May 2011

To be reviewed no later than May 2016

DUNGOG SHIRE
LOCAL FLOOD PLAN

A Sub-Plan of the Dungog Local Disaster Plan (DISPLAN)

Chair, Local Emergency Management Committee

Dungog SES Local Controller
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AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to:

The Local Controller
Dungog State Emergency Service
Clarence Town Road
DUNGOG NSW 2420

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

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LIST OF ABBREVIATIONS

The following abbreviations have been used in this plan:

AEP  Annual Exceedance Probability
AHD  Australian Height Datum
AIIMS Australasian Inter-service Incident Management System
ARI  Average Recurrence Interval (Years)
 ALERT Automated Local Evaluation in Real Time
AWRC Australian Water Resources Council
Bureau Australian Government Bureau of Meteorology
DCF  Dam Crest Flood
DSC  Dams Safety Committee
DISPLAN Disaster Plan
DSEP Dam Safety Emergency Plan
DVR  Disaster Victim Registration
FACS Depart of Family and Community Services
GIS  Geographic Information System
GRN  Government Radio Network
IAP  Incident Action Plan
IFF  Imminent Failure Flood
LEMO Local Emergency Management Officer
LEOCON Local Emergency Management Controller
NOW NSW Office of Water
OEH  Office of Environment and Water
PMF  Probable Maximum Flood
PMR  Private Mobile Radio
PMP  Probable Maximum Precipitation
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<td>SEWS</td>
<td>Standard Emergency Warning Signal</td>
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<td>VRA</td>
<td>Volunteer Rescue Association</td>
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<td>WICEN</td>
<td>Wireless Institute Civil Emergency Network</td>
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GLOSSARY

**Annual Exceedance Probability (AEP)**. The chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage. For example, if a peak flood level (height) has an AEP of 5%, there is a 5% chance (that is, a one-in-20 chance) of such a level or higher occurring in any one year (see also Average Recurrence Interval).

**Assistance Animal.** A guide dog, a hearing assistance dog or any other animal trained to assist a person to alleviate the effect of a disability (Refer to Section 9 of the Disability Discrimination Act 1992).

**Australian Height Datum (AHD)**. A common national surface level datum approximately corresponding to mean sea level.

**Average Recurrence Interval (ARI)**. The long-term average number of years between the occurrence of a flood as big as, or larger than, the selected event. For example, floods reaching a height as great as, or greater than, the 20 year ARI flood event will occur on average once every 20 years.

**Catchment (river basin)**. The land area draining through the main stream, as well as tributary streams, to a particular site. It always relates to an area above a specific location.

**Coastal Erosion**. The loss of land along the shoreline predominantly by the offshore movement of sand during storms.

**Dambreak Study**. A Dambreak Study is undertaken to determine the likely downstream inundation areas in case of a dam failure. Modelling is undertaken for a range of dam breach possibilities and design floods. The dambreak study includes information such as the extent of flooding, flood travel times and flood water velocities. The study can assist dam owners, regulators, and emergency agencies in the preparations of evacuation plans, dam break and other flood warning systems, and hazard classification of affected areas.

**Dam Failure**. The uncontrolled release of a water storage. The failure may consist of the collapse of the dam or some part of it, or excessive seepage or discharges. The most likely causes of dam failure are:

- **Flood Induced Dam Failure**: Dam failure caused by flood, either due to overtopping erosion or by subsequent structural failure.
- **Sunny Day Dam Failure**: Dam Failure as a result of factors other than flood ie other than flood flow into the reservoir. Causes of "Sunny Day" dam failure can include internal erosion, landslide, piping, earthquake or sabotage.
**Dam Safety Emergency Plan (DSEP).** A DSEP outlines the required actions of owners and their personnel at dams in response to a range of possible emergency situations. The NSW Dam Safety Committee requires a quality controlled DSEP, with associated dambreak warning procedures to be prepared for prescribed dams where persons may be at risk downstream, if the dam failed.

**Design flood (or flood standard).** A flood of specified magnitude that is adopted for planning purposes. Selections should be based on an understanding of flood behaviour and the associated flood risk, and take account of social, economic and environmental considerations. There may be several design floods for an individual area.

**DisPlan (Disaster Plan).** The object of a Displan is to ensure the coordinated response by all agencies having responsibilities and functions in emergencies.

**Emergency Alert.** A national telephony alerting based system available for use by emergency service agencies to send SMS and voice messages to landlines and/or mobile telephones (by billing address) in times of emergency.

**Essential services.** Those services, often provided by local government authorities, that are considered essential to the life of organised communities. Such services include power, lighting, water, gas, sewerage and sanitation clearance.

**Evacuation.** The temporary movement (relocation) of people from a dangerous or potentially dangerous place to a safe location, and their eventual return. It is a safety strategy which uses distance to separate people from the danger created by the hazard.

**Evacuation Order.** Notification to the community, authorised by the SES, when the intent of an Incident Controller is to instruct a community to immediately evacuate in response to an imminent threat.

**Evacuation Warning.** Notification to the community, authorised by the SES, when the intent of an Incident Controller is to warn a community of the need to prepare for a possible evacuation.

**Flash flooding.** Flooding which is sudden and often unexpected because it is caused by sudden local or nearby heavy rainfall. It is sometimes defined as flooding which occurs within six hours of the rain that causes it.

**Flood.** 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 overtopping coastline defences, including Tsunami.
**Flood classifications.** Locally defined flood levels used in flood warnings to give an indication of the severity of flooding (minor, moderate or major) expected. These levels are used by the State Emergency Service and the Australian Government Bureau of Meteorology in flood bulletins and flood warnings.

