td>Settlement Point
Longitude = 152.901°E
Latitude = -31.406°S</td><td colspan="2">207418</td><td>1.2m</td><td>1.5m</td><td>1.75m</td></tr>
<tr><td>Maria River Road
Longitude = 152.8572°E
Latitude = -31.2242°S</td><td colspan="2">207406</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><th>Key Flood Events</th><th>5% AEP</th><th>2% AEP</th><th>1% AEP</th><th>0.5% AEP</th><th>PMF</th></tr>
<tr><td>Settlement Point (207418)</td><td>2.3m</td><td>2.5m</td><td>2.7m</td><td>3m</td><td>6.2m</td></tr>
</table>
</td></tr>
<tr><td>General Strategy</td><td>

Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
Issue of early warning of flood level impacts and potential isolation
Activation of the North Port Macquarie community phone tree by the NSW SES Port Macquarie or Kempsey Unit Controller

</td></tr>
</table>

	• Evacuation of at risk population:
	  ○ Self-evacuation to friends/family outside the impact area.
	  ○ Establishment of an Assembly Area in consultation with the Welfare Services Functional Area Coordinator and in accordance with the NSW SES Incident Action Plan
	• Establishment of a helicopter landing zone at the Port Macquarie Airport.

Key Risks / Consequences	**From ~1.22m on the Maria River gauge-** • Low lying roads and properties in the Maria River Road sub sector start to be impacted by floodwater **From ~1.4m to 2m on the Maria River gauge-** • Maria River Road is cut **From 1.4m to 1.5m on the Settlement Point gauge-** • Evacuation routes west along Shoreline Drive for the Plomer and North Shore sub sectors start to become inundated and progressively close including the Ferry entry / exit points at North Shore, Settlement Point and Hibbard • Low lying properties in the North Shore sub sector are impacted by floodwater **From 1.7m on the Settlement Point gauge-** • Water commences to inundate low lying properties in Hibbard North, Riverside Drive, North Shore sub sector, Plomer sub sector **From 1.8m on the Settlement Point gauge-** • Shoreline Drive and Riverside Drive are inundated • Wombat Close and Shoreline Drive and all accesses to Ferry Services at the North Shore and Riverside are inundated **From 2.3m on the Settlement Point gauge-** • The majority of residential areas in the sector will be inundated by floodwater

Information and Warnings	NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
	• NSW SES Bulletins
	  ○ Flood Watch
	  ○ Flood Warning
	  ○ Equipment, Livestock and Aquaculture Warnings
	  ○ Media Release such as– Isolation Warnings
	• Evacuation Warning
	• Evacuation Order
	• All Clear
	• Emergency Alert
	• Standard Emergency Warning Signal (SEWS)

	• Sequenced door knocking • Media briefing • Interagency LEMC briefings Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.
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 • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector.
Isolation Triggers	The sector is heavily influenced by prevailing tidal and storm surge influences. The sector becomes isolated once the Maria River Road closes from ~1.22m m on the Maria River gauge and the Settlement Point and Hibbard Ferries cease operations between ~1.4m and ~1.5m on the Settlement Point gauge. The majority of properties within the sector are built to accommodate flooding – however evacuation routes and local roads will be impacted by floodwaters from ~1.4 to ~1.5m. It is unlikely an evacuation centre could be established within the sector due to the isolation and difficulty in accessing a centre. An Assembly Area will be established at the Rural Fire Service building to manage operations within the sector.
Evacuation Triggers	The majority of the sector is classified as having an 'Overland Refuge Area' apart from the Maria River Road sub sector which is completely inundated from 3m on the Maria River gauge. The majority of properties within the sector are built to accommodate flooding – however evacuation routes and local roads will be impacted by floodwaters from ~1.4 to ~1.5m. **To evacuate out of the sector –** If height to reach or exceed ~1.5m on the Settlement Point gauge for egress via the Settlement Point and Hibbard Ferries **To evacuate within the sector to the Assembly Area –**

	If height to reach or exceed ~1.7m on the Settlement Point gauge *Depending upon the rate of rise - additional triggers for evacuation are available for the North Shore and Plomer sub sectors on the Kindee gauge at 5.5m providing ~8 hours warning and 4.3m on the Wauchope gauge providing ~2 hours warning* It is unlikely an evacuation centre could be established within the sector due to the isolation and difficulty in accessing a centre. An Assembly Area will be established at the Rural Fire Service building to manage operations within the sector.
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	**Plomer sub sector-** • Via Shoreline Drive heading west to higher ground **North Shore sub sector-** • Via Shoreline Drive heading west to higher ground **Maria River Road** • Via Maria River Road heading south to higher ground **Riverside Drive sub sector-** • Via Shoreline Drive heading east to higher ground
Evacuation Route Closure	**Plomer sub sector-** • Shoreline Drive from ~1.4m to ~1.5m on the Settlement Point gauge **North Shore sub sector-** • Shoreline Drive from ~1.4m to ~1.5m on the Settlement Point gauge **Maria River Road** • Maria River Road from ~1.22m to ~2m on the Maria River Road gauge **Riverside Drive sub sector-** • Shoreline Drive from ~1.8m on the Settlement Point gauge
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Ferries across the Hastings River will cease operations dependent upon prevailing conditions however this will generally be from ~1.5m when the southern side access points are inundated

	• Self-evacuation by private transport to the Assembly Area • With assistance of NSW SES or emergency services to the Assembly Area and then to the Evacuation Centre • At risk residents will be advised via warnings issued and or doorknocks from emergency services personnel advising of evacuation details and arrangements
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential Assembly Area locations are- • North Shore Rural Fire Service building – Shoreline Drive North Shore Potential Evacuation Centre locations are- • Westport High School – Finlay Ave, Port Macquarie • Port Macquarie High School – Owen Street, Port Macquarie
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Centre or Assembly Area and then onto the Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 2:** Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. NSW Police will be responsible for security of evacuated areas. Population densities with the sector would not exceed capacity of the surround evacuation centres and services.

Rescue	The NSW SES Port Macquarie Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	In large scale events it may be necessary to resupply the sector whilst it is under an evacuation order. This is due to the potential for short notice on evacuation warning times and the volume of persons within the sector to be evacuated by air and or flood boat. Where resupply is required it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES North Shore Incident Action Plan. Resupply will be managed through the nominated Assembly Area.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Oxley Oval – Pacific Drive, Port Macquarie • Vacant land adjacent to the North Shore Rural Fire Service building – Shoreline Drive North Shore Port Macquarie **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge • Owner: Port Macquarie Hasting Council
Other	• Ferry services do not operate in flood or storm conditions. Access and egress points to the Settlement Point and Hibbard Ferries are inundated from ~1.4 to ~1.5m on the Settlement Point gauge. • Due to the short notice on evacuation warning times and the early closure of Ferries for access to Port Macquarie along with the closure of the Maria River Road to the North – it is likely persons will be isolated for the duration of an event if they do not exit the sector prior to 1.4m on the Settlement Point gauge.

NORTH SHORE SECTOR MAP

SECTOR 6 - THE HATCH/BLACKMANS POINT

THE HATCH/BLACKMANS POINT RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description	This sector is sparsely populated and comprises mainly rural residential properties bordered to the east by the Maria River, the south by the Hastings River, the west by the Pacific Highway and in the north by the Telegraph Point sector and the Wilsons River. The sector has two sub sectors- 1. Blackmans Point classified as a Low Flood Island 2. The Hatch classified as a Low Flood Island Flooding of this area is from the Hastings and Maria Rivers with flow influenced by prevailing tidal and storm surge conditions. The area is classified as a high to very high hazard. The Blackmans Point sub sector comprises households located to the east of the Pacific Highway, whose main access / egress route is along Blackmans Point Road. The community is partially flooded from 1.93m on the Maria River Road gauge and almost completely inundated at 3.7m or the 1% AEP. Where evacuation is required it should be undertaken along Blackmans Point Road to the Pacific Highway. The Hatch sub sector comprises of a number of rural residential properties bordering the Maria River. Evacuation routes south to Blackmans Point Road close from 1.7m on Elford's Road and 1.9m on The Hatch Road off the Maria River gauge. The community is partially flooded from 1.93m on the Maria River Road gauge and almost completely inundated at 3.7m or the 1% AEP. Where evacuation is required it should be undertaken along Elford's Road, The Hatch Road, and Blackman's Point Road then to the Pacific Highway.
Hazard	Riverine flooding from the Maria and Hastings Rivers
Flood Affect Classification	The entire sector is classified as a Low Flood Island
At risk properties from the Maria River gauge	Of 141 addresses in the entire area, the number of dwellings inundated is approximately - • 5% flood (2.8 metres)– 12 • 1% flood (3.7 metres) – 42 up to 115 • PMF (6.9 metres) – up to 127
Sector Control	**Command-** The assigned NSW SES Incident Controller will Command operations in the local area.

<table>
<tr><td></td><td>

Control- The NSW SES Port Macquarie Unit Controller will control operations and evacuations in this sector.

Conduct and Coordination- The NSW SES Port Macquarie Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.

</td></tr>
<tr><td>Key Warning Gauge Name</td><td>

<table>
<tr><th>Name</th><th colspan="2">AWRC No.</th><th>Min</th><th>Mod</th><th>Maj</th></tr>
<tr><td>Maria River Gauge
Longitude = 152.8572°E
Latitude = -31.2242°S</td><td colspan="2">207406</td><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><th>Key Flood Events</th><th>5% AEP</th><th>2% AEP</th><th>1% AEP</th><th>0.5% AEP</th><th>PMF</th></tr>
<tr><td>Maria River Gauge</td><td>2.8m</td><td>N/A</td><td>3.7m</td><td>N/A</td><td>6.9m</td></tr>
</table>

</td></tr>
<tr><td>General Strategy</td><td>

- Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
- Issue of early warning of flood level impacts and potential isolation.
- Evacuation of at risk population:
  - Self-evacuation to friends/family outside the impact area.
  - Establishment of an Assembly Area/Evacuation Centre in consultation with the Welfare Services Functional Area Coordinator
- Establishment of a helicopter landing zone at the Port Macquarie Airport.

</td></tr>
<tr><td>Key Risks / Consequences</td><td>

From ~1.7m on the Maria River gauge-

- Low lying properties and parts of Elford commence to be inundated

From ~1.9m to 2.3m on the Maria River gauge-

- Low lying parts of The Hatch Road commence to be inundated isolating properties
- Low lying properties in the sector commence to be inundated

From ~2.1m to 3m on the Maria River gauge-

- Low lying part of Blackmans Point Road commence to be inundated isolating Blackmans Point properties

From ~3.7m on the Maria River gauge-

- The entire sector is inundated

</td></tr>
</table>

Information and Warnings	NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
	• NSW SES Bulletins
	  ○ Flood Watch
	  ○ Flood Warning
	  ○ Equipment, Livestock and Aquaculture Warnings
	  ○ Media Release such as– Isolation Warnings
	• Evacuation Warning
	• Evacuation Order
	• All Clear
	• Emergency Alert
	• Standard Emergency Warning Signal (SEWS)
	• Sequenced door knocking
	• Media briefing
	• Interagency LEMC briefings
	
	Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.

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 • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** *Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector.*
Isolation Triggers	The Hatch sub sector becomes isolated once The Hatch Road is cut from ~1.9m to ~2.3m on the Maria River gauge. Low lying properties will also be impacted from this point. The Blackmans Point sub sector becomes isolated one the Blackmans Point Road is cut from ~2.1m to ~3m on the Maria River gauge. Low lying properties will also be impacted from this point. *Depending upon the rate of rise – additional triggers for isolation / evacuation are available on the Kindee gauge at 10m providing ~12 hours warning and 5.2m on the Wauchope gauge providing ~8 hours warning.*

Evacuation Triggers	The sector is classified as a Low Flood Island and is completely inundated in a 1% AEP event at 3.7m on the Maria River gauge. Some properties in the sector are built to accommodate flooding – however evacuation routes are impacted from ~1.7m in Elford's Road, ~1.9m in The Hatch Road and ~2.1m on the Blackmans Point Road off the Maria River gauge. **Evacuation required from The Hatch sub sector if heights to reach or exceed ~1.7m to ~1.9m on the Maria River gauge** **Evacuation required from the Blackmans Point sub sector if heights to reach or exceed ~2.1m to 3m on the Maria River gauge**
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	**The Hatch sub sector-** • Via Elford's Road and The Hatch Road to Blackmans Point Road and then the Pacific Highway **Blackmans Point sub sector-** • Via Blackmans Point Road to the Pacific Highway
Evacuation Route Closure	**The Hatch sub sector-** • Elford's Road from ~1.7m on the Maria River gauge • The Hatch Road from ~1.9m to 2.3m on the Maria River gauge **Blackmans Point sub sector-** • Blackmans Point Road from 2.1m to 3m on the Maria River gauge
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the nominated Evacuation Centre • With assistance of NSW SES or emergency services to the nominated Evacuation Centre
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential Assembly Area locations are- • Wilsons River Sports Ground at Telegraph Point

	Potential Evacuation Centre locations are- • Westport High School – Finlay Ave, Port Macquarie • Port Macquarie High School – Owen Street, Port Macquarie
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Assembly area and or Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area or Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 2:** Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. NSW Police will be responsible for security of evacuated areas. Population densities with the sector would not exceed capacity of the surround evacuation centres and services.
Rescue	The NSW SES Port Macquarie Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	It is unlikely the sector will require resupply as the sector will be evacuated. Where resupply is required to the sector it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Resupply Incident Action Plan.

Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Oxley Oval – Pacific Drive, Port Macquarie **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge • Owner: Port Macquarie Hasting Council
Other	The sector is a popular tourist destination. Consideration should be given to the potential for large numbers of holiday makers in the River Lodge Tourist Park as well as tourist accommodation within the sector significantly increasing the sectors population during peak holiday periods.

THE HATCH/BLACKMANS POINT SECTOR MAP

SECTOR 7 - TELEGRAPGH POINT

TELEGRAPH POINT RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description	This sector comprises the community around the village of Telegraph Point on either side of the Wilsons River. The residential areas in and around the village on the north west side of the Wilsons River are largely flood free with the evacuation route north along the Pacific Highway remaining flood free throughout the PMF at 6.9m on the Telegraph Point gauge. The sector is classified as having Rising Road Access with the area around Hacks Ferry Road classified as a high to extreme hazard. The sector has two sub sectors- 1. Telegraph Point West classified as Rising Road Access 2. Telegraph Point East classified as Low Flood Island The Telegraph Point West sub sector is largely flood free apart from some flooding of small areas of low lying land affected by flooding during the 1% AEP at 6.9m on the Telegraph Point gauge. Telegraph Point village itself is not considered to be vulnerable to flooding. The Telegraph Point East sub sector is comprised mainly of low lying farmland and a small residential area in Mooney Street. The Stoney Park Water Ski Park is also located within the sector. Evacuation routes for properties along Hacks Ferry Road commence inundation from 1.95m on the Telegraph Point gauge, Mooney Street from 2.4m from 2.8m for Stoney Park.
Hazard	Riverine flooding from the Wilsons River
Flood Affect Classification	The sector is classified as having Rising Road Access, with rural properties in the east being a Low Flood Island when Hacks Ferry Road closes from 1.95m.
At risk properties from the Telegraph Point gauge	Of 112 addresses, the number of dwellings inundated is approximately - • 5% flood (3 metres) – 3 • 1% flood (3.7 metres) – 16 up to 32 • PMF (6.9 metres) – up to 36
Sector Control	**Command-** The assigned NSW SES Incident Controller will Command operations in the local area. **Control-** The NSW SES Port Macquarie Unit Controller will control operations and evacuations in this sector.