**Flood intelligence.** The product of collecting, collating, analysing and interpreting flood-related data to produce meaningful information (intelligence) to allow for the timely preparation, planning and warning for and response to a flood.

**Flood fringe.** The remaining area of flood prone land after floodway and flood storage have been defined.

**Flood liable land (also referred to as flood prone land).** Land susceptible to flooding by the Probable Maximum Flood (PMF) event. This term also describes the maximum extent of a floodplain which is an area of a river valley, adjacent to the river channel, which is subject to inundation in floods up to this event.

**Flood of record.** Maximum observed historical flood.

**Floodplain Management Plan.** A plan developed in accordance with the principles and guidelines in the New South Wales Floodplain Development Manual. Such a plan usually includes both written and diagrammatic information describing how particular areas of flood prone land can be used and managed to achieve defined objectives.

**Flood Plan.** A response strategy plan that deals specifically with flooding and is a sub-plan of a Disaster Plan. Flood plans describe agreed roles, responsibilities, functions, strategies and management arrangements for the conduct of flood operations and for preparing for them. A flood plan contains information and arrangements for all floods whereas an IAP is for a specific flood/event.

**Flood Rescue:** the rescue or retrieval of persons trapped by floodwaters.

**Flood storage areas.** Those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood. The extent and behaviour of flood storage areas may change with flood severity, and loss of flood storage can increase the severity of flood impacts by reducing natural flood attenuation.

**Floodway.** An area where a significant volume of water flows during floods. Such areas are often aligned with obvious naturally-defined channels and are areas that, if partially blocked, would cause a significant redistribution of flood flow which may in turn adversely affect other areas. They are often, but not necessarily, the areas of deeper flow or the areas where higher velocities occur.
**Flood Watch.** A Flood Watch is a notification of the potential for a flood to occur as a result of a developing weather situation and consists of short generalised statements about the developing weather including forecast rainfall totals, description of catchment conditions and indicates streams at risk. The Bureau will also attempt to estimate the magnitude of likely flooding in terms of the adopted flood classifications. Flood Watches are normally issued 24 to 36 hours in advance of likely flooding. Flood watches are issued on a catchment wide basis.

**Flood Warning.** A Flood Warning is a gauge specific forecast of actual or imminent flooding. Flood Warnings specify the river valley, the locations expected to be flooded, the likely severity of flooding and when it will occur.

**Functional Area.** means a category of services involved in the preparations for an emergency, including the following:

- Agriculture and Animal Services;
- Communication Services;
- Energy and Utility Services;
- Engineering Services;
- Environmental Services;
- Health Services;
- Public Information Services;
- Transport Services; and
- Welfare Services.

**Geographic Information System (GIS).** A computerised database for the capture, storage, analysis and display of locationally defined information. Commonly, a GIS portrays a portion of the earth’s surface in the form of a map on which this information is overlaid.

**Inundation.** See definition for *Flood*.

**Indirect Effect.** Indirect effects are generally a consequence of infrastructure damage or interruption of services and can affect communities distant from the actual flood footprint i.e. floodplain. Indirect effects can also refer to indirect losses due to disruption of economic activity, both in areas which are inundated or isolated. Indirect effects are one of the three primary sources of risk in the context of flooding (the other two are inundation and isolation).
Isolation. Properties and/or communities where flooding cuts access to essential services or means of supply. Isolation is one of the three primary sources of risk in the context of flooding (the other two are inundation and indirect effects).

Local overland flooding. Inundation by local runoff rather than overbank discharge from a stream, river, estuary, lake or dam.

Major flooding. Flooding which causes inundation of extensive rural areas, with properties, villages and towns isolated and/or appreciable urban areas flooded.

Minor flooding. Flooding which causes inconvenience such as closing of minor roads and the submergence of low-level bridges. The lower limit of this class of flooding, on the reference gauge, is the initial flood level at which landholders and/or townspeople begin to be affected in a significant manner that necessitates the issuing of a public flood warning by the Australian Government Bureau of Meteorology.

Moderate flooding. Flooding which inundates low-lying areas, requiring removal of stock and/or evacuation of some houses. Main traffic routes may be covered.

Incident Action Plan (IAP). An action plan for managing a specific flood event. Information from the Local Flood Plan is used to develop the IAP.

Peak height. The highest level reached, at a nominated gauging station, during a particular flood event.

Prescribed Dam. "Prescribed" dams are those listed in Schedule 1 of the Dams Safety Act 1978. The NSW Dam Safety Committee will prescribe those dams with the potential for a failure which could have a significant adverse effect on community interests.

Probable Maximum Flood (PMF). The largest flood that could conceivably be expected to occur at a particular location, usually estimated from probable maximum precipitation. The PMF defines the maximum extent of flood prone land, that is, the floodplain. It is difficult to define a meaningful Annual Exceedance Probability for the PMF, but it is commonly assumed to be of the order of $10^4$ to $10^7$ (once in 10,000 to 10,000,000 years).

Runoff. The amount of rainfall which ends up as streamflow, also known as ‘rainfall excess’ since it is the amount remaining after accounting for other processes such as evaporation and infiltration.

Standing Operating Procedure (SOP).

Stage height. A level reached, at a nominated gauging station, during the development of a particular flood event.
Stream gauging station. A place on a river or stream at which the stage height is routinely measured, either daily or continuously, and where the discharge is measured from time to time so as to develop a relationship between stage and discharge or rating curve.
PART 1 - INTRODUCTION

1.1 PURPOSE

1.1.1 This plan covers preparedness measures, the conduct of response operations and the coordination of immediate recovery measures from flooding within the Dungog Local Government Area (LGA). It covers operations for all levels of flooding within the Council area.