<table>
<tr><td></td><td colspan="6">Conduct and Coordination- The NSW SES Port Macquarie Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.</td></tr>
<tr><td rowspan="4">Key Warning Gauge Name</td><td>Name</td><td colspan="2">AWRC No.</td><td>Min</td><td>Mod</td><td>Maj</td></tr>
<tr><td>Telegraph Point Gauge
Longitude = 152.800°E
Latitude = -31.323°S</td><td colspan="2">207415</td><td>1.1m</td><td>1.6m</td><td>2.1m</td></tr>
<tr><td>Key Flood Events</td><td>5% AEP</td><td>2% AEP</td><td>1% AEP</td><td>0.5% AEP</td><td>PMF</td></tr>
<tr><td>Telegraph Point</td><td>3m</td><td>N/A</td><td>3.7m</td><td>N/A</td><td>6.9m</td></tr>
<tr><td>General Strategy</td><td colspan="6">• Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
• Issue of early warning of flood level impacts and potential isolation.
• Evacuation of at risk population:
o Self-evacuation to friends/family outside the impact area
o Establishment of an Assembly Area/Evacuation Centre in consultation with the Welfare Services Functional Area Coordinator
• Establishment of a helicopter landing zone at the Port Macquarie Airport.</td></tr>
<tr><td>Key Risks / Consequences</td><td colspan="6">From ~1.95m on the Telegraph Point gauge-
• Evacuation route for Telegraph Point east sub sector along Hacks Ferry Road starts to be inundated by floodwater
• Low lying properties in Telegraph Point east sub sector impacted by Floodwater

From ~2.4m on the Telegraph Point gauge-
• Evacuation routes and low lying areas in and Mooney Street and Stoney Park Water Ski Park start to be impacted by floodwater
• Telegraph Point Primary School impacted by floodwater

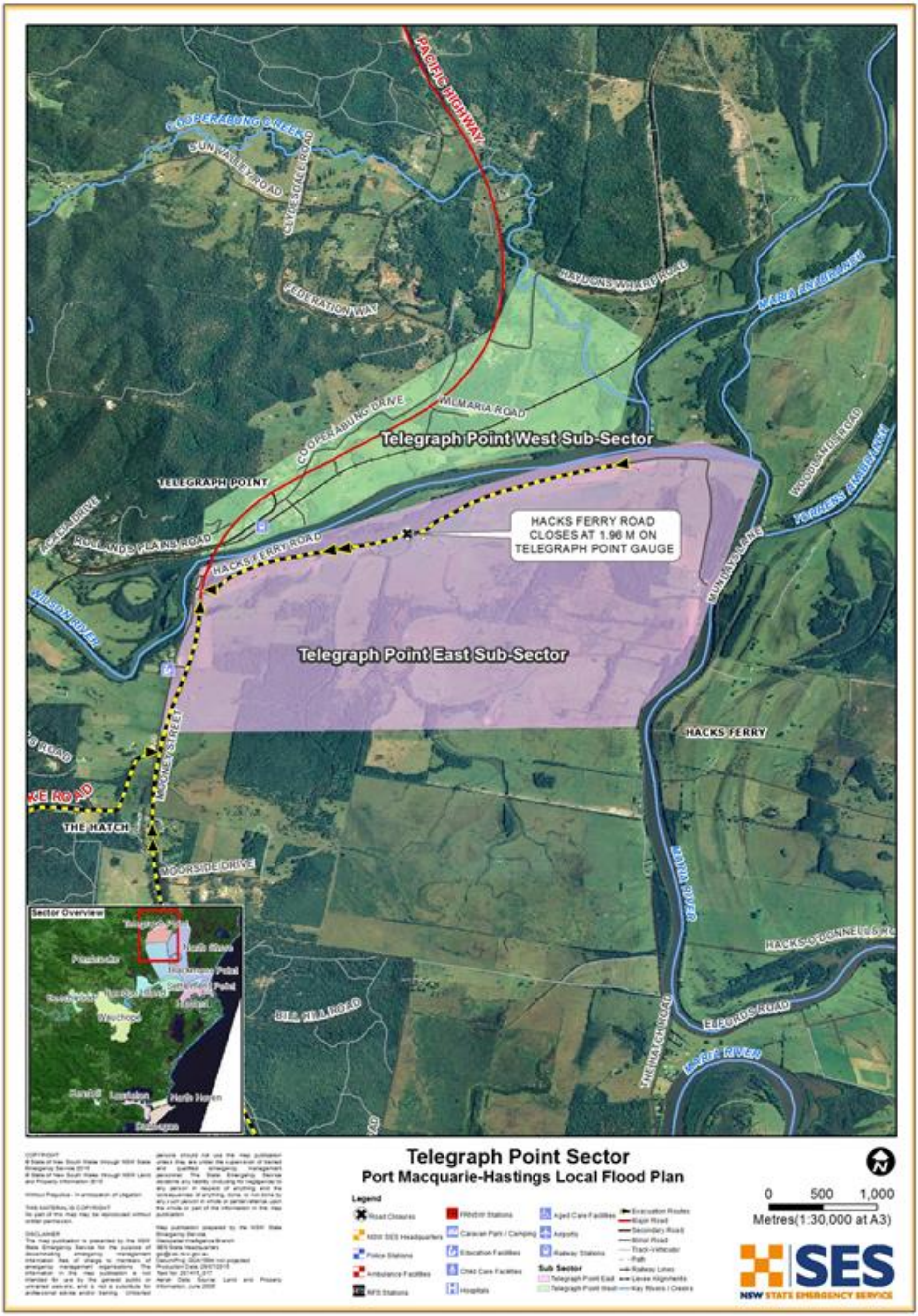
From ~2.8m on the Telegraph Point gauge-
• Stoney Park Water Ski Park commences to be inundated by Floodwater</td></tr>
<tr><td>Information and Warnings</td><td colspan="6">NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
• NSW SES Bulletins
o Flood Watch
o Flood Warning
o Equipment, Livestock and Aquaculture Warnings
o Media Release such as– Isolation Warnings
• Evacuation Warning
• Evacuation Order</td></tr>
</table>

	• All Clear • Emergency Alert • Standard Emergency Warning Signal (SEWS) • Sequenced door knocking • Media briefing • Interagency LEMC briefings Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.
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 • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** *Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector.*
Evacuation Triggers	The sector is classified as having Rising Road Access, with approximately 6 rural properties located in a Low Flood Island after the closure of Hacks Ferry Road from ~1.95m on the Telegraph Point gauge. **Evacuation required from low lying areas of Hacks Ferry Road if heights to reach or exceed ~1.95m on the Telegraph Point gauge** **Evacuation required from low lying areas of Mooney Street if heights to reach or exceed ~2.4m** **Evacuation required from Stoney Park Water Ski Park if heights to reach or exceed ~2.8m on the Telegraph Point gauge**
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	**Telegraph Point West sub sector-** • Via the Pacific Highway

	Telegraph Point East sub sector- • Via Hacks Ferry Road to the Pacific Highway • Via Mooney Street to the Pacific Highway
Evacuation Route Closure	**Telegraph Point East sub sector-** • Hacks Ferry Road from ~1.95m on the Telegraph Point gauge • Mooney Street from ~2.4m on the Telegraph Point gauge
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the nominated Evacuation Centre • With assistance of NSW SES or emergency services to the nominated Evacuation Centre
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential Assembly Area locations are- • Wilsons River Sports Ground at Telegraph Point Potential Evacuation Centre locations are- • Westport High School – Finlay Ave, Port Macquarie • Port Macquarie High School – Owen Street, Port Macquarie
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Assembly area and or Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area or Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 2:** Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions.

	Stage 3: Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground – if access is impeded or blocked by water, flood boats and helicopters may be utilised. NSW Police will be responsible for security of evacuated areas. Population densities with the sector would not exceed capacity of the surround evacuation centres and services.
Rescue	The NSW SES Port Macquarie Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	It is unlikely the sector will require resupply as the sector will be evacuated. Where resupply is required to the sector it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Resupply Incident Action Plan.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Wilsons River Sports Ground – Telegraph Point **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge • Owner: Port Macquarie Hasting Council
Other	Consideration should be given to the potential for large numbers of holiday makers in the Stoney Park Water Ski Park as well as tourist accommodation and camping within the sector significantly increasing the population during peak holiday periods.

TELEGRAPH POINT SECTOR MAP



SECTOR 8 - RAWDON ISLAND

RAWDON ISLAND RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description	This sector is entirely surrounded by the Hastings River and is predominantly comprised of low lying farmland. It is classified as a Low Flood Island, with two small refuges as there is a small section of land on the island that is above the PMF at 12.4m on the Wauchope gauge. Most of the residential dwellings in the sector are located to the south end with only scattered houses to the north. Properties tend to be located on high points of the sector and are predominantly located above the 1% AEP level at 9.85m on the Wauchope gauge, however local roads on the island are inundated early in flood events from 4.2m when the only access bridge is closed isolating the island. Whilst most properties are located above the 1%AEP if the water level reached the PMF these properties would require evacuation. There is a high point towards the south of the island which is above the PMF, however the ability for residents of properties located to the north of the island to reach this refuge may be compromised by floodwaters.
Hazard	Flooding is from the Hastings River, where branches of the river form Rawdon Island. An additional 'flood runner' becomes active from floods exceeding 9.5m on the Wauchope gauge.
Flood Affect Classification	Low Flood Island
At risk properties from the Wauchope gauge	Of the 47 addresses in the area, the number of dwellings inundated is approximately - • 5% flood (6.9m) – 6 • 1% flood (9.85m) – 12 up to 33 • PMF (12.4m) – up to 37
Sector Control	**Command-** The assigned NSW SES Incident Controller will Command operations in the local area. **Control-** The NSW SES Wauchope Unit Controller will control operations and evacuations in this sector. **Conduct and Coordination-** The NSW SES Wauchope Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.

<table>
<tr><td rowspan="4">Key Warning Gauge Name</td><td>Name</td><td colspan="2">AWRC No.</td><td>Min</td><td>Mod</td><td>Maj</td></tr>
<tr><td>Wauchope Gauge
Longitude = 152.736°E
Latitude = -31.452°S</td><td colspan="2">207401</td><td>2.5m</td><td>4.3m</td><td>5.5m</td></tr>
<tr><td>Key Flood Events</td><td>5% AEP</td><td>2% AEP</td><td>1% AEP</td><td>0.5% AEP</td><td>PMF</td></tr>
<tr><td>Wauchope Gauge</td><td>6.9m</td><td>9.60m</td><td>9.85m</td><td>N/A</td><td>12.4m</td></tr>
<tr><td>General Strategy</td><td colspan="6">• Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
• Issue of early warning of flood level impacts and potential isolation
• Evacuation of at risk population:
o Self-evacuation to friends/family outside the impact area.
o Establishment of an Assembly Area in consultation with the Welfare Services Functional Area Coordinator and in accordance with the NSW SES Incident Action Plan
• Establishment of a helicopter landing zone at the Port Macquarie Airport and or the Wauchope RFS building.</td></tr>
<tr><td>Key Risks / Consequences</td><td colspan="6">From ~3.6m on the Wauchope gauge-
• Low lying parts of Narrow Gut Road and Rawdon Island Road are inundated

From ~4.2m on the Wauchope gauge-
• Rawdon Island Road Bridge across the Hastings River is inundated and closed isolating the sector

From ~6.5m on the Wauchope gauge-
• Low lying parts of the south western corner of the sector become inundated
• Low lying properties need to be evacuated from isolated sector

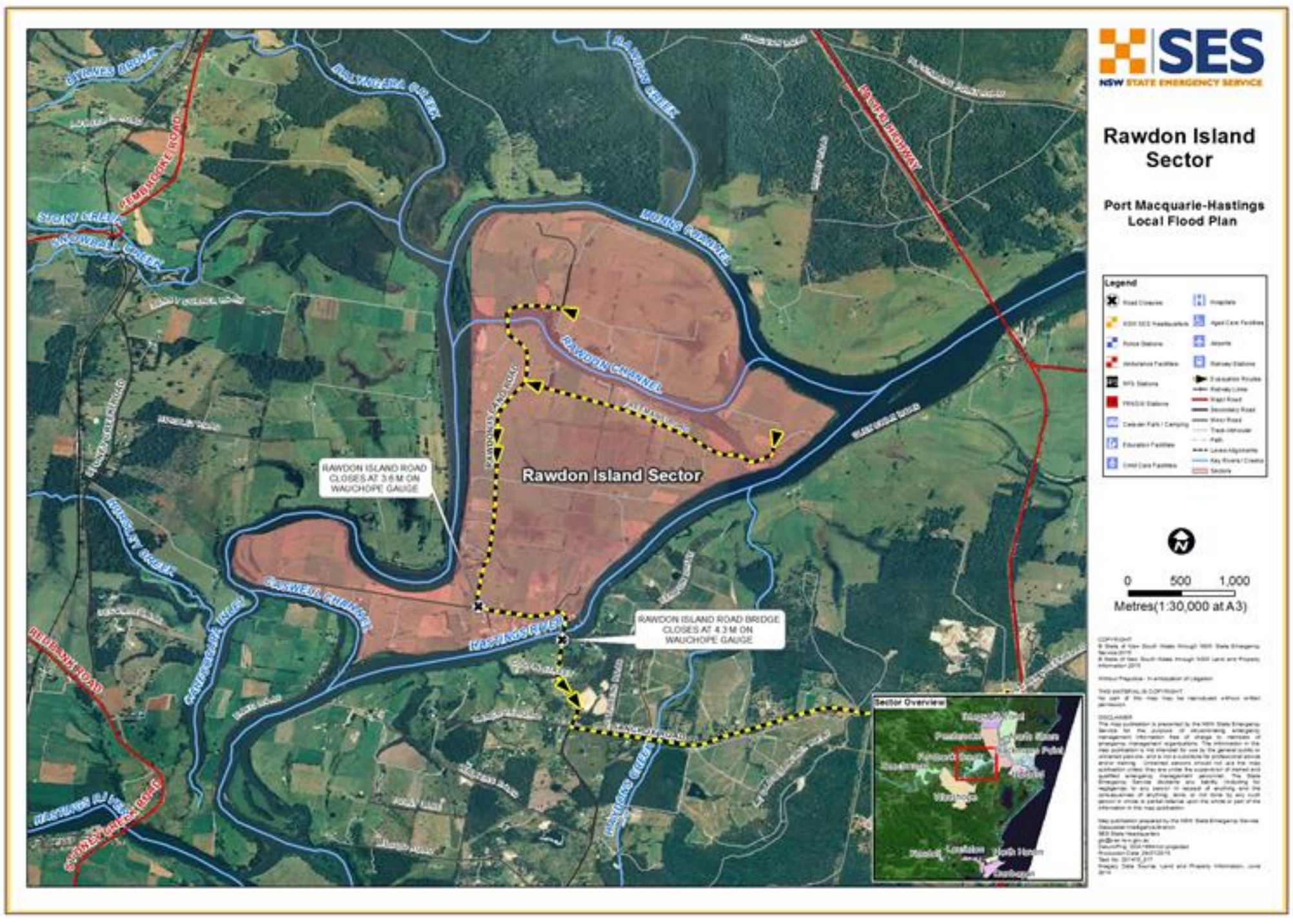
From 8.7m on the Wauchope gauge-
• Majority of low lying parts of sector inundated</td></tr>
<tr><td>Information and Warnings</td><td colspan="6">NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
• NSW SES Bulletins
o Flood Watch
o Flood Warning
o Equipment, Livestock and Aquaculture Warnings
o Media Release such as– Isolation Warnings
• Evacuation Warning
• Evacuation Order
• All Clear
• Emergency Alert</td></tr>
</table>

	• Standard Emergency Warning Signal (SEWS) • Sequenced door knocking • Media briefing • Interagency LEMC briefings Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.
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 • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** *Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector.*
Evacuation and/or Isolation Triggers	The sector is classified as a Low Flood Island with overland refuge to high ground which is above the PMF at 12.4m on the Wauchope gauge. The majority of the sector is inundated from 8.7m. Whilst the majority of properties tend to be on high ground above the 1% AEP at 9.85m there are no facilities or emergency services within the sector. **Evacuation required from the sector if heights to reach or exceed ~4.2m on the Wauchope gauge.**
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	Via Rawdon Island Road and Narrow Gut Road south to Sancrox Road
Evacuation Route Closure	• Narrow Gut Road from 3.6m on the Wauchope gauge • Rawdon Island Road Bridge across the Hastings River from 4.2m on Wauchope gauge

Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the Assembly Area • With assistance of NSW SES or emergency services to the Assembly Area and then to the Evacuation Centre • At risk residents will be advised via warnings issued and or doorknocks from emergency services personnel advising of evacuation details and arrangements
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential Assembly Area locations are- • High ground in vicinity of Rawdon Island Function Centre Potential Evacuation Centre locations are- • Wauchope RSL • Westport High School – Finlay Ave, Port Macquarie • Port Macquarie High School – Owen Street, Port Macquarie
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Centre or Assembly Area and then onto the Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 2:** Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions NSW Police will be responsible for security of evacuated areas.

	Population densities with the sector would not exceed capacity of the surround evacuation centres and services.
Rescue	The NSW SES Wauchope Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	In large scale events it may be necessary to resupply the sector whilst it is under an evacuation order. This is due to the potential for short notice on evacuation warning times. Where resupply is required it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Rawdon Island Incident Action Plan. Resupply will be managed through the nominated Assembly Area.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Rear of Wauchope SES and Wauchope RFS buildings - Wauchope **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge
Other	It is unlikely the community will evacuate as requested, early in events at 4.2m on the Wauchope gauge when the access / egress route across the Hastings River closes. The community will be largely self-sufficient in short events however may require resupply and support for the duration.

RAWDON ISLAND SECTOR MAP



SECTOR 9 - WAUCHOPE

WAUCHOPE RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description	This sector incorporates the communities south of the Hastings River in and around the township of Wauchope. The sector comprises both rural and urban communities and has three sub sectors – 1. Yippin Creek – with a flood classification of Rising Road Access 2. Wauchope – with a flood classification of Rising Road Access 3. King and Sarah's Creek – with a flood classification of Overland Refuge on a Low Flood Island Flooding in this area is influenced by the Hastings River, Yippin Creek, Sarah's and Kings Creek. The Yippin Creek sub sector is located north-west of Wauchope and south of the Hastings River. The sub sector is primarily above the level of the PMF at 12.4m on the Wauchope gauge, although flooding of low lying areas and roads is expected early in an event. As most residential properties are located outside the floodplain, widespread evacuation of the sub sector should not be required. The evacuation route along Beechwood Road is affected by flooding in low points from the Hastings River. This could lead to the sub sector becoming isolated during major events. The Wauchope sub sector is comprised predominantly of the township of Wauchope. Aside from some minor flooding of land during the 5% AEP at 6.9m on the Wauchope gauge and some minor property inundation around Cameron Street and Parker Street during the 1% AEP at 9.85m, the Wauchope community is predominantly a flood free area. The Wauchope sub sector is classified as Rising Road Access; flood free egress routes to Wauchope are available throughout the PMF at 12.4m on the Wauchope gauge. The King and Sarah's Creek sub sector is comprised predominantly of rural residential properties. Low lying roads are generally inundated by flooding prior to private property becoming inundated. Evacuation out of the sector is via the Oxley Highway and this route closes from between 5m and 5.3m on the Wauchope gauge. A further evacuation route is available via King Creek Road and this route closes from around 8.6m on the Wauchope gauge, potentially lower.
Hazard	Riverine flooding from the Hastings River and associated flooding from Yippin, King and Sarah's Creek
Flood Affect Classification	1. Yippin Creek sub sector – Rising Road Access to a High Flood Island 2. Wauchope sub sector – Rising Road Access to a High Flood Island 3. King and Sarah's Creek sub sector –Low Flood Island

<table>
<tr><td>At risk properties from the Wauchope gauge</td><td>Of the 4229 addresses in the area, the number of properties inundated are approximately -
5% flood (6.9 metres) – 11
1% flood (9.85 metres) – 161 up to 200
PMF (12.4 metres) – up to 836</td></tr>
<tr><td>Sector Control</td><td>Command- The assigned NSW SES Incident Controller will Command operations in the local area.

Control- The NSW SES Wauchope Unit Controller will control operations and evacuations in this sector.

Conduct and Coordination- The NSW SES Wauchope Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.</td></tr>
<tr><td>Key Warning Gauge Name</td><td>
<table>
<tr><th>Name</th><th colspan="2">AWRC No.</th><th>Min</th><th>Mod</th><th>Maj</th></tr>
<tr><td>Wauchope Gauge
Longitude = 152.736°E
Latitude = -31.452°S</td><td colspan="2">207401</td><td>2.50m</td><td>4.30m</td><td>5.50m</td></tr>
<tr><th>Key Flood Events</th><th>5% AEP</th><th>2% AEP</th><th>1% AEP</th><th>0.5% AEP</th><th>PMF</th></tr>
<tr><td>Wauchope Gauge</td><td>6.9m</td><td>9.60m</td><td>9.85m</td><td>N/A</td><td>12.3m</td></tr>
</table>
</td></tr>
<tr><td>General Strategy</td><td>Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
Issue of early warning of flood level impacts and potential isolation
Evacuation of at risk population:
Self-evacuation to friends/family outside the impact area.
Establishment of a helicopter landing zone at the Port Macquarie Airport and or the Wauchope RFS building.</td></tr>
<tr><td>Key Risks / Consequences</td><td>From~2.5m on the Wauchope gauge-
Bain Bridge commences overtopping closing Beechwood Road and access egress into Pembroke and Beechwood
From ~4m on the Wauchope gauge-
Approaches to Rawdon Island become inundated and low lying areas and properties become impacted by floodwaters – Rawdon Island becomes isolated from ~4.2m
From ~5m to 5.3m on the Wauchope gauge-
Oxley Highway (Port Lane) commences to be inundated in several locations between Wauchope and east of King Creek Road – low lying properties in these areas are impacted
Oxley Highway West of Wauchope is inundated in the vicinity of Colonels Creek</td></tr>
</table>

	• Water flows fast under the Railway Bridge at Rocks Ferry Road – impacting low lying parks, roads and properties **From ~6.5m on the Wauchope gauge-** • Beechwood Road access to Yippin Creek may become inundated **From ~7.8m to 8.6m on the Wauchope gauge-** • Wauchope High School grounds commence to become inundated by rising floodwater • Floodwaters surround Wauchope High School • Low lying properties in Alma Street, River Street, Nelson Street, Hasting Street, Cowarra Close, Rocks Ferry Road, Sarah's Creek Road, Kings Creek Road, Princess Avenue and the lower north side of Wauchope loose evacuation routes and / or are inundated by rising flood water • Kings Creek Road at Kings Creek inundated isolating King and Sarah's Creek sub sector (potentially earlier) **From ~9.50m on the Wauchope gauge-** • Low lying properties in Randall Street, Nelson Street, Park Street, Wallace Street, King Street and all low lying flood prone areas of Wauchope and surrounds that are not under current warnings loose evacuation routes and / or are inundated by rising flood water • The Golf Course may become inundated by rising floodwaters **From ~9.85m on the Wauchope gauge-** • Low lying properties in Flobern Avenue, Wattle Street, Fairmont Drive, Kerewong Close, Cogo Close, Fox Crescent, Campbell Street, Webb Street, Hastings Street, Clareville Street, Bain Street, Walters Street, Parker Street, Cameron Street, Bago Road, Wallace Street, Carrington Street and Randall Street that not under current warnings may lose evacuation routes and / or are inundated by rising flood water. • Wauchope High School inundated

Information and Warnings	NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
	• NSW SES Bulletins
	  ○ Flood Watch
	  ○ Flood Warning
	  ○ Equipment, Livestock and Aquaculture Warnings
	  ○ Media Release such as– Isolation Warnings
	• Evacuation Warning
	• Evacuation Order
	• All Clear
	• Emergency Alert
	• Standard Emergency Warning Signal (SEWS)
	• Sequenced door knocking
	• Media briefing

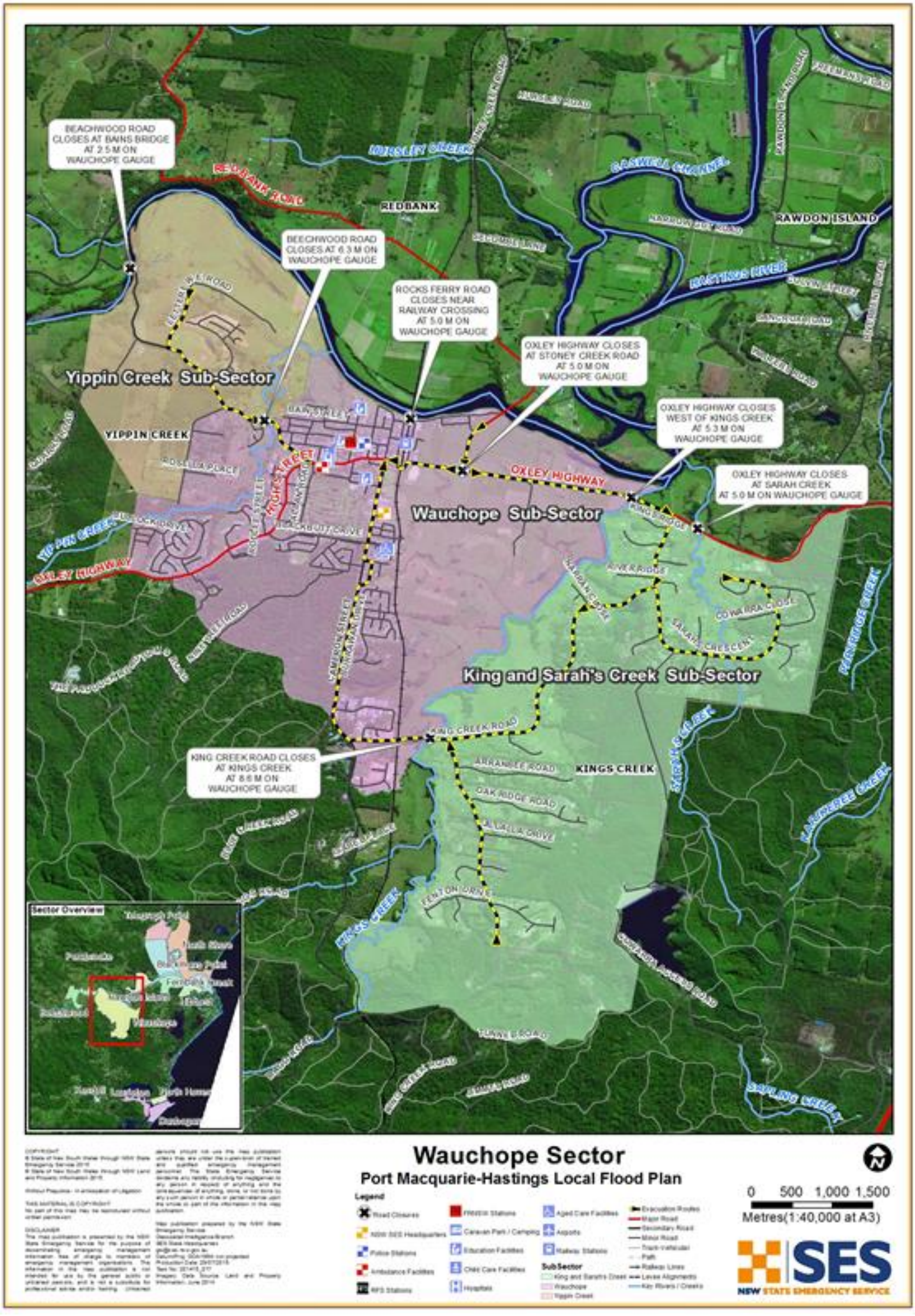
	• Interagency LEMC briefings Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.
Property Protection	**Assistance with property protection:** NSW SES will monitor rising flood waters and provide the following assistance for flood-threatened properties where time and resources permit - • Relocation of personal property for at risk locations • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** *Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector.*
Evacuation and/or Isolation Triggers	Oxley Highway may become inundated from 5-5.3 metres on the Wauchope gauge (11m on the Kindee Bridge gauge) near Little Port Lane, isolating residents between Wauchope Railway Station and Kings Creek and preventing access between Wauchope, Kings Creek and Pembrooke. There are no alternative routes. Oxley Highway may also cut at Colonels Creek West of Wauchope and potentially at Yippin Creek 4 km East of Colonels Creek. This impacts traffic flow west of Wauchope. Water starts to cross the Oxley Highway (Port Lane) at Sarah's Creek and at Stoney Creek Road where eight dwellings East of Wauchope on the Oxley Highway (Port Lane) will become isolated. **Primary access to Yippin Creek sub sector is lost at ~6.3m (although access / egress through Rosewood may still be available) –** • Beechwood Road may become inundated at low points in the vicinity of Yippin Creek Road and Glenview Drive. Bain Bridge is closed at 2.5m as a result the Yippin Creek sub sector may become isolated, and any evacuations should be complete by this height. **Evacuation warnings/orders required for predictions to reach/exceed ~7.8m to 8.6m on the Wauchope gauge *(refer Wauchope gauge Flood Action Card)* for-** • Wauchope High School and Low lying properties in Alma Street, River Street, Nelson Street, Hasting Street, Cowarra Close, Rocks Ferry Road, Sarah's Creek Road, Kings Creek Road, Princess Avenue and the lower north side of Wauchope loose evacuation routes and / or are inundated by rising flood water • King and Sarah's Creek sub sector isolated sector **Evacuation warnings/orders required for predictions to reach/exceed ~9.50m on the Wauchope gauge *(refer Wauchope gauge Flood Action Card)* for -** • Low lying properties in Randall Street, Nelson Street, Park Street, Wallace