1.2 AUTHORITY

1.2.1 This plan is issued under the authority of the State Emergency and Rescue Management Act 1989 and the State Emergency Service Act 1989. It has been accepted by the Hunter SES Region Controller and the Dungog Local Emergency Management Committee (LEMC).

1.3 AREA COVERED BY THE PLAN

1.3.1 The area covered by the plan is the Dungog Shire Council Local Government Area which includes:

- The town of Dungog;
- The villages of Gresford, Paterson, Vacy, Martins Creek, Clarence Town and Hilldale; and
- Large areas of rural and forested land.

1.3.2 The Dungog Local Government Area is shown in Map 2.

1.3.3 The Council area is in the Hunter SES Region and for emergency management purposes is part of the Hunter Central Coast Emergency Management District.

1.4 DESCRIPTION OF FLOODING AND ITS EFFECTS

1.4.1 The nature of flooding in the Dungog Shire Council area is described in Annex A.

1.4.2 The effects of flooding on the community are detailed in Annex B.

1.5 RESPONSIBILITIES

1.5.1 The general responsibilities of emergency service organisations and supporting services (functional areas) are listed in the Lower Hunter Emergency Management Coordinating Committee Local Disaster Plan (DISPLAN), covering Cessnock, Dungog, Maitland and Port Stephens Local Government Areas. Some specific responsibilities are expanded upon in the following paragraphs. The extent of their implementation will depend on the severity of the flooding.
1.5.2 **Dungog SES Local Controller.** The Dungog SES Local Controller is responsible for dealing with floods as detailed in the State Flood Plan, and will:

### Preparedness

a. Maintain a Local Headquarters at Clarence Town Road, Dungog in accordance with the SES Controllers’ Handbook and the SES Operations Manual.

b. Ensure that SES members are trained to undertake operations in accordance with current policy as laid down in the SES Controllers’ Handbook and the SES Operations Manual.

c. Coordinate the development and operation of a flood warning service for the community.

d. Participate in floodplain risk management initiatives organised by the Dungog Shire Council.

e. Coordinate a public education program.

f. Identify and monitor people and/or communities at risk of flooding.

g. Ensure that the currency of this plan is maintained.

### Response

h. The Dungog SES Local Controller will appoint an appropriate Incident Controller to undertake response roles.

i. Control flood and storm response operations. This includes:
   - Directing the activities of the SES units operating within the Council area.
   - Coordinating the activities of supporting agencies and organisations and ensuring that liaison is established with them.
   - Contribute to preparation of Region IAP

j. Provide an information service in relation to:
   - Flood heights and flood behaviour.
   - Road conditions and closures.
   - Advice on methods of limiting property damage.
   - Confirmation of evacuation warnings and evacuation orders.

k. Direct the conduct of flood rescue operations.

l. Direct the evacuation of people and/or communities.

m. Provide immediate welfare support for evacuated people.

n. Coordinate the provision of emergency food and medical supplies to isolated people and/or communities.

o. Coordinate operations to protect property, for example by:
• Arranging resources for sandbagging operations.
• Lifting or moving household furniture.
• Lifting or moving commercial stock and equipment.

p. Arrange for support (for example, accommodation and meals) for emergency service organisation members and volunteers assisting them.

q. If SES resources are available, assist with emergency fodder supply operations conducted by Agriculture and Animal Services.

r. If SES resources are available, assist the NSW Police Force, RTA and Council with road closure and traffic control operations.

s. Exercise financial delegations relating to the use of emergency orders as laid down in the SES Controllers’ Handbook.

t. Coordinate the collection of flood information for development of intelligence.

u. Submit Situation Reports to the Hunter SES Region Headquarters and agencies assisting within the council area. These will contain information on:
   • Road conditions and closures.
   • Current flood behaviour.
   • Current operational activities.
   • Likely future flood behaviour.
   • Likely future operational activities.
   • Probable resource needs.

v. Keep the Local Emergency Operations Controller advised of the flood situation and the operational response.

w. Issue the ‘All Clear’ when flood operations have been completed.

**Recovery**

x. Ensure that appropriate After Action Reviews are held after floods.

y. Provide appropriate representation to the Recovery Committee for the duration of the response phase of an event and as agreed during the recovery phase.

1.5.3 **Dungog SES Unit Members:**

a. Carry out flood response tasks. These may include:
   • The management of the Dungog SES Local Headquarters Operations Centre.
   • Assist in the collection of flood information for the development of intelligence.
   • Flood rescue.
• Evacuation.
• Providing immediate welfare for evacuated people.
• Delivery of warnings and information.
• Resupply.
• Sandbagging.
• Lifting and/or moving household furniture and commercial stock.
• Assisting with road closure and traffic control operations.
• Assisting with emergency fodder supply operations.

b. Assist with preparedness activities.

c. Undertake training in flood operations.

1.5.4 Agricultural and Animal Services Functional Area

a. When requested by SES;

b. Activate the Agriculture and Animal Services Supporting Plan as required and coordinate the provision of required services which may include:

• Supply and delivery of emergency fodder
• Coordinate the management of livestock and farm animals
• Advice on dealing with dead and injured farm animals
• Financial, welfare and damage assessment assistance to flood affected farm people
• Operation of animal shelter compound facilities for the domestic pets and companion animals of evacuees

1.5.5 Australian Government Bureau of Meteorology (Bureau):

a. Provide Flood Watches for the Paterson and Williams Rivers catchment areas.

b. Provide Flood Warnings, incorporating height-time predictions, for the Dungog (210903), Mill Dam Falls (Glen Martin) (210010) and Gostwyck Bridge (210902) gauges.

c. Provide severe weather warnings when flash flooding is likely to occur.

1.5.6 Caravan Park Proprietors - Ferndale Park (Chichester), Frank Robinson Memorial Park (Cooreei Bridge, Dungog), and the Williams River Holiday Park (Clarence Town):


b. Ensure that owners and occupiers of caravans are aware that the caravan park is flood liable and what they must do to facilitate evacuation and van relocation when flooding occurs.

c. Ensure that occupiers are informed of flood warnings and flood watches.
d. Coordinate the evacuation of people and the relocation of moveable vans when floods are rising and their return when flood waters have subsided.

e. Inform the SES of the progress of evacuation and/or van relocation operations and of any need for assistance in the conduct of these tasks.

1.5.7 **Child Care Centres and Preschools:**

a. Child care centres listed in Annex B are to be contacted by the SES in the event of possible flooding or isolation:

b. When notified, the child care centres should:
   - Liaise with the 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 child care centres.

1.5.8 **Citizens’ Radio Emergency Service Teams (CREST) / Wireless Institute Civil Emergency Network (WICEN):**

a. Provide communications assistance.

1.5.9 **Communication Services Functional Area:**

a. When requested by SES;

   - Coordinate the restoration of telephone facilities damaged by flooding;
   - Coordinate additional telecommunications support for the SES Headquarters as required; and
   - Assist the SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence

1.5.10 **Dungog Local Emergency Operations Controller:**

a. Monitor flood operations.

b. Coordinate support to the Dungog SES Local Controller if requested to do so.

1.5.11 **Dungog Local Emergency Management Officer:**

a. Provide executive support to the Local Emergency Operations Controller in accordance with the Lower Hunter Emergency Management Coordinating Committee Local Disaster Plan (DISPLAN).

b. At the request of the Dungog SES Local Controller, advise appropriate agencies and officers of the activation of this plan.

1.5.12 **Dungog Shire Council:**

   **Preparedness**

   a. Establish and maintain a floodplain risk management committee and ensure that key agencies are represented on the committee.
b. Provide flood studies and floodplain management studies to the SES.
c. Maintain a plant and equipment resource list for the Council area.
d. Contribute to the development and implementation of a public education program.

Response

e. At the request of the Dungog Local SES Controller, deploy personnel and resources for flood related activities.
f. Close and reopen Council roads and advise the Dungog SES Local Controller and the Police.
g. Provide information on the status of roads through Council’s website (http://www.dungog.nsw.gov.au) and/or telephone services.
h. Provide filled sandbags to urban and village areas in which flooding is expected.
i. Assist with the removal of caravans from caravan parks.
j. Provide back-up radio communications.
k. In the event of evacuations, assist with making facilities available for the domestic pets and companion animals of evacuees.

Recovery

l. Provide for the management of health hazards associated with flooding. This includes removing debris and waste.
m. Ensure premises are fit and safe for reoccupation and assess any need for demolition.
n. Arrange for storage of evacuees' furniture as required.

1.5.13 Energy and Utility Services Functional Area:

a. When requested by SES;
   - Implement the Energy and Utilities Services Functional Area Supporting Plan;
   - Where required, coordinate energy and utility services emergency management planning, preparation, response and recovery, including the restoration of services following a flood event;
   - Coordinate advice to the SES of any need to disconnect electricity, gas, water or wastewater services;
   - Assist the SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence;
   - Identify interdependencies between flooding and utility services due to secondary impacts of flooding and advise the SES;
   - Assist the SES with advisory notices relating to hazards from utility services during flooding; and
• Coordinate with utilities on restoration of services, including advisory notices relating to estimated time for restoration and mandatory safety checks prior to reconnection. Advise the SES and the relevant recovery committee and coordinator of the timetable for restoration.

b. Local Providers (electricity, water and wastewater) are Essential Energy and Hunter Water Corporation.

c. Essential Energy:
  • Provide advice to the Dungog SES Local Controller of any need to disconnect power supplies or of any timetable for reconnection.
  • Clear or make safe any hazard caused by power lines or electrical reticulation equipment.
  • Assess the necessity for and implement the disconnection of customers’ electrical installations where these may present a hazard.
  • Advise the public with regard to electrical hazards during flooding and to the availability or otherwise of the electricity supply.
  • Inspect, test and reconnect customers’ electrical installations as conditions allow.
  • Assist the SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence.

d. Hunter Water Corporation
  • Provide advice to the Dungog SES Local Controller of any need to disconnect water supplies or of any timetable for reconnection.
  • Clear or make safe any hazard caused by wastewater pipes or wastewater facilities.
  • Assess the necessity for and implement the disconnection of customers’ water supplies or wastewater pipes where these may present a hazard.
  • Advise the public with regard to water and wastewater hazards during flooding and to the availability or otherwise of the water supply and wastewater facilities.
  • Inspect, test and reconnect customers’ water and wastewater installations as conditions allow.
  • Assist the SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence.
  • Maintain and operate the Dam Failure Warning System for Chichester Dam.
  • Contribute to the development and implementation of a public education program on floods affected by dam failure within the Council area.
• Consult with SES on the determination of dam failure alert levels and notification arrangements when developing a Dam Safety Emergency Plan.

• Maintain a Dam Safety Emergency Plan and provide copies to the SES.

• Advise the SES of actual and prospective outflows from Chichester Dam.

• Provide river and rainfall information from their Supervisory Control and Data Acquisition (SCADA) system for the Chichester, Wangat and Williams River systems and catchment areas.