	Street, King Street and all low lying flood prone areas of Wauchope and surrounds that are not under current warnings loose evacuation routes and / or are inundated by rising flood water • The Wauchope Golf Course **Evacuation warnings/order required for predictions to reach/exceed ~9.85m on the Wauchope gauge *(refer Wauchope gauge Flood Action Card)* for -** • Low lying properties in Flobern Avenue, Wattle Street, Fairmont Drive, Kerewong Close, Cogo Close, Fox Crescent, Campbell Street, Webb Street, Hastings Street, Clareville Street, Bain Street, Walters Street, Parker Street, Cameron Street, Bago Road, Wallace Street, Carrington Street and Randall Street that not under current warnings may lose evacuation routes and / or are inundated by rising flood water.
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	**The Yippin Creek sub sector –** • Via Beechwood Road east to Wauchope **The Wauchope sub sector –** • Cameron Street and the Oxley Highway to Wauchope township **The King and Sarah's Creek sub sector –** • Oxley Highway to Wauchope or Port Macquarie • King Creek Road to Wauchope
Evacuation Route Closure	**The Yippin Creek sub sector –** • Beechwood Road east to Wauchope – closes ~6.3m on the Wauchope gauge **The Wauchope sub sector –** • Oxley Highway to Wauchope township – closes ~5m on the Wauchope gauge **The King and Sarah's Creek sub sector –** • Oxley Highway to Wauchope or Port Macquarie – closes ~between 5m and 5.3m on the Wauchope gauge • King Creek Road to Wauchope – closes ~8.6m on the Wauchope gauge, potentially earlier
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the nominated Evacuation Centre • With assistance of NSW SES or emergency services to the nominated

	Evacuation Centre
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential Evacuation Centre locations are- • Wauchope RSL • Westport High School – Finlay Ave, Port Macquarie • Port Macquarie High School – Owen Street, Port Macquarie
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Centre or Assembly Area and then onto the Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 2:** Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. NSW Police will be responsible for security of evacuated areas. At risk population densities with the sector would not exceed capacity of the surround evacuation centres and services.
Rescue	The NSW SES Wauchope Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.

Resupply	In large scale events it may be necessary to resupply sub sectors whilst they are under an evacuation order. This is due to the potential for short notice on evacuation warning times and residents not complying with orders as they are on high ground. Where resupply is required it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Incident Action Plan. Resupply will be managed through a nominated Assembly Area.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Rear of Wauchope SES and Wauchope RFS buildings - Wauchope **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge
Other	• From >7.5m on the Wauchope gauge Wauchope High School surrounded by shallow waters and from the 1% AEP at 9.85m is at risk of inundation • From the 1% AEP at 9.85m on the Wauchope gauge the main North Coast Railway is at risk of inundation • Properties at risk from Cowarra Dam. Properties are located in Jillara Dr, High St, Arranbee Rd, Old King Creek Rd, King Creek Rd, Weismantle St, Oak Ridge Rd Wauchope and Doomben Ave Eastwood. The following represents maximum number of properties at risk (4): o Houses – 35 o Cabins – 3 o Industrial blocks – 35 (Note: only 4 currently built on) o Pump station

WAUCHOPE SECTOR MAP



SECTOR 10 - PEMBROOKE

PEMBROOKE RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description	This sector comprises mainly rural and rural residential properties north of the Hastings River at Wauchope. The sector has two sub sectors – 1. Pembrooke classified as Rising Road Access 2. Redbank classified as Rising Road Access
Hazard	Riverine flooding from the Hastings River and tributary creeks
Flood Affect Classification	The entire sector is classified as High Flood Islands, with Ennis Road a Low Flood Island from around 3.9m.
At risk properties from the Wauchope gauge	Of 241 properties within the area, the following may be susceptible to flooding - • 5% flood (6.9 metres) – 11 • 1% flood (9.85 metres) – 45 • PMF (12.4 metres) - 90
Sector Control	**Command-** The assigned NSW SES Incident Controller will Command operations in the local area. **Control-** The NSW SES Wauchope Unit Controller will control operations and evacuations in this sector. **Conduct and Coordination**- The NSW SES Wauchope Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.

Key Warning Gauge Name

Name	AWRC No.	Min	Mod	Maj
Wauchope Gauge Longitude = 152.736°E Latitude = -31.452°S	207401	2.50m	4.30m	5.50m

Key Flood Events	5% AEP	2% AEP	1% AEP	0.5% AEP	PMF
Wauchope Gauge	6.9m	9.60m	9.85m	N/A	12.3m

General Strategy	• Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions. • Issue of early warning of flood level impacts and potential isolation

	• Evacuation of at risk population: o Self-evacuation to friends/family outside the impact area. • Establishment of a helicopter landing zone at the Port Macquarie Airport and or the Wauchope RFS building.
Key Risks / Consequences	**Pembrooke is impacted by flooding of the Balyngara, Loggy and Stoney Creeks which flow in a south easterly direction through the northern part of the sector. Overbank flooding primarily occurs at the confluence of these creeks – this area is classified as a high to extreme hazard with velocities exceeding 6100 cubic metres a second.** **From ~3.9m on the Wauchope gauge-** • Ennis Road evacuation route within the Redbank sub-sector becomes inundated isolating approximately 7 properties **At ~6.5m on the Wauchope gauge-** • Low lying properties on Redbank Island impacted by rising floodwater • Low lying areas of Sandy Point Island are inundated – stock are impacted **At ~6.9m on the Wauchope gauge (11m on the Kindee gauge)-** • Approximately 7 properties on Ennis Road in the Redbank sub sector become inundated

Information and Warnings	NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
	• NSW SES Bulletins
	  o Flood Watch
	  o Flood Warning
	  o Equipment, Livestock and Aquaculture Warnings
	  o Media Release such as– Isolation Warnings
	• Evacuation Warning
	• Evacuation Order
	• All Clear
	• Emergency Alert
	• Standard Emergency Warning Signal (SEWS)
	• Sequenced door knocking
	• Media briefing
	• Interagency LEMC briefings
	
	Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.

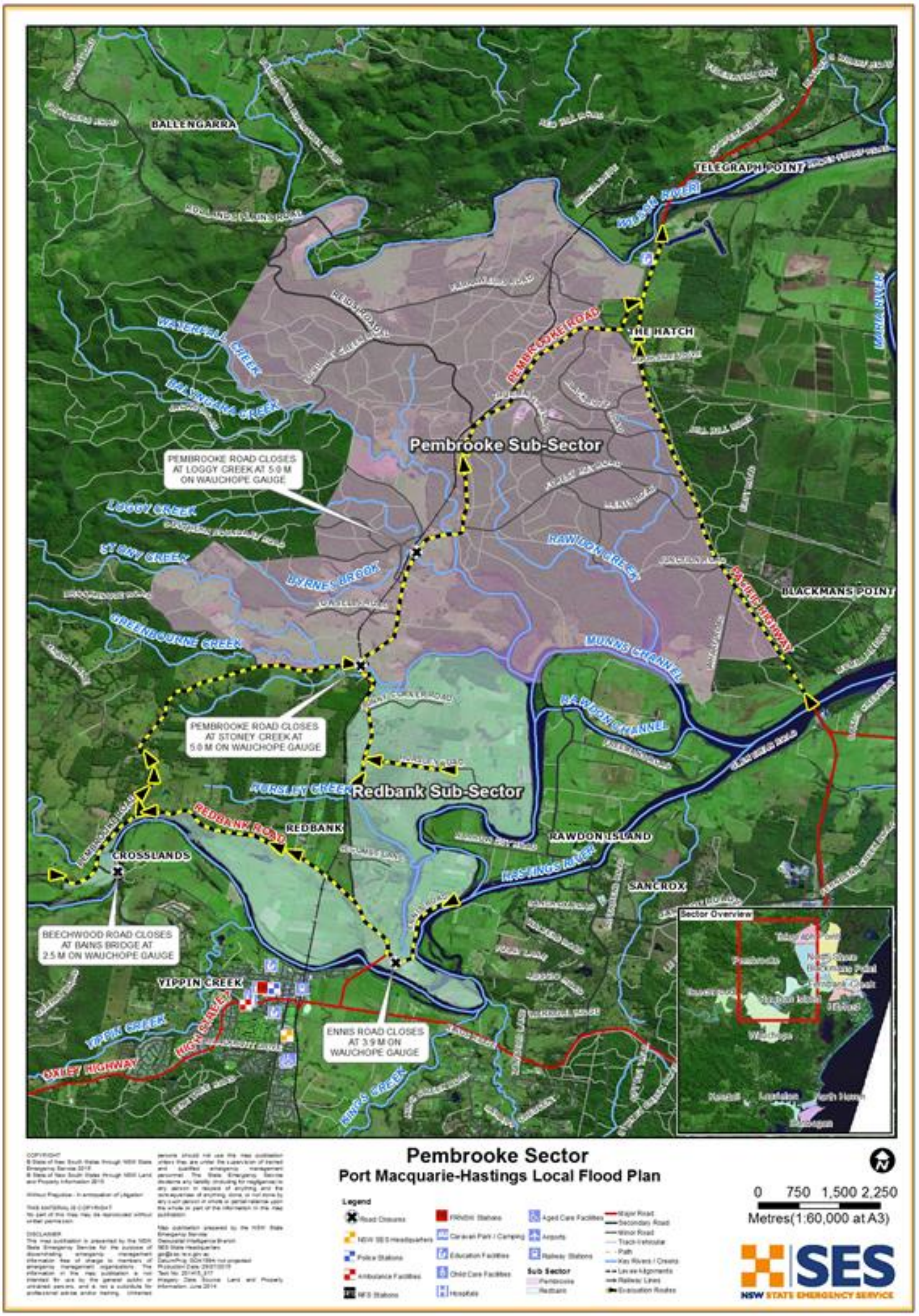
Property Protection	**Assistance with property protection:** NSW SES will monitor rising flood waters and provide the following assistance for flood-threatened properties where time and resources permit -

	• Relocation of personal property for at risk locations • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** *Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector*
Evacuation and/or Isolation Triggers	The sector has rising road access with the majority of inundation impacting low lying rural areas and closing low lying roads, bridges and causeways progressively as floodwaters rise and flash flooding impacts. **Evacuations required from the Ennis Road area if heights to reach or exceed 3.9m on the Wauchope gauge if peak is unknown heights to exceed 6.9m** **Isolation occurs for southern parts of the Pembrooke sub sector and the Redbank sub sector when the Pembrooke Road at Loggy Creek closes at ~3.3m on the Kindee gauge (however this height may vary as it is due to local flooding)** **Isolation occurs for the Redbank sub sector when the Pembrooke Road at Stoney Creek closes at ~5m on the Wauchope gauge – access to Beechwood is still available**
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	**The Pembrooke sub sector-** • Pembrooke Road to Telegraph Point and the Pacific Highway **The Redbank sub sector-** • Ennis Road to Redbank Road then Pembroke Road to Beechwood or Telegraph Point and the Pacific Highway
Evacuation Route Closure	**The Pembrooke sub sector-** • Pembrooke Road from ~5m on the Wauchope gauge at Stoney Creek (however is due to local flooding and the height may vary) • Pembrooke Road from ~3.3m on the Kindee gauge at Loggy Creek (however is due to local flooding and the height may vary) **The Redbank sub sector-** • Ennis Road from ~3.9m on the Wauchope gauge • Bain Bridge at ~2.5m on the Wauchope gauge

	• Pembrooke Road from ~5m on the Wauchope gauge at Stoney Creek intersection (however is due to local flooding and the height may vary) • Pembrooke Road from ~3.3-5m on the Kindee gauge at Loggy Creek (however is due to local flooding and the height may vary)
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the nominated Evacuation Centre • With assistance of NSW SES or emergency services to the nominated Evacuation Centre
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential Evacuation Centre locations are- • Wauchope RSL • Westport High School – Finlay Ave, Port Macquarie • Port Macquarie High School – Owen Street, Port Macquarie
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Centre or Assembly Area and then onto the Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 2:** Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. NSW Police will be responsible for security of evacuated areas.

	At risk population densities with the sector would not exceed capacity of the surround evacuation centres and services.
Rescue	The NSW SES Wauchope Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	In large scale events it may be necessary to resupply sub sectors whilst they are under an evacuation order due to isolation. Where resupply is required it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Incident Action Plan. Resupply will be managed through a nominated Assembly Area.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Rear of Wauchope SES and Wauchope RFS buildings - Wauchope **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge
Other	No other considerations noted

PEMBROOKE SECTOR MAP



SECTOR 11 - BEECHWOOD

BEECHWOOD RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description	This sector is mainly rural residential with a small village in the hamlet of Beechwood. The sector is bordered by the Hastings River in the south. Most dwellings are located outside the floodplain and have flood free egress routes throughout the PMF at 12.4m on the Wauchope gauge – however the sector can become isolated. There are no critical locations for evacuation of the sector however isolation due to road closures at low points is a possibility from ~5m on the Wauchope gauge.
Hazard	Riverine flooding from the Hastings River and Morton's Creek
Flood Affect Classification	The entire sector is classified as Rising Road Access
At risk properties	Approximately 380 persons are at risk in Beechwood. However, it is unclear where the properties at risk are located in the sector, and potentially may only be a few. This area requires further monitoring and reconnaissance in a flood.
Sector Control	**Command-** The assigned NSW SES Incident Controller will Command operations in the local area. **Control-** The NSW SES Wauchope Unit Controller will control operations and evacuations in this sector. **Conduct and Coordination**- The NSW SES Wauchope Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.

Key Warning Gauge Name

Name	AWRC No.		Min	Mod	Maj
Wauchope Gauge Longitude = 152.736°E Latitude = -31.452°S	207401		2.50m	4.30m	5.50m
Key Flood Events	5% AEP	2% AEP	1% AEP	0.5% AEP	PMF
Wauchope Gauge	6.9m	9.60m	9.85m	N/A	12.3m

General Strategy	• Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions. • Issue of early warning of flood level impacts and potential isolation

	• Evacuation of at risk population: ○ Self-evacuation to friends/family outside the impact area. • Establishment of a helicopter landing zone at the Port Macquarie Airport and or the Wauchope RFS building.
Key Risks / Consequences	Modelling indicates approximately 380 persons are at risk in Beechwood. However, the exact location in which properties at risk are located is unclear and potentially may only be a few. This requires further monitoring and reconnaissance during event to confirm.