• Provide information on the consequences of dam failure to the SES for incorporation into planning and flood intelligence.

• Close and evacuate at risk recreational areas in Hunter Water Corporation’s managed areas.

1.5.14 Engineering Services Functional Area:

a. When requested by SES;
   • Provide engineering advice regarding the integrity of damaged structures;
   • Assist the SES with damage assessment;
   • Acquire and/or provide specialist technical engineering expertise; and
   • Coordinate the restoration of critical public facilities.

1.5.15 Environmental Services Functional Area:

a. When requested by SES;
   • Implement the Environmental Services Functional Area (Enviroplan) Supporting Plan if required; and
   • Activate the Hazmat/CBR Emergency Sub Plan if required.

1.5.16 Fire and Rescue NSW, Dungog:

a. Assist the SES with the delivery of evacuation warnings and evacuation orders.

b. Assist the SES with the conduct of evacuations.

c. Provide equipment for pumping flood water out of buildings and from low-lying areas.

d. Assist with cleanup operations, including the hosing out of flood affected properties.

1.5.17 Health Services Functional Area:

a. When requested by SES;
   • Activate Healthplan if required;
- Ensure that appropriate business continuity plans are developed for essential health infrastructure and are activated during floods;
- Provide medical support to the SES;
- Establish health surveillance in affected areas;
- Assess potential public health risks that either acutely endanger the health of human populations or are thought to have longer term consequences;
- Provide environmental health advice;
- Provide public health warnings and advice to affected communities;
- Assist the SES with the warning and evacuation of hospitals.

b. The **Ambulance Service of NSW** will:

- Assist with the evacuation of at risk communities (in particular elderly and/or infirm people)
- Deploy ambulance resources to areas likely to become isolated, in consultation with the Dungog SES Local Controller.
- Assist the SES with flood rescue operations

1.5.18 **NSW Office of Water**

a. Collect and maintain flood data including data relating to flood heights, velocities and discharges;

b. Provide the Bureau of Meteorology and SES real-time or near real-time access to river height gauges and height data for the development of official flood warnings;

c. Provide flow rating charts for river height gauges; and

d. Manage (with technical support from OEH) the approval process under the Water Act 1912 and Water Management Act 2000 for flood control works (earthworks, embankments and levees which can affect the distribution of floodwaters) including:

- Assessment and approval of flood control works (including flood mitigation works) in rural areas designated under the Acts.
- Use of floodplain management plans prepared by OEH in rural areas designated under the Acts to assess flood control work approvals.
- Giving the SES access to relevant studies regarding flooding and studies supporting floodplain management plans prepared by OEH including flood studies, floodplain risk management studies and flood behaviour investigations.
1.5.19 **NSW Police Force, Central Hunter and Port Stephens Local Area Commands (LAC):**

a. Assist the SES with the delivery of evacuation warnings and evacuation orders.
b. Assist the SES with the conduct of evacuation operations.
c. Conduct road and traffic control operations in conjunction with Council.
d. Coordinate the registration of all evacuees.
e. Secure evacuated areas.

1.5.20 **NSW Rural Fire Service (RFS), Lower Hunter Zone:**

a. Provide personnel and high-clearance vehicles for flood related activities.
b. Assist the SES with the delivery of evacuation warnings and evacuation orders.
c. Assist the SES with the conduct of evacuations.
d. Provide equipment for pumping flood water out of buildings and from low-lying areas.
e. Assist with the removal of caravans.
f. Provide back-up radio communications.
g. Assist with cleanup operations, including the hosing of flood affected properties.

1.5.21 **Office of Environment and Heritage:**

a. Provide specialist policy, engineering and scientific advice to councils and the SES on flood related matters including assistance with:
   - The identification of flood problems
   - The preparation of Floodplain Risk Management Plans and associated studies
   - The implementation of floodplain risk management plans. This involves floodplain management projects which include flood mitigation works, flood warning, strategic land use planning and upgrade of evacuation routes
   - The exercising of Flood Sub Plans
b. Provide specialist advice on flood related matters as follows:
   - Provide the SES with access to relevant studies regarding flooding, including Flood Studies and Floodplain Risk Management Studies
   - Coordinate the collection of post event flood data, in consultation with the SES.
   - Provide advice to the SES in relation to the operation of the Hunter Valley Flood Mitigation Scheme
• Provide data to the Bureau of Meteorology and SES real-time or near real-time access to river height gauges and height data for the development of official flood warnings (through a contract with MHL as described in the Response section of this plan).

c. **Forest NSW**
   • Close and evacuate at risk camping grounds in Forest NSW managed areas.

d. **NSW National Parks and Wildlife Service**
   • Close and evacuate at risk camping grounds in National Parks managed areas.

1.5.22 **Public Information Services** Functional Area:

a. When requested by SES;
   • Assist the SES in the establishment and operation of a Joint Media Information Centre

1.5.23 **School Administration Offices including Catholic Education Office (Newcastle West), Department of Education & Training (Adamstown) and Private Schools:**

a. Liaise with the SES and arrange for the early release of students whose travel arrangements are likely to be disrupted by flooding and/or road closures (or where required, for students to be moved to a suitable location until normal school closing time).

b. Pass information to school bus drivers/companies and/or other school principals on expected or actual impacts of flooding.

c. Assist with coordinating the evacuation of schools listed in Annex B when flooding or isolation is expected to occur.

d. Provide space in schools for evacuation centres where necessary.

1.5.24 **State Water, Lostock Dam**

a. Maintain and operate a Dam Failure Warning System for Lostock Dam.

b. Contribute to the development and implementation of a public education program on flooding within the Council area

c. Consult with SES on the determination of dam failure alert levels and notification arrangements when developing a Dam Safety Emergency Plan.

d. Maintain a Dam Safety Emergency Plan and provide copies to the SES.

f. Advise the SES and downstream property owners of actual and prospective outflows from the dams.

g. Close and evacuate at risk camping grounds/recreational areas in State Water’s managed areas.
1.5.25 **Transport Services Functional Area:**

a. When requested by SES;
   - Assist with the coordination of transport for evacuation purposes.
   - Assist with the resupply of isolated communities and/or properties

b. **Rail Corporation NSW, Central Train Control Broadmeadow will:**
   - Close and reopen railway lines affected by flood waters and advise the SES;
   - Arrange trains for evacuations, commuting and/or resupply purposes.

1.5.26 **Welfare Services Functional Area:**

a. When requested by SES;

b. Establish and manage evacuation centres; and

c. Administer the Personal Hardship and Distress component of the NSW Disaster Relief Scheme established to provide financial assistance to people affected by emergencies.
PART 2 - PREPAREDNESS

2.1 MAINTENANCE OF THIS PLAN

2.1.1 The Dungog SES Local Controller will maintain the currency of this plan by:
   a. Ensuring that all agencies, organisations and officers mentioned in it are aware of their roles and responsibilities.
   b. Conducting exercises to test arrangements.
   c. Reviewing the contents of the plan:
      d. After each flood operation.
      e. When significant changes in land-use or community characteristics occur.
      f. When new information from flood studies become available.
      g. When flood control or mitigation works are implemented or altered.
      h. When there are changes that alter agreed plan arrangements.

2.1.2 In any event, the plan is to be reviewed no less frequently than every five years.

2.2 FLOODPLAIN RISK MANAGEMENT

2.2.1 The Dungog SES Local Controller will ensure that the SES:
   a. Participates in floodplain risk management committee activities when this committee is formed.
   b. Informs the Hunter SES Region Headquarters of involvement in floodplain risk management activities.

2.3 DEVELOPMENT OF FLOOD INTELLIGENCE

2.3.1 Flood intelligence describes flood behaviour and its effects on the community.

2.3.2 The SES maintains a centralised flood intelligence system.

2.4 DEVELOPMENT OF WARNING SYSTEMS

2.4.1 The SES may establish a total flood warning system for areas affected by flooding. This requires:
   a. An identification of the potential clients of flood warning information at different levels of flooding (i.e.: who would be affected in floods of differing severities).
   b. Available information about the estimated impacts of flooding at different heights.
c. Identification of required actions and the amounts of time needed to carry them out.

d. Appropriate means of disseminating warnings to different clients and at different flood levels.

2.5 PUBLIC EDUCATION

2.5.1 The Dungog SES Local Controller, with the assistance of the Dungog Shire Council, the Hunter Water Corporation, the Hunter SES Region Headquarters and SES State Headquarters, is responsible for ensuring that the residents of the Council area are aware of the flood threat in their vicinity and how to protect themselves from it.

2.5.2 Specific strategies to be employed include:

   a. Dissemination of flood-related brochures and booklets in flood liable areas.

   b. Talks and displays orientated to community organisations and schools.

   c. Publicity given to this plan and to flood-orientated SES activities through local media outlets, including articles in local newspapers about the flood threat and appropriate responses.

2.6 TRAINING

2.6.1 Throughout this document there are references to functions that must be carried out by the members of the Dungog SES. The Dungog SES Local Controller is responsible for ensuring that the members are:

   a. Familiar with the contents of this plan.

   b. Trained in the skills necessary to carry out the tasks allocated to the SES.

2.7 RESOURCES

2.7.1 The Dungog SES Local Controller is responsible for maintaining the condition and state of readiness of SES equipment and the Dungog SES Local Headquarters.
PART 3 - RESPONSE

CONTROL

3.1 CONTROL ARRANGEMENTS

3.1.1 The SES is the legislated combat agency for floods and is responsible for the control of flood operations. This includes the coordination of other agencies and organisations for flood management tasks.

3.1.2 The Local DISPLAN will operate to provide support as requested by the SES Local Controller.

3.2 OPERATIONAL MANAGEMENT

3.2.1 SES utilises the Australasian Inter-service Incident Management System (AIIMS), which is based on three principles:
   a. functional management;
   b. management by objectives; and
   c. span of control.

3.2.2 AIIMS provides for different incident levels based on the complexity of management.

3.2.3 The Local Government Area may be divided into sectors and divisions to manage the flood event (divisions are usually a group of sectors).

3.2.4 Sectors and divisions may be based on floodplain classifications, geographical, physical or functional boundaries. A town, city or suburb may be one sector or split into several sectors and divisions.

3.2.5 Flood waters may isolate some small rural communities in the Dungog Shire. Each of these isolated areas may form an individual ‘sector’ for the management of flood operations.

3.2.6 Depending on the severity of flooding, these sectors may include the towns and villages of:
   a. Dungog
   b. Paterson
   c. Martins Creek
   d. Clarence Town

3.2.7 In smaller flood events, all of the local government area will be under the control of the Dungog SES Incident Controller.

3.2.8 In more significant flood events, sector controllers and division controllers may be appointed to manage operations in the respective sectors or divisions.
3.2.9 Forward control centres for each of these sectors may be established at the relevant Rural Fire Service (RFS) Brigade Headquarters.