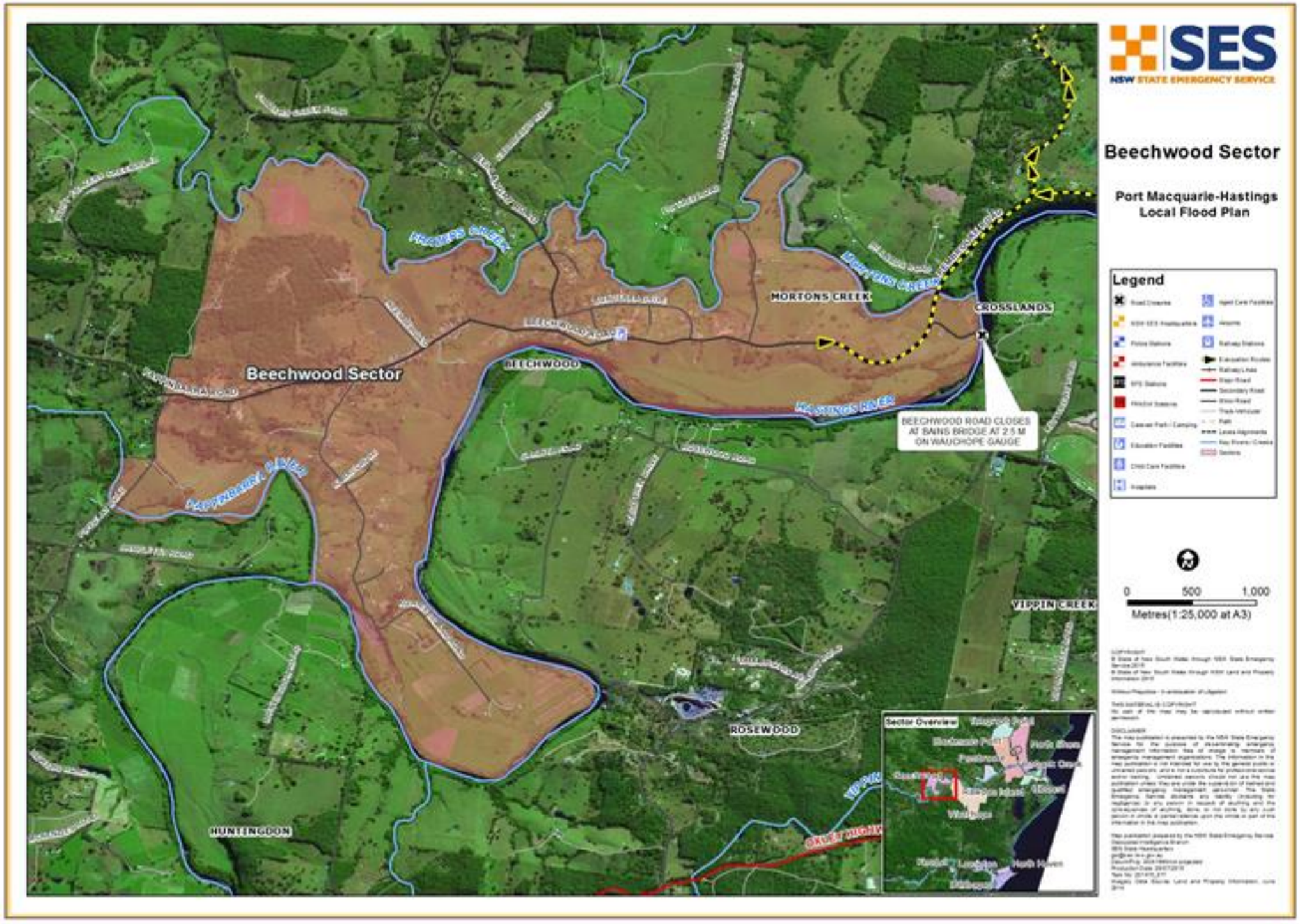
Information and Warnings	NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
	• NSW SES Bulletins
	  ○ Flood Watch
	  ○ Flood Warning
	  ○ Equipment, Livestock and Aquaculture Warnings
	  ○ Media Release such as– Isolation Warnings
	• Evacuation Warning
	• Evacuation Order
	• All Clear
	• Emergency Alert
	• Standard Emergency Warning Signal (SEWS)
	• Sequenced door knocking
	• Media briefing
	• Interagency LEMC briefings
	
	Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.

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 • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** *Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector.*
Evacuation and/or Isolation Triggers	The sector has rising road access with the majority of inundation impacting low lying rural areas and closing low lying roads, bridges and causeways progressively as floodwaters rise and flash flooding impacts.

	Isolation occurs when the Bain Bridge closes at 2.5m on the Wauchope Gauge and Pembrooke Road at Loggy Creek closes at ~3.3-5m on the Kindee gauge.
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	• Beechwood Road to Pembrooke Road then to Telegraph Point and the Pacific Highway
Evacuation Route Closure	• Bain Bridge at ~2.5m on the Wauchope gauge • Pembrooke Road from ~3.3-5m on the Kindee gauge at Loggy Creek • Pembrooke Road from ~5m on the Wauchope gauge at Stoney Creek intersection
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the nominated Evacuation Centre • With assistance of NSW SES or emergency services to the nominated Evacuation Centre
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential Evacuation Centre locations are- • Wauchope RSL • Westport High School – Finlay Ave, Port Macquarie • Port Macquarie High School – Owen Street, Port Macquarie
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Centre or Assembly Area and then onto the Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 2:**

	Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector (including emergency services). Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. NSW Police will be responsible for security of evacuated areas. At risk population densities with the sector would not exceed capacity of the surround evacuation centres and services.
Rescue	The NSW SES Wauchope Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	In large scale events it may be necessary to resupply areas whilst they are under an evacuation order due to isolation. Where resupply is required it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Incident Action Plan. Resupply will be managed through a nominated Assembly Area.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Rear of Wauchope SES and Wauchope RFS buildings - Wauchope **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge
Other	No other considerations noted

BEECHWOOD SECTOR MAP



SECTOR 12 - NORTH HAVEN

NORTH HAVEN RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description	This sector is located on the northern bank of the Camden Haven River. It is bordered by the Camden Haven River and Stingray Creek in the south. The sector is predominantly made up of residential dwellings. During major events, floodwaters will spread across a relatively large tract of low lying swampy land located either side of Stingray Creek. Therefore the majority of the area is subject to flooding, with almost half defined as being high risk due to relatively deep fast rising flood waters, short warning times, evacuation difficulties and the long potential duration of flooding. Tidal influences extend to just above Kendall and Johns River, affecting Watson Taylors Lake, Queens Lake, Stingray Creek and Gogley's Lagoon. The lakes and swamps have significant storage capacity for flood waters. Therefore, flood behaviour here is affected by the complex interaction between catchment runoff, the storage effects of the lakes, tides, storm surge and wave setup effects. These factors will need to be considered in operational and incident management decision making.
Hazard	Riverine flooding from the Camden Haven River and Stingray Creek There is little warning of a major flood being reached in the sector with only approximately five hours between catchment saturation and the major flood level of 1.7m on the Laurieton gauge being reached.
Flood Affect Classification	Low Flood Island

At risk properties from the Laurieton gauge	• From 1.3m over floor flooding commences in low lying properties in -
	  • Alfred Street
	  • Bridge Street
	  • Pioneer Street
	  • Eames Avenue
	
	• 45 properties experience over floor flooding at 1.9m
	
	• 193 properties experience over floor flooding in a 5% AEP at 2.4m
	
	• 273 properties experience over floor flooding in a 2% AEP at 2.7m
	
	• 380 properties experience over floor flooding in a 1% AEP at 3.03
	
	• 522 properties experience over floor flooding in the PMF at 3.65m

<table>
<tr><td>Sector Control</td><td>Command- The assigned NSW SES Incident Controller will Command operations in the local area.

Control- The NSW SES Camden Haven Unit Controller will control operations and evacuations in this sector.

Conduct and Coordination- The NSW SES Camden Haven Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.</td></tr>
<tr><td>Key Warning Gauge Name</td><td>
<table>
<tr><th>Name</th><th>AWRC No.</th><th colspan="2">Min</th><th>Mod</th><th>Maj</th></tr>
<tr><td>Laurieton (Fish Co-Op)
Left bank Camden Haven River at the Laurieton Fish Co-Op)</td><td>207425</td><td colspan="2">1.1</td><td>1.50</td><td>1.7</td></tr>
<tr><th colspan="2">Key Flood Events</th><th>5% AEP</th><th>2% AEP</th><th>1% AEP</th><th>PMF</th></tr>
<tr><td colspan="2">Laurieton gauge</td><td>2.4</td><td>2.7</td><td>3.03</td><td>3.65</td></tr>
</table>
</td></tr>
<tr><td>General Strategy</td><td>

Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
Issue of early warning of flood level impacts and potential isolation
Evacuation of at risk population:
Self-evacuation to friends/family outside the impact area.
Establishment of a helicopter landing zone at the Port Macquarie or Taree Airport and or-

Pilot Beach, Camden Head S31 38.511 E 152 49.781
North Haven Primary School S31 38.200 E 152 49.189
Laurieton Cemetery S31 38.490 E 152 47.219
Kendall Sportsground S31 38.318 E 152 42.064

</td></tr>
<tr><td>Key Risks / Consequences off Laurieton gauge</td><td>From 1.15m –
Flooding commences across Ocean Drive at Stingray Creek Bridge closing the only access / egress to Laurieton and Kew in the south
From 1.30m –
Over floor flooding commences in low lying properties in Alfred Street, Bridge Street, Pioneer Street and Eames Avenue and then progressively throughout the sector as floodwaters rise as per the evacuation and isolation triggers set out below</td></tr>
<tr><td>Information and Warnings</td><td>NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
NSW SES Bulletins
Flood Watch
Flood Warning
Equipment, Livestock and Aquaculture Warnings
Media Release such as– Isolation Warnings
Evacuation Warning</td></tr>
</table>

	• Evacuation Order • All Clear • Emergency Alert • Standard Emergency Warning Signal (SEWS) • Sequenced door knocking • Media briefing • Interagency LEMC briefings Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.
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 • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** *Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector*
Evacuation and/or Isolation Triggers off the Laurieton gauge	**Note – Reference progressive property inundation table PMQH Flood Plan, Volume 2 Hazard and Risk. These properties need to be evacuated prior to isolation, when Alfred Street, Alma Street and Eames Avenue becomes flooded.** **For prediction to reach/exceed 1.3m- evacuations required from low lying properties in –** ○ **Alfred Street** ○ **Bridge Street** ○ **Pioneer Street** ○ **Eames Avenue** **For predictions to reach/exceed 1.9m evacuations required from low lying properties in –** ○ **Alfred Street - 12** ○ **Alma Street - 4** ○ **Bridge Street - 1** ○ **Eames Avenue - 14** ○ **Ocean Drive - 8** ○ **Pioneer Street - 6** **For predictions to reach/exceed 2.4m (5% AEP) evacuations required from low lying properties in –**

	○ **Adeline Street - 6** ○ **Alfred Street - 50** ○ **Alma Street - 25** ○ **Bridge Street - 3** ○ **Coral Street - 1** ○ **Eames Avenue - 32** ○ **Edith Street - 2** ○ **Leighton Close - 3** ○ **Lepemi Place - 11** ○ **Ocean Drive - 40** ○ **Pioneer Street - 16** ○ **Vine Street - 4** **For predictions to reach/exceed 2.7m (2% AEP) evacuations required from low lying properties in –** ○ **Adeline Street - 6** ○ **Alfred Street - 69** ○ **Alma Street - 27** ○ **Bridge Street - 4** ○ **Coral Street - 2** ○ **David-Campbell Street - 1** ○ **Eames Avenue - 34** ○ **Edith Street - 8** ○ **Hillman Street - 2** ○ **Jacaranda Street - 1** ○ **Leighton Close - 7** ○ **Lepemi Place - 14** ○ **Ocean Drive - 57** ○ **Pioneer Street - 16** ○ **River Street - 7** ○ **The Parade - 10** ○ **Vine Street - 6** ○ **Woodford Road - 2** **For predictions to reach/exceed 3.03m (1% AEP) evacuations required from low lying properties in –** ○ **Adeline Street - 6** ○ **Alfred Street - 71** ○ **Alma Street - 27** ○ **Bridge Street - 4** ○ **Coral Street - 22** ○ **David-Campbell Street - 3** ○ **Eames Avenue - 35** ○ **Edith Street - 15** ○ **Hillman Street - 3** ○ **Jacaranda Street - 1**

	○ **Leighton Close - 14** ○ **Lepemi Place - 14** ○ **Murson Crescent - 24** ○ **Ocean Drive - 66** ○ **Pioneer Street - 16** ○ **River Street - 7** ○ **The Parade - 43** ○ **Vine Street - 7** ○ **Woodford Road - 2** **For predictions to reach/exceed 3.65m (PMF) evacuations required from low lying properties in –** ○ **Adeline Street - 6** ○ **Alfred Street - 76** ○ **Alma Street - 30** ○ **Bridge Street - 4** ○ **Coral Street - 24** ○ **David-Campbell Street - 20** ○ **Eames Avenue - 37** ○ **Edith Street - 32** ○ **Glenn Close - 23** ○ **Hillman Street - 4** ○ **Jacaranda Street - 3** ○ **Leighton Close - 25** ○ **Lepemi Place - 16** ○ **Murson Crescent - 24** ○ **Ocean Drive - 72** ○ **Ocean Street - 21** ○ **Pioneer Street - 19** ○ **River Street - 7** ○ **Riverview Place - 6** ○ **The Parade - 62** ○ **Vine Street - 7** ○ **Wall Street - 2** ○ **Woodford Road - 2**
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Route	Via Ocean Drive north to Bonny Hills / Port Macquarie
Evacuation Route	• Ocean Drive is impacted at the Stingray Creek Bridge from 1.15m closing the

Closure	road to the south. • Ocean Drive between Stingray Creek Bridge and the Parade is inundated at 3.03 (1% AEP)
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the nominated Evacuation Centre • With assistance of NSW SES or emergency services to the nominated Evacuation Centre
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential Evacuation Centre locations are- • North Haven Primary School – Ocean Drive, North Haven • Bonny Hills Community Hall – Short Street, Bonny Hills
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Centre or Assembly Area and then onto the Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 2:** Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. NSW Police will be responsible for security of evacuated areas. At risk population densities with the sector would not exceed capacity of the surround evacuation centres and services.

Rescue	The NSW SES Camden Haven Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	In large scale events it may be necessary to resupply areas whilst they are under an evacuation order due to isolation. Where resupply is required it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Incident Action Plan. Resupply will be managed through a nominated Assembly Area.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Pilot Beach, Camden Head S31 38.511 E 152 49.781 • North Haven Primary School S31 38.200 E 152 49.189 • Laurieton Cemetery S31 38.490 E 152 47.219 • Kendall Sportsground S31 38.318 E 152 42.064 **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge
Other	• During peak tourist season (Christmas and Easter) up to 2850 persons may be at risk including 615 resident above the age of 65 • There are flood prone Caravan Parks in this sector – refer to Volume 3, Chapter 4 of this Local Flood Plan

NORTH HAVEN SECTOR MAP

SECTOR 13 – LAURIETON

LAURIETON RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description	This sector is located on the southern bank of the Camden Haven River at the head of the Camden Haven Inlet. It is bordered to the north west by Stingray Creek, to the north east by the Camden Haven River and to the south by North Brother Mountain. It includes the communities at West Have and Lakewood. The sector is predominantly made up of residential and commercial properties. During major events, floodwaters will spread across a relatively large tract of low lying swampy land located either side of Stingray Creek. Therefore the majority of the area is subject to flooding, with almost half defined as being high risk due to relatively deep fast rising flood waters, short warning times, evacuation difficulties and the long potential duration of flooding. Tidal influences extend to just above Kendall and Johns River, affecting Watson Taylors Lake, Queens Lake, Stingray Creek and Gogley's Lagoon. The lakes and swamps have significant storage capacity for flood waters. Therefore, flood behaviour here is affected by the complex interaction between catchment runoff, the storage effects of the lakes, tides, storm surge and wave setup effects. . These factors will need to be considered in operational and incident management decision making.
Hazard	Riverine flooding from the Camden Haven River and Stingray Creek There is little warning of a major flood being reached in the sector with only approximately five hours between catchment saturation and the major flood level of 1.7m on the Laurieton gauge being reached.
Flood Affect Classification	Rising Road Access
At risk properties off the Laurieton gauge	• From 1.3m over floor flooding commences in low lying properties in Haven Circuit • 17 properties experience over floor flooding at 1.9m • 48 properties experience over floor flooding in a 5% AEP at 2.4m • 65 properties experience over floor flooding in a 2% AEP at 2.7m • 68 properties experience over floor flooding in a 1% AEP at 3.03m flooding)

<table>
<tr><td></td><td>

- 320 properties experience over floor flooding in the PMF at 3.655m (over floor flooding)

</td></tr>
<tr><td>Sector Control</td><td>

Command- The assigned NSW SES Incident Controller will Command operations in the local area.

Control- The NSW SES Camden Haven Unit Controller will control operations and evacuations in this sector.

Conduct and Coordination- The NSW SES Camden Haven Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.

</td></tr>
<tr><td>Key Warning Gauge Name</td><td>

<table>
<tr><th>Name
Laurieton (Fish Co-Op)
Left bank Camden Haven River at the Laurieton Fish Co-Op)</th><th>AWRC No.</th><th>Min</th><th>Mod</th><th>Maj</th></tr>
<tr><td></td><td>207425</td><td>1.1</td><td>1.50</td><td>1.7</td></tr>
<tr><th>Key Flood Events</th><th>5% AEP</th><th>2% AEP</th><th>1% AEP</th><th>PMF</th></tr>
<tr><td>Laurieton gauge</td><td>2.4</td><td>2.7</td><td>3.03</td><td>3.65</td></tr>
</table>

</td></tr>
<tr><td>General Strategy</td><td>

- Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
- Issue of early warning of flood level impacts and potential isolation
- Evacuation of at risk population:
  - Self-evacuation to friends/family outside the impact area.
- Establishment of a helicopter landing zone at the Port Macquarie or Taree Airport and or-
  - Pilot Beach, Camden Head S31 38.511 E 152 49.781
  - North Haven Primary School S31 38.200 E 152 49.189
  - Laurieton Cemetery S31 38.490 E 152 47.219
  - Kendall Sportsground S31 38.318 E 152 42.064

</td></tr>
<tr><td>Key Risks / Consequences on the Laurieton gauge</td><td>

From 1.15m –

- Flooding commences across Ocean Drive at Stingray Creek Bridge closing the only access / egress to Laurieton and Kew in the south
- Flooding commences across approaches to Dunbogan Bridge cutting access / egress to Dunbogan from 1.15-1.5m

From 1.30m –

- Over floor flooding commences in low lying properties in and around Haven Circuit and then progressively throughout the sector as floodwaters rise as per the evacuation and isolation triggers set out below

From 3.03m –

- St Joseph’s Primary School, St Joseph’s Early Childhood Centre and St Joseph’s Preschool in Ocean Drive, Laurieton are at risk of inundation

</td></tr>
</table>

	• Laurieton Lakeside Aged Care Centre, Ocean Drive Laurieton is at risk of inundation • Sirius Drive Lakewood Haven is impacted by floodwater at the roundabout with Banks Street, the residential properties in Lakewood including Lilly Pilly and Botanic Drive become impacted and potentially isolated, with an overland escape route

Information and Warnings	NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
	• NSW SES Bulletins
	  ○ Flood Watch
	  ○ Flood Warning
	  ○ Equipment, Livestock and Aquaculture Warnings
	  ○ Media Release such as– Isolation Warnings
	• Evacuation Warning
	• Evacuation Order
	• All Clear
	• Emergency Alert
	• Standard Emergency Warning Signal (SEWS)
	• Sequenced door knocking
	• Media briefing
	• Interagency LEMC briefings
	
	Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.

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 • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** *Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector*
Evacuation and/or Isolation Triggers	**Note – Reference progressive property inundation table PMQH Flood Plan, Volume 2 Hazard and Risk** **For predictions to reach/exceed 1.3m evacuations required from low lying properties in and around –** **Laurieton** ○ **Haven Circuit**

	For predictions to reach/exceed 1.9m evacuation required from low lying properties in – **Laurieton** ○ **Arnott Street x1** ○ **Haven Crescent - 8** ○ **Lane Street - 1** ○ **Ocean Drive - 4** ○ **Short Street - 3** **For predictions to reach/exceed 2.4m (5 % AEP) evacuation required from low lying properties in –** **Laurieton** ○ **Arnott Street - 3** ○ **Castle Street - 3** ○ **Haven Crescent - 20** ○ **Lane Street - 4** ○ **Lord Street - 1** ○ **Ocean Drive - 12** ○ **Short Street - 5** **For predictions to reach/exceed 2.7m (2% AEP) evacuations required from low lying properties in –** **Laurieton** ○ **Arnott Street - 3** ○ **Castle Street - 6** ○ **Haven Crescent - 21** ○ **Lane Street - 4** ○ **Laurie Street - 1** ○ **Lord Street - 1** ○ **Ocean Drive - 18** ○ **Short Street - 5** **West Haven / Lakewood** ○ **Pelican Court - 6** **For predictions to reach/exceed 3.03m (1% AEP) evacuations required from low lying properties in –** **Laurieton** ○ **Arnott Street - 4** ○ **Castle Street - 6** ○ **Haven Crescent - 21** ○ **Lake Street - 1** ○ **Lane Street - 4** ○ **Laurie Street - 1** ○ **Lord Street - 1**

	○ **Ocean Drive - 18** ○ **Short Street - 5** **West Haven / Lakewood** ○ **Pelican Court - 6** ○ **Mahogany Close - 1** **For predictions to reach/exceed 3.65m (PMF) evacuations required from low lying properties in –** **Laurieton** ○ **Arnott Street - 7** ○ **Castle Street - 12** ○ **George Street - 11** ○ **Haven Crescent - 28** ○ **Lake Street - 24** ○ **Lane Street - 11** ○ **Laurie Street - 1** ○ **Lord Street - 1** ○ **McClenan Street - 9** ○ **Ocean Drive - 33** ○ **Reid Street - 1** ○ **Short Street - 5** ○ **Wharf Street - 5** **West Haven / Lakewood** ○ **Blue Gum Place - 4** ○ **Brotherglen Drive - 1** ○ **Mountain View Road - 6** ○ **Ocean Drive - 23** ○ **Pelican Court - 12** ○ **St Albans Way - 2** ○ **The Gateway - 1** ○ **The Silhouette - 1** ○ **Botanic Drive - 12** ○ **Cook Close - 12** ○ **Honeysuckle Avenue - 20** ○ **Mahogany Close - 6** ○ **Mangrove Close - 6** ○ **Phillip Close - 11** ○ **Sirius Drive - 43** ○ **Tern Close - 11**
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most

	floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	Via Bold Street and Ocean Drive to the Pacific Highway
Evacuation Route Closure	• From 1.15m on the Laurieton gauge the approaches to Stingray Creek Bridge in the north and the Dunbogan Bridge in the east are impacted by floodwater. • The evacuation route along Bold Street and Ocean Drive to the Pacific Highway remains largely flood free to the PMF at 3.65m
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the nominated Evacuation Centre • With assistance of NSW SES or emergency services to the nominated Evacuation Centre
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential Evacuation Centre locations are- • Laurieton School of Arts, Bold Street, Laurieton • Camden Haven High School, Valley View Road, Laurieton'
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Centre or Assembly Area and then onto the Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 2:** Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the

	Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. NSW Police will be responsible for security of evacuated areas. At risk population densities with the sector would not exceed capacity of the surround evacuation centres and services.
Rescue	The NSW SES Camden Haven Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	In large scale events it may be necessary to resupply areas whilst they are under an evacuation order due to isolation. Where resupply is required it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Incident Action Plan. Resupply will be managed through a nominated Assembly Area.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Pilot Beach, Camden Head S31 38.511 E 152 49.781 • North Haven Primary School S31 38.200 E 152 49.189 • Laurieton Cemetery S31 38.490 E 152 47.219 • Kendall Sportsground S31 38.318 E 152 42.064 **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge
Other	• During peak tourist season (Christmas and Easter) the population may increase by 10%, increasing the number of persons at risk including a significant number above the age of 65 • There are flood prone Caravan Parks in this sector – refer to Volume 3, Chapter 4 of this Local Flood Plan

LAURIETON SECTOR MAP

SECTOR 14 - DUNBOGAN

DUNBOGAN RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description	This sector is located on the southern bank of the Camden Haven River at the head of the Camden Haven Inlet. It is bordered to the north west by the Camden Haven River, to the north east by the Ocean and to the south by North Brother Mountain. It includes the communities of Dunbogan, Camden Head and Dicks Hill. The sector is predominantly made up of residential properties. The sector is the highest hazard area in the Camden Haven Catchment. The entire village of Dunbogan along the Boulevard is subject to flooding and is classified as high risk due to relatively deep fast rising flood waters, short warning times, evacuation difficulties and the potential long duration of flooding. Tidal influences extend to just above Kendall and Johns River, affecting Watson Taylors Lake, Queens Lake, Stingray Creek and Gogley's Lagoon. The lakes and swamps have significant storage capacity for flood waters. Therefore, flood behaviour here is affected by the complex interaction between catchment runoff, the storage effects of the lakes, tides, storm surge and wave setup effects. . These factors will need to be considered in operational and incident management decision making.
Hazard	Riverine flooding from the Camden Haven River There is little warning of a major flood being reached in the sector with only approximately five hours between catchment saturation and the major flood level of 1.7m on the Laurieton gauge being reached.
Flood Affect Classification	Area with Overland Escape Route
At risk properties	• From 1.3m over floor flooding commences in low lying properties in and around Dunbogan in Camden Head Road, Longworth Road and the Boulevard • 103 properties experience over floor flooding at 1.9m • 147 properties experience over floor flooding in a 5% AEP at 2.4m • 152 properties experience over floor flooding in a 2% AEP at 2.7m • 156 properties experience over floor flooding in a 1% AEP at 3.03m flooding) • 170 properties experience over floor flooding in the PMF at 3.655m (over floor flooding)

<table>
<tr><td>Sector Control</td><td colspan="5">Command- The assigned NSW SES Incident Controller will Command operations in the local area.

Control- The NSW SES Camden Haven Unit Controller will control operations and evacuations in this sector.

Conduct and Coordination- The NSW SES Camden Haven Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.</td></tr>
<tr><td rowspan="4">Key Warning Gauge Name</td><td>Name
Laurieton (Fish Co-Op)
Left bank Camden Haven River at the Laurieton Fish Co-Op)</td><td>AWRC No.</td><td>Min</td><td>Mod</td><td>Maj</td></tr>
<tr><td></td><td>207425</td><td>1.1</td><td>1.50</td><td>1.7</td></tr>
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<tr><td>Laurieton gauge</td><td>2.4</td><td>2.7</td><td>3.03</td><td>3.65</td></tr>
<tr><td>General Strategy</td><td colspan="5">• Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
• Issue of early warning of flood level impacts and potential isolation
• Evacuation of at risk population:
o Self-evacuation to friends/family outside the impact area.
• Establishment of a helicopter landing zone at the Port Macquarie or Taree Airport and or-
o Pilot Beach, Camden Head S31 38.511 E 152 49.781
o North Haven Primary School S31 38.200 E 152 49.189
o Laurieton Cemetery S31 38.490 E 152 47.219
o Kendall Sportsground S31 38.318 E 152 42.064</td></tr>
<tr><td>Key Risks / Consequences off the Laurieton gauge</td><td colspan="5">From 1.15m –
• Flooding commences across approaches to Dunbogan Bridge impeding access to the sector

From 1.30m –
• Over floor flooding commences in low lying properties in Dunbogan in and around Camden Head Road, Longworth Road and The Boulevard then progressively throughout the sector as floodwaters rise as per the evacuation and isolation triggers set out below

From 1.50m-
• Diamond Head Road and the Dunbogan Bridge approaches are flooded isolating the sector</td></tr>
</table>

Information and Warnings	NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats:
	• NSW SES Bulletins
	  ○ Flood Watch
	  ○ Flood Warning
	  ○ Equipment, Livestock and Aquaculture Warnings
	  ○ Media Release such as– Isolation Warnings
	• Evacuation Warning
	• Evacuation Order
	• All Clear
	• Emergency Alert
	• Standard Emergency Warning Signal (SEWS)
	• Sequenced door knocking
	• Media briefing
	• Interagency LEMC briefings
	
	Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.