3.3 START OF RESPONSE OPERATIONS

3.3.1 This plan is always active to ensure that preparedness actions detailed in this plan are completed.

3.3.2 Response operation will begin:
   a. On receipt of a Bureau of Meteorology Preliminary Flood Warning, Flood Warning, Flood Watch, Severe Thunderstorm Warning or a Severe Weather Warning for flash flooding.
   b. On receipt of a dam failure alert.
   c. When other evidence leads to an expectation of flooding within the Council area.

3.3.3 Contact with the Bureau of Meteorology to discuss the development of flood warnings will normally be through the Hunter SES Region Headquarters.

3.3.4 The following persons and organisations will be advised of the start of response operations regardless of the location and severity of the flooding anticipated:
   a. Dungog Local Emergency Operations Controller (for transmission to the NSW Police Force Local Area Command Headquarters).
   b. Dungog SES Local Controller
   c. Dungog SES Unit
   d. Hunter SES Region Headquarters.
   e. Dungog Local Emergency Management Officer (for transmission to appropriate Council officers and departments).
   f. Dungog Shire Council Mayor.

3.3.5 Other agencies listed in this plan will be advised by the LEMO on the request of the Dungog SES Local Controller and as appropriate to the location and nature of the threat.

3.4 RESPONSE STRATEGIES

3.4.1 The main response strategies for SES flood operations include:
   a. Information Provision and Warning
      ● Provision of warnings, information and advice to communities.
      ● Inform the community regarding the potential impacts of a flood and what actions to undertake in preparation for flooding.
      ● Provide timely and accurate information to the community.
   b. Property protection
• Protect the property of residents and businesses at risk of flood damage.
• Assistance with property protection by way of sandbagging and the lifting or transporting of furniture, personal effects, commercial stock and caravans;
• Assistance with the protection of essential infrastructure;

c. Evacuation
• The temporary movement (relocation) of people from a dangerous or potentially dangerous place to a safe location, and their eventual return. It is a safety strategy which uses distance to separate people from the danger created by the hazard.

d. Rescue
• The rescue or retrieval of persons trapped by floodwaters.

e. Resupply
• Minimise disruption upon the community by resupplying towns and villages which have become isolated as a consequence of flooding.
• Ensure supplies are maintained to property owners by coordinating the resupply of properties which have become isolated as a consequence of flooding.

3.4.2 The Dungog SES Incident Controller will select the appropriate response strategy to deal with the expected impact of the flood in each sector. The impact may vary from sector to sector, so a number of different strategies may be selected and implemented across the whole operational area.

3.4.3 Supporting strategies include:

a. Protect the community from incidents involving fire and hazardous materials.

b. Maintain the welfare of communities and individuals affected by the impact of a flood.

c. Minimise disruption to the community by ensuring supply of essential energy and utility services.

d. Ensure coordinated health services are available to and accessible by the flood affected communities.

e. Maintain the welfare of animals affected by the impact of a flood.

3.5 OPERATIONS CENTRES

3.5.1 The Dungog SES maintains an Operations Centre at Clarence Town Road, Dungog (32’ 24.750 S, 151’ 44.961E).

3.5.2 The Dungog Local Emergency Operations Centre (LEOC) is located at the Dungog Shire Depot, Common Road Dungog.
3.6 LIAISON

3.6.1 At the request of the Dungog SES Local Controller, each agency with responsibilities identified in this plan will provide liaison (including a liaison officer where necessary) to the Dungog SES Local Headquarters Operations Centre.

3.6.2 Liaison officers are to:

   a. have the authority to deploy the resources of their parent organisations at the request of the Dungog SES Local Controller,
   b. advise the Dungog SES Local Controller on resource availability for their service; and
   c. be able to provide communications to their own organisations.

3.7 ALL CLEAR

3.7.1 When the immediate danger to life and property has passed the SES Region Incident Controller or the Dungog SES Incident Controller will issue an ‘all clear’ message signifying that response operations have been completed. The message will be distributed through the same media outlets as earlier evacuation messages. The relevant Controller will also advise details of recovery coordination arrangements, arrangements made for clean up operations prior to evacuees being allowed to return to their homes, and stand-down instructions for agencies not required for recovery operations.

3.7.2 A template guide to the content of an all clear message is contained in Annex E – Template Evacuation Warning, Evacuation Order and All Clear.

PLANNING

3.8 COLLATING SITUATIONAL INFORMATION

   Strategy

3.8.1 The SES maintains and records situational awareness of current impacts and response activities.

   Actions

3.8.2 The Dungog SES Local Headquarters collates information on the current situation in the Dungog Shire Council LGA and incorporates in Situation Reports.

3.8.3 The Hunter SES Region Headquarters collates Region-wide information for inclusion in Region SES Situation Reports.

3.8.4 Sources of situational information during times of flooding are:

   a. **Agency Situation Reports.** Agencies and functional areas provide regular situation reports (SITREPs) to the SES.
b. **Active Reconnaissance.** The Dungog SES Incident Controller is responsible for coordinating the reconnaissance of impact areas, recording and communicating observations. Reconnaissance can be performed on the ground and using remote sensing (more commonly aerial). The SES monitors areas known to be at risk from flooding in the Dungog Shire. In addition, numerous roads may be closed by flood waters. These roads are listed in Annex B of this plan.

c. The **Bureau of Meteorology’s Flood Warning Centre** provides river height and rainfall information, data can is available on the website http://www.bom.gov.au/hydro/flood/nsw/

d. The Department of Services, Technology and Administration’s, **Manly Hydraulics Laboratory** automated river watch system funded by the Department of Environment, Climate Change and Water. This system provides river height and rainfall readings for a number of gauges as indicated in Annex C. Recent data from this system is available on the Manly Hydraulic Laboratory website: http://www.mhl.nsw.gov.au. A history of area floods is also available upon request via the website.

e. **NSW Office of Water.** This office advises flow rates and rates of rise for the Paterson and Williams Rivers. Daily river reports containing information on gauge heights and river flows are available from the website: http://waterinfo.nsw.gov.au/

f. **Chichester Dam Storage Monitoring System.** The Supervisory Control and Data Acquisition (SCADA) system provides information on water levels at Chichester Dam.

g. **Hunter SES Region Headquarters.** The Region Headquarters provides information on flooding and its consequences, including those in nearby council areas (this information is documented in Bulletins and Situation Reports).