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 • Relocate moveable at risk public assets • Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** *Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector*
Evacuation and/or Isolation Triggers	**Note – Reference progressive property inundation table PMQH Flood Plan, Volume 2 Hazard and Risk page 52, Table 12** **For predictions to reach/exceed 1.10m - access / egress routes to the sector at the Dunbogan Bridge approaches, Diamond Head Road, Camden Head Road and the Boulevard are impacted by rising floodwaters – sector progressively becomes isolated as waters rise** **For predictions to reach/exceed 1.3m - evacuations required from low lying properties in and around Dunbogan in the following areas –** ○ **Camden Head Road** ○ **Longworth Road** ○ **The Boulevard**

	By 1.5m sector becomes isolated – Dunbogan Bridge approaches, Diamond Head Road, Camden Head Road and the Boulevard are inundated **For predictions to reach/exceed 1.9m - evacuation required from low lying properties in –** ○ **Bay Street - 5** ○ **Bell Street - 27** ○ **Longworth Road - 22** ○ **River Street - 3** ○ **The Boulevard - 29** ○ **Camden Head Road - 14** **For predictions to reach/exceed 2.4m (5% AEP) - evacuation required from low lying properties in –** ○ **Bay Street - 13** ○ **Bell Street - 38** ○ **Longworth Road - 31** ○ **River Street - 4** ○ **The Boulevard - 39** ○ **Camden Head Road - 22** **For predictions to reach/exceed 2.7m (2% AEP) - evacuation required from low lying properties in –** ○ **Bay Street - 13** ○ **Bell Street - 38** ○ **Longworth Road - 32** ○ **River Street - 4** ○ **The Boulevard - 43** ○ **Camden Head Road - 22** **For predictions to reach/exceed 3.03m (1% AEP) - evacuation required from low lying properties in -** ○ **Bay Street - 13** ○ **Beach Street - 3** ○ **Bell Street - 38** ○ **Longworth Road - 32** ○ **River Street - 4** ○ **The Boulevard - 44** ○ **Camden Head Road - 22** **For predictions to reach/exceed 3.65m (PMF) - evacuation required from low lying properties in –** ○ **Bay Street - 13** ○ **Beach Street - 3** ○ **Bell Street - 39**

	○ **Diamond Head Road - 7** ○ **Longworth Road - 36** ○ **River Street - 4** ○ **Scarborough Road - 1** ○ **The Boulevard - 45** ○ **Camden Head Road - 22**
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	Via Camden Head Road, Diamond Head Road or the Boulevard to Laurieton
Evacuation Route Closure off the Laurieton gauge	Evacuation routes along Dunbogan Bridge, Diamond Head Road, The Boulevard and Camden Head Road are impacted by rising floodwater from 1.15m All evacuations from the sector should be completed by 1.15-1.5m after which approaches to the Dunbogan Bridge, Diamond Head Road, The Boulevard and Camden Head Road are inundated by floodwater.
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the nominated Evacuation Centre • With assistance of NSW SES or emergency services to the nominated Evacuation Centre
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential Evacuation Centre locations are- • Laurieton School of Arts, Bold Street, Laurieton • Camden Haven High School, Valley View Road, Laurieton
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Centre or Assembly Area and then onto the Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. There are no stores or facilities in the sector for those communities such as Camden Head and Dicks Hill that will become isolated once evacuation routes close from 1.15m on the Laurieton gauge. Camden Head and Dicks Hill remains largely flood free to the PMF at 3.65m on the Laurieton gauge.

	Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 2:** Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. NSW Police will be responsible for security of evacuated areas. At risk population densities with the sector would not exceed capacity of the surround evacuation centres and services.
Rescue	The NSW SES Camden Haven Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	In large scale events it may be necessary to resupply areas whilst they are under an evacuation order due to isolation. Where resupply is required it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Incident Action Plan. Resupply will be managed through a nominated Assembly Area.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport (*refer details below)*.** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Pilot Beach, Camden Head S31 38.511 E 152 49.781 • North Haven Primary School S31 38.200 E 152 49.189

	• Laurieton Cemetery S31 38.490 E 152 47.219 • Kendall Sportsground S31 38.318 E 152 42.064 **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge
Other	• During peak tourist season (Christmas and Easter) up to 2020 persons may reside in the sector including ~270 persons over the age of 65 • There are flood prone Caravan Parks in this sector – refer to Volume 3, Chapter 4 of this Local Flood Plan

DUNBOGAN SECTOR MAP

SECTOR 15 - KENDALL

KENDALL RESPONSE ARRANGEMENTS

- These response arrangements should be read in conjunction with the NSW SES Mid North Coast Region Flood Action Card for the sectors flood gauge.
- For more information about this sector refer to the Port Macquarie Hastings Flood Plan, Volume 2: Hazard and Risk.

Sector Description	This sector is located upstream of Laurieton on the Camden Haven River. Surrounding areas include Kew, Rossglen and Logan's Crossing. The sector is made up of residential, small rural residential allotments and rural properties. The sector is subject to tidal influences on the Camden Haven River to Kendall. Flooding occurs from the Camden Haven River and is typically confined to a relatively narrow floodplain extending across to the north of the main channel. The Pacific Highway forms a barrier to flows which can impact on the ultimate spread of floodwater on the upstream side of the embankment. River flow is fast to very fast due to the restriction of water under the Kendall Bridge. There is little warning of major floods with less than five hours between catchment saturation and the major flood level being reached.
Hazard	The sector is susceptible to flooding from the Camden Haven River, Upsalls Creek, Batar Creek and Black Creek.
Flood Affect Classification	The sector has a series of High Flood Islands up to the PMF at 9.15m on the Logan's Crossing gauge. The community of Rossglen has Rising Road Access
At risk properties off the Kendall Road Bridge gauge	• At 3.5m low lying properties in River Street and Old Bridge Road located in eastern Kendall near the Traffic Bridge are particularly susceptible to flooding • At 5.10m a total of 12 properties are affected in River Street, Old Bridge Road and Lorne Road • At 5.45m (5% AEP) – 30 properties are inundated with 18 dwellings and 5 business's impacted – Araluen Street, Lorne Road, Old Bridge Road, Railway Street and River Street • At 6.2m (1% AEP) – 63 properties are inundated with 49 dwellings and 7 business's impacted – Araluen Street, Fagan's Crescent, Logan Vale Place, Lorne Road, Old Bridge Road, Railway Street and River Street. Floodwaters exceeding this level will also impact Berryman Road, Foxes Creek Road, Graham Street, Kendall Road, Logan's Crossing Road and River Oaks Drive. • At 7.25m (PMF) – 118 properties are inundated with 92 dwellings and 14 business's impacted **In Rossglen and surrounds off the Logan's Crossing gauge –**

<table>
<tr><td></td><td>

At 7.65m (5% AEP) - Houses on Lorne Road, Old Bridge Road and River Street (Kendall) and Ivers Road (Kew) may become flooded.
At 8.2m (1% AEP) - Houses located in Fagans Cres, Loganvale Pl, Lorne Rd, Sunnyvale Rd, (Kew); Main St, Pacific Hwy, Ross Glen Rd, Stage Coach Rd (Ross Glen) are flooded.
Between 8.2m and ~ 9.15m (PMF) – 14 properties are susceptible to inundation at the end of Stage Coach Road and Main Street

</td></tr>
<tr><td>Sector Control</td><td>
Command- The assigned NSW SES Incident Controller will Command operations in the local area.

Control- The NSW SES Camden Haven Unit Controller will control operations and evacuations in this sector.

Conduct and Coordination- The NSW SES Camden Haven Unit will conduct and coordinate operations and evacuations in this sector with assistance from other agencies.
</td></tr>
<tr><td>Key Warning Gauge Name</td><td>
<table>
<tr><td>Name
Logan’s Crossing
Longitude = 152.692°E
Latitude = -31.616°S</td><td>AWRC No.</td><td>Min</td><td>Mod</td><td>Maj</td></tr>
<tr><td></td><td>207428</td><td>7m</td><td></td><td></td></tr>
<tr><td>Name
Kendall Road, Bridge gauge
Longitude = 152 42.506°E
Latitude = -31.38.023°S</td><td>AWRC No.</td><td>Min</td><td>Mod</td><td>Maj</td></tr>
<tr><td></td><td>207912</td><td>3.10m</td><td>3.50m</td><td>5m</td></tr>
<tr><td>Key Flood Events</td><td>5% AEP</td><td>2% AEP</td><td>1% AEP</td><td>PMF</td></tr>
<tr><td>Logan’s Crossing gauge</td><td>7.65m</td><td>N/A</td><td>8.2m</td><td>9.15m</td></tr>
<tr><td>Kendall Road, Bridge</td><td>5.45m</td><td>5.85m</td><td>6.2m</td><td>7.25m</td></tr>
</table>
</td></tr>
<tr><td>General Strategy</td><td>

Manage operations in response to predicted heights indicating likely consequences that pre-empt appropriate actions.
Issue of early warning of flood level impacts and potential isolation
Evacuation of at risk population:

Self-evacuation to friends/family outside the impact area.

Establishment of a helicopter landing zone at the Port Macquarie or Taree Airport and or-

Kendall Sportsground S31 38.318 E 152 42.064
North Haven Primary School S31 38.200 E 152 49.189

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</table>

	○ Laurieton Cemetery S31 38.490 E 152 47.219
Key Risks / Consequences	**From 3.1m on the Kendall Road Bridge gauge –** • Kendall Bridge on Camden Haven River is closed by rising floodwater preventing access / egress to the Pacific Highway and Laurieton isolating Kendall **From 3.5m on the Kendall Road Bridge gauge –** • Properties in River Street and Old Bridge Road in eastern Kendall impacted by rising floodwater **From 3m on the Logan's Crossing gauge –** • Logan's Crossing bridge is closed by rising floodwater The following schools and childcare centres are at risk of isolation and should be monitored as flood levels rise – • Kendall Public School, Logan's Crossing Road, Kendall • Camden Haven High School, Valley View Road, Kew • Kendall Community Preschool, Railway Street, Kendall • Kid Haven Early Learning Centre, Ocean Drive Kew
Information and Warnings	NSW SES Flood Bulletins will localise the consequences of the Bureau products on the sector. NSW SES Mid North Coast Region will issue timely, relevant and tailored information to the public in the following formats: • NSW SES Bulletins ○ Flood Watch ○ Flood Warning ○ Equipment, Livestock and Aquaculture Warnings ○ Media Release such as– Isolation Warnings • Evacuation Warning • Evacuation Order • All Clear • Emergency Alert • Standard Emergency Warning Signal (SEWS) • Sequenced door knocking • Media briefing • Interagency LEMC briefings Bureau products, such as Flood Watches and Flood Warnings, will include NSW SES safety advice.
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 • Relocate moveable at risk public assets

	• Control surface water through sandbagging • Monitor integrity of dwellings surrounded by flood waters **Protection of essential infrastructure:** *Port Macquarie-Hastings Council (Roads, Water and Sewerage services) and Essential Energy (Electricity) have responsibility for preparing and implementing emergency response arrangements for the protection of essential infrastructure within the sector*
Evacuation and/or Isolation Triggers	**For predictions to reach/exceed 3.1m Kendall becomes isolated** **For predictions to reach/exceed 3.5m evacuation required for low lying properties in –** o **River Street** o **Old Bridge Road** **For predictions to reach/exceed 5.10m evacuations required for low lying properties in –** o **River Street** o **Old Bridge Road** o **Lorne Road** **For predictions to reach/exceed 5.45m (5% AEP) evacuation required for low lying properties in –** o **Araluen Street** o **Lorne Road** o **Old Bridge Road** o **Railway Street** o **River Street** **For predictions to reach/exceed 6.2m (1% AEP) evacuation required for low lying properties in –** o **Araluen Street** o **Fagan's Crescent** o **Logan Vale Place** o **Lorne Road** o **Old Bridge Road** o **Railway Street** o **River Street** **Floodwaters exceeding this level will also impact low lying properties in –** o **Berryman Road** o **Foxes Creek Road** o **Graham Street** o **Kendall Road** o **Logan's Crossing Road** o **River Oaks Drive.** **For predictions to reach/exceed 7.25m (PMF) evacuation required for low lying properties in –** o **Araluen Street** o **Fagan's Crescent** o **Logan Vale Place** o **Lorne Road** o **Old Bridge Road** o **Railway Street** o **River Street** o **Berryman Road**

	○ **Foxes Creek Road** ○ **Graham Street** ○ **Kendall Road** ○ **Logan's Crossing Road** ○ **River Oaks Drive.**
Sequencing of evacuation	Evacuation sequencing will be as per the triggers for identified at risk properties. Outside the identified sequenced evacuation areas, a number of residences and properties may need to be evacuated during periods of significant flooding. In most floods, the evacuation tasks will only involve a small number of people from impacted properties. These properties would be dealt with on a case by case basis in conjunction with NSW Police and the Welfare Services Functional Area Coordinator.
Evacuation Routes	Comboyne Street, River Street and Kendall Road to the Pacific Highway
Evacuation Route Closure	Access along Kendall road to Kew and the Pacific Highway is cut from 3.1m on the Kendall Road Bridge gauge
Method of Evacuation	• Evacuations should reflect the principles outlined in Evacuation Planning Handbook (1) • Self-evacuation by private transport to the nominated Evacuation Centre • With assistance of NSW SES or emergency services to the nominated Evacuation Centre
Evacuation Centre/Assembly Area	Evacuation Centre/Assembly Area(s) will be determined by the Welfare Services Functional Area Coordinator and the NSW SES. Potential Evacuation Centre locations are- • Kendall Community Hall, Comboyne and Albert Streets, Kendall • Kendall CWA Memorial Hall, Comboyne Street, Kendall • Laurieton School of Arts, Bold Street, Laurieton • Camden Haven High School, Valley View Road, Laurieton
Large scale evacuations	In a large or full scale evacuation – Evacuees will be moved to the Evacuation Centre or Assembly Area and then onto the Evacuation Centre identified by the NSW SES Incident Controller in consultation with the Community Services Functional Support Area. Evacuations will be conducted incrementally as the flood height predictions become known and the impact extent established. Evacuations will be staged- **Stage 1:** Evacuation of the elderly, sick and infirm as well as families with young children. Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions.

	Stage 2: Evacuation of all persons not required for emergency operations. Evacuation will by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. **Stage 3:** Full evacuation of the sector if required (including emergency services). Evacuation will be by way of road along higher ground to the nominated Assembly Area then to the Evacuation Centre – if access is impeded or blocked by water, flood boats and helicopters may be utilised dependent upon prevailing conditions. NSW Police will be responsible for security of evacuated areas. At risk population densities with the sector would not exceed capacity of the surround evacuation centres and services.
Rescue	The NSW SES Camden Haven Unit will manage flood rescue operations in accordance with the responsibilities outlined in the Flood Emergency Sub Plan.
Resupply	In large scale events it may be necessary to resupply areas whilst they are under an evacuation order due to isolation. Where resupply is required it will be in accordance with the Port Macquarie Local Flood Emergency Sub Plan and the NSW SES Incident Action Plan. Resupply will be managed through a nominated Assembly Area.
Aircraft Management	**Helicopter Landing Points:** **The primary landing point is located at the Port Macquarie Airport *(refer details below).*** Landing sites within the sector will be dependent on the prevailing conditions and operational requirements. The final decision rests with the Pilot. **If required additional operational landing points are also located at:** • Kendall Sportsground S31 38.318 E 152 42.064 **Airports:** Port Macquarie Airport Location: Long: 31deg 26.2 S 152deg 51.8E • Runway Height: 15 feet above mean sea level (4.54m AHD) • Directions: RWY 03/21 is 1800m, Code 4 (rated to B737,A320 types) • Surface: 03/21 sealed 45m wide, 150m runway strip • **Limitations:** Access to airport is lost at Intersection of Hastings River Drive and Boundary Street between 1.8m and 2.3m • Parts of runway may be inundated if flooding is expected to be greater than 2.7m on the settlement point gauge

Other	• River flow within this sector is very fast and represents a high hazard due to the restriction of flow under the Kendall Bridge. This is a flood rescue hot spot.

KENDALL SECTOR MAP

PORT MACQUARIE - HASTINGS: NSW SES CARAVAN PARK ARRANGEMENTS

Chapter 4 of Volume 3 (NSW SES Response Arrangements for Port Macquarie – Hastings) of the Port Macquarie - Hastings Local Flood Plan

Last Update: November 2015

AUTHORISATION

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

Approved

Manager Emergency Risk Management

Date: 5/11/15

Approved

5/10/16

NSW SES Mid North Coast Region Controller

Date:

17/11/16

Tabled at LEMC

Date:

Document Issue: V3.3-21102014

CONTENTS

LIST OF TABLES

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

1.1 GENERAL

1.1.1 The following caravan parks are flood liable:

a. Sundowner Breakwall Tourist Park
b. Jordan's Boating Centre and Holiday Park
c. Marina Holiday Park
d. Melaleuca Caravan Park
e. Leisure Touirist Park and Holiday Units
f. Edgewater Holiday Park
g. Aquatic Caravan Park
h. Hastings River Caravan Park
i. Riverlodge Tourist Village
j. Stoney Park Holiday
k. North Coast Holiday Parks
l. Brigadoon Holiday Park
m. Diamond Waters Caravan Park
n. Dunbogan Caravan Park
o. The Haven Caravan Park
p. Jacaranda Caravan Park
q. Laurieton Gardens Caravan Resort
r. Christmas Cove Caravan Park
s. Lighthouse Beach Residential Village

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 Port Macquarie Hastings Local Controller will ensure that the managers of caravan parks are advised of Flood Information (described in Volume 1 of the Port Macquarie Hastings Local Flood Plan).

1.3 EVACUATION OF OCCUPANTS AND RELOCATION OF MOVEABLE DWELLINGS

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

a. Isolate power to moveable dwellings.

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

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

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

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

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

1.3.3 Caravan park managers will:

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

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

c. Advise the NSW SES Port Macquarie Hastings Local Controller of:

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

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

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

f. Provide the NSW SES Port Macquarie Hastings Local Controller with a register of people that have been evacuated.

1.4 RETURN OF OCCUPANTS AND MOVEABLE DWELLINGS

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

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

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

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

Name	Address/Location description	Town/Sector	Number of sites	Risk	Evacuation route	Evacuation route closure	Moveable dwelling relocation location	Evacuation centre	Notes
Sundowner Breakwall Tourist Park	1 Munster St, Port Macquarie CBD 02 6583-2755	Sector 1 Port Macquarie CBD (Settlement Pont Gauge)	Long term sites 2 Short term sites 363 Camp sites 100	Inundation begins at 2.2m on Settlment Point Gauge (207418)	Along high ground to Gordon Street then to nominated evacuation centre.	Munster St @ 2.5m on Settlment Point Gauge (207418)	Vans moved to Oxley Oval	West Port High School – Findlay Drive	Peak season are:- Christmas and Easter holidays. "Rising road access"
Jordan's Boating Centre & Holiday Park	McInherney Close, Settlement Point 02 6583-1005	Sector 2 Settlement Point Sub sector: Northern Canals (Settlement Point gauge)	Short term sites 22 Camp sites 14 No permanent sites	Inundation begins at 3.50m on Settlment Point Gauge (207418)	Via River Park Road and Commodore Crescent onto Park Street and then towards higher ground and the nominated evacuation centre	McInherney Close @ 3.8m on Settlment Point Gauge (207418) Park street from 2.6mts	Vans moved to high ground on Settlement Point Road. If higher levels of flooding are expected, to the Racecourse	West Port High School – Findlay Drive	Peak season are:- Christmas and Easter holidays. "Low flood island."
Marina Holiday Park	52 Settlement Point Rd, Settlement Point	Sector 2 Settlement Point Sub sector	Short term sites 21	Inundation begins at 1.5m on Settlment	Via Settlement Point Road heading	Settlement Pt Rd @ 1.5mts on Settlment	Vans moved to high ground on Settlement	West Port High School – Findlay Drive	Peak season are:- Christmas and Easter

Name	Address/Location description	Town/Sector	Number of sites	Risk	Evacuation route	Evacuation route closure	Moveable dwelling relocation location	Evacuation centre	Notes
	(02) 6583-2353	Settlement Point Peninsula (Settlement Point gauge)	NO permanent residence	Point Gauge (207418)	south onto Park Street onto higher ground and the nominated evacuation centre	Point Gauge (207418)	Point Road. If higher levels of flooding are expected, to the Racecourse		holidays. "Low flood island."
Melaleuca Caravan Park	128 Hastings River Drv, Hibbard (02) 6583-4498	Sector 3 Hibbard	Long term sites 11 Short term sites 39	Inundation begins at 2.5m on Settlment Point Gauge (207418)	Hastings River Drive	Hastings River Drive @ 1.5m on Settlment Point Gauge (207418)	Vans moved to the Racecourse	West Port High School – Findlay Drive	Peak season are:- Christmas and Easter holidays. "Low flood island."
Leisure Tourist Park &Holiday Units	202 Hastings River Drv, Hibbard (02) 6584-4555 F: (02) 6583-1261 (2nd enterance 13 Boundary St)	Sector 3 Hibbard	Long term sites 17 Short term sites 27 Camp sites 4	Inundation begins at 2.02m on Settlment Point Gauge (207418)	Hastings River Drive	Hastings River Drive @ 1.5m on Settlment Point Gauge (207418)	Vans moved to the Racecourse	West Port High School – Findlay Drive	Peak season are:- Christmas and Easter holidays. "Low flood island."
Edgewater Holiday Park	221 Hastings River Drv, Hibbard 1800 228 800	Sector 3 Hibbard Sub sector	Long term sites 61	Inundation begins at 1.5m on Settlment	Hastings River Drive	Hastings River Drive @ 2.3m on Settlment	Vans moved to the Racecourse	West Port High School – Findlay Drive	Peak season are:- Christmas and Easter

Name	Address/Location description	Town/Sector	Number of sites	Risk	Evacuation route	Evacuation route closure	Moveable dwelling relocation location	Evacuation centre	Notes
	(02) 6583-2799	Southern Canals	Short term sites 86	Point Gauge (207418)		Point Gauge (207418)			holidays. "Rising road access."
Aquatic Caravan Park	259 Hastings River Drv, Hibbard (02) 6584-9155 F: (02) 6854-6855	Sector 3 Hibbard Sub Sector Boundary Road	Long term sites 17 Short term sites 27 Campl sites 8	Inundation begins at 1.5m on Settlment Point Gauge (207418)	Hastings River Drive	Hastings River Drive @ 1.5m on Settlment Point Gauge (207418)	Vans moved to the Racecourse	West Port High School – Findlay Drive	Peak season are:- Christmas and Easter holidays. "Rising road access."
Riverside Residential Village	270 Hastings River Drv, Hibbard (02) 6583-3387	Sector 3 Hibbard Sub Sector Boundary Road	Long term sites 96	Inundation begins at 1.5m on Settlment Point Gauge (207418)	Hastings River Drive	Hastings River Drive @ 1.5m on Settlment Point Gauge (207418)	Vans moved to the Racecourse	West Port High School – Findlay Drive	Peak season are:- Christmas and Easter holidays.
Riverlodge Tourist Village	340 Blackman's Point Rd, Blackman's Point (02) 6585-0264	Sector 6 The Hatch & Blackman's Point Sub Sector Blackmans Point	Long term sites 50 Short term sites 22	Inundation begins at 3.3m on Settlment Point Gauge (207418)	Blackman's Point Road	Blackman's Point Rd @ 2.1m on Settlment Point Gauge (207418)	Vans moved to high ground Blackman's Point Road. East of Swamp Road	Assembly point Wilson River Sports Ground Telegraph Point Evacuation	Peak season are:- Christmas and Easter holidays. "Low flood island."

Name	Address/Location description	Town/Sector	Number of sites	Risk	Evacuation route	Evacuation route closure	Moveable dwelling relocation location	Evacuation centre	Notes
								Centre West Port High School Findlay Drive Port Macquarie	
Stoney Park Holiday Park	16 Hacks Ferry Rd, Telegraph Point (02) 6585-0080	Sector 6 The Hatch/Blackman's Point Sub Sector The Hatch	Short term sites 25 Camp sites 5	Inundation begins at 2.5m on Telegraph Point gauge (207415)	Hacks Ferry Road	Hacks Ferry Rd @ 1.95m on Telegraph Point gauge (207415)	Vans move West along Hacks Ferry Rd to high ground on pacific Highway	Assembly point Wilson River Sports Ground Telegraph Point Evacuation Centre West Port High School Findlay Drive Port Macquarie	Peak season are:- Christmas and Easter holidays. "Low flood island."
North Coast Holiday Parks Beachfront	109 The Parade, North Haven (02) 6559-9193	Sector 12 North Haven	Long term sites 14 Short term sites 183	Flood free to the 1 % AEP level at 3.03mts - then inundated at the PMF at 3.65mts	Ocean Drive	Ocean Drive to Bonny Hills is flood free throughout the PMF from Cook Street. Access to Ocean Drive	Bonny Hills	North Haven Primary School, Bonny Hills Community Hall or Bonny Hills Uniting Church	Peak season are:- Christmas and Easter holidays. "Low flood island."

Name	Address/Location description	Town/Sector	Number of sites	Risk	Evacuation route	Evacuation route closure	Moveable dwelling relocation location	Evacuation centre	Notes
			Camp sites 64			is progessively impacted from the 1% AEP level at 3.03mts		Conference Centre	
Brigadoon Holiday Park	7 Eames Avenue, North Haven (02) 6559-9172	Sector 12 North Haven	Long term sites 97 Short term sites 100	Inundation begins from @1.25mts	Ocean Drive to Bonny Hills	Access to Ocean Drive is progressively lost from 1.30mts	Bonny Hills	North Haven Primary School, Bonny Hills Community Hall or Bonny Hills Uniting Church Conference Centre	Peak season are:- Christmas and Easter holidays. "Low flood island."
Diamond Waters Caravan Park	152 Diamond Head Rd, Laurieton (02) 6559-9334	Sector 14 Dunbogan	Long term sites 65 Short term sites 51 Campl sites 18	Inundation begins from 1.25mts	Diamond Head Road Dunbogan to Laurieton	1.15mts at the Dunbogan Bridge	Laurieton Quarry, Mill St / Lady Penrhyn Court, Camden Head / Bonny Hills	Laurieton School of Arts or Camden Haven High School	Peak season are:- Christmas and Easter holidays. "Low Floodfd island."
Dunbogan	16A Bell St,	Sector 14		Inundation	Diamond	1.15mts at	Laurieton	Laurieton	Peak season

Name	Address/Location description	Town/Sector	Number of sites	Risk	Evacuation route	Evacuation route closure	Moveable dwelling relocation location	Evacuation centre	Notes
Caravan Park	Dunbogan (02) 6559-9375	Dunbogan	Long term sites 34 Short term sites 45	begins from 1.10mts	Head Road Dunbogan to Laurieton	the Dunbogan Bridge	Quarry, Mill St / Lady Penrhyn Court, Camden Head / Bonny Hills	School of Arts or Camden Haven High School	are:- Christmas and Easter holidays. "Low flood island."
The Haven Caravan Park	2 Arnott St, Laurieton (02) 6559-9584	Sector 13 Laurieton	Long term sites 39 Short term sites 22 Camp sites 3	Inundation from 2.40mts	South on Ocean Drive to the Pacific Highway Kew	1.15mts at Stingray Creek Bridge North to Port Macquarie	Laurieton Quarry, Mill St / Lady Penrhyn Court, Camden Head / Bonny Hills	Laurieton School of Arts or Camden Haven High School	Peak season are:- Christmas and Easter holidays. "Rising road access."
Jacaranda Caravan Park	85-89 The Parade, North Haven (02) 6559-9470	Sector 12 North Haven	Long term sites 57 Short term sites 59	Flood free to the 1 % AEP level at 3.03mts - then inundated at the PMF at 3.65mts	Ocean Drive	Ocean Drive to Bonny Hills is flood free throughout the PMF from Cook Street.	Laurieton Quarry, Mill St / Lady Penrhyn Court, Camden Head / Bonny Hills	North Haven Primary School, Bonny Hills Community Hall or Bonny Hills	Peak season are:- Christmas and Easter holidays. "Low flood island."

Name	Address/Location description	Town/Sector	Number of sites	Risk	Evacuation route	Evacuation route closure	Moveable dwelling relocation location	Evacuation centre	Notes
			Camp sites 13			Access to Ocean Drive is progessively impacted from the 1% AEP level at 3.03mts		Uniting Church Conference Centre	
Laurieton Gardens Caravan Resort	478 Ocean Drive, Laurieton (02) 6559-9256	Sector 13 Laurieton	Long term sites 32 Short term sites 13 Camp sites 18	Inundation from 2.40mts	South on Ocean Drive to the Pacific Highway Kew	1.15mts at Stingray Creek Bridge North to Port Macquarie	Laurieton Quarry, Mill St / Lady Penrhyn Court, Camden Head / Bonny Hills	Laurieton School of Arts or Camden Haven High School	Peak season are:- Christmas and Easter holidays. "Rising Road access."
Christmas Cove Caravan Park	229 Ocean Drive Laurieton (02) 6559-9086	Sector 13 Laurieton	Long term sites 43 Short term sites 43	Only affected by flood in a PMF	East on Ocean Drive to Pacific Highway Kew	Flood free	Laurieton Quarry, Mill St / Lady Penrhyn Court, Camden Head / Bonny Hills	Laurieton School of Arts or Camden Haven High School	Peak season are:- Christmas and Easter holidays. "Rising road access."

Name	Address/Location description	Town/Sector	Number of sites	Risk	Evacuation route	Evacuation route closure	Moveable dwelling relocation location	Evacuation centre	Notes
Lighthouse Beach Residential Village	140 Mathew Flinders Drive Port Macquarie 6582 0581	N/A - not subject to riverine flooding from the Hastings River	Long term sites 76 Short term sites 39	Flash flood risk - with overland Flooding	Rising Road access Mathew Flinders Drive to Ocean Road	Rising Road access	N/A	Westport High School Findlay Drive	
The Retreat Manufactured Home Village	3 Lincoln Road Port Macquarie	Port Macquarie	Long term sites 193	Flooding	Oxley Highway	N/A	Vans moved to the Racecourse	High School – Findlay Drive	
Melaleuca Mobile Home Village	36 Mumford Street Port Macquarie	Port Macquarie - Hibbard	Long term sites 36	Flooding	Hastings River Dirve	Hastings River Drive @ 1.5m on Settlment Point Gauge (207418)	Vans moved to the Racecourse	West Port High School – Findlay Drive	
Taskers Residential Village	1 Ocean Street Port Macquarie	Port Macquarie	Long term sites 73	Flooding	Ocean Drive and Pacific Drive	N/A	Vans moved to high ground via rising road acess	West Port High School – Findlay Drive	
Flynns Beach Caravan Park	22 Ocean Street Port Macquarie	Port Macquarie	Long term sites 18	Flooding	Ocean Drive and Pacific Drive	N/A	Vans moved to high ground via rising road	West Port High School – Findlay Drive	

Name	Address/Location description	Town/Sector	Number of sites	Risk	Evacuation route	Evacuation route closure	Moveable dwelling relocation location	Evacuation centre	Notes
			Short term sites 21 Camp sites 18				acess		
Dahlsford Grove Villaage	1 to 5 Greenmeadows Drive Port Macquarie	Port Macquarie	Long term sites 248	Flooding	Ocean Drive	N/A	Vans moved to high ground via rising road access	West Port High School – Findlay 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.