3.8.5 **During flood operations sources of information on roads closed by flooding include:**

a. Dungog Shire Council website (http://www.dungog.nsw.gov.au) and/or telephone service

b. Central Hunter and Port Stephens Police Local Area Commands

c. Roads and Maritime Services website (http://www.rta.nsw.gov.au ) and/or telephone service.

d. Hunter SES Region Headquarters

e. Dungog SES Local Headquarters.

3.8.6 Situational information relating to consequences of flooding should be used to verify and validate SES Flood Intelligence records.
3.9 PROVISION OF FLOOD INFORMATION AND WARNINGS

Strategy

3.9.1 The Dungog SES Local Headquarters provides advice to the Hunter SES Region Headquarters on current and expected impacts of flooding in the Dungog Shire Council LGA.

3.9.2 The Hunter SES Region Headquarters issues SES Flood Bulletins, SES Livestock and Equipment Warnings, Evacuation Warnings and Evacuation Orders to media outlets and agencies on behalf of all SES units in the Region.

Actions

3.9.3 The Dungog SES Incident Controller will ensure that the Hunter SES Region Incident Controller is regularly briefed on the progress of operations.

3.9.4 Dungog SES Local Headquarters operations staff will be briefed regularly so that they can provide information in response to inquiries received in person or by other means such as phone or fax.

3.9.5 The Dungog SES Local Headquarters will operate a “phone-in” information service for the community in relation to:

a. river heights,
b. flood behaviour,
c. road conditions,
d. closures of local and main roads and advice,
e. advice on safety matters and means of protecting property.

3.9.6 **Bureau of Meteorology Severe Thunderstorm Warning.** These are issued direct to the media by the Bureau when severe thunderstorms are expected to produce dangerous or damaging conditions, including flash flooding. Severe thunderstorms are usually smaller in scale than events covered by Flood Watches and Severe Weather Warnings.

3.9.7 **Bureau of Meteorology Severe Weather Warnings for Flash Flooding.** These are issued direct to the media by the Bureau and provide a warning of the possibility for flash flooding as a result of intense rainfall. These warnings are issued when severe weather is expected to affect land based communities with 6 to 24 hours. Severe Weather Warnings may also include other conditions such as Damaging Winds.

3.9.8 **Bureau of Meteorology Flood Watches.** Flood Watches are issued by the Bureau to advise people of the potential for flooding in a catchment area based on predicted or actual rainfall. Flood Watches will be included in SES Flood Bulletins issued by the Hunter SES Region Headquarters.

3.9.9 **Bureau of Meteorology Flood Warnings.** The Hunter SES Region Headquarters will send a copy of the Bureau Flood Warnings to the Dungog SES Unit. On receipt the Dungog SES Incident Controller will provide the
Hunter SES Region Headquarters with information on the estimated impacts of flooding at the predicted heights for inclusion in SES Region Flood Bulletins.

3.9.10 **SES Livestock and Equipment Warnings.** Following heavy rain or when there are indications of significant creek or river rises (even to levels below Minor Flood heights), the Dungog SES Incident Controller will advise the Hunter SES Region Headquarters which will issue SES Livestock and Equipment Warnings.

3.9.11 **SES Local Flood Advices.** The Dungog SES Incident Controller may issue Local Flood Advices for locations not covered by the Bureau Flood Warnings. They may be provided verbally in response to phone inquiries but will normally be incorporated into SES Region Flood Bulletins. They will be distributed to agencies listed in Annex D.

3.9.12 **SES Flood Bulletins.** The Hunter SES Region Headquarters will regularly issue SES Flood Bulletins which describe information on the estimated impacts of flooding at the predicted heights (using information from Bureau Flood Warnings and SES Local Flood Advices) to SES units, media outlets and agencies on behalf of all SES units in the Region.

3.9.13 **SES Evacuation Warnings and Evacuation Orders.** These are usually issued to the media by the SES Region Incident Controller on behalf of the Dungog SES Incident Controller. A template guide to the content of evacuation warning and evacuation order messages is at Annex E.

3.9.14 **Dam Failure Alerts.** Dam failure alerts are issued to SES by the dam owner, in accordance with arrangements in the Dam Safety Emergency Plan (DSEP), the system involves the Dam Owner notifying SES State Headquarters Communications Centre, who in turn distribute the warning to the SES Region Headquarters and SES Unit Headquarters.

3.9.15 A flow chart illustrating the notification arrangements for potential dam failure is shown in Annex J.

3.9.16 Dam failure alert levels are set in consultation with the SES and are used to trigger appropriate response actions. The conditions that define each of the alert levels are listed in the relevant DSEP. Responses escalate as the alert level migrates from white to amber to red. Table 3-1 briefly outlines example defining conditions and appropriate SES responses associated with each alert.
Table 3-1: Outline of dam failure alerts, defining conditions and SES responses

<table>
<thead>
<tr>
<th>Alert Level</th>
<th>Defining Condition</th>
<th>SES Response</th>
<th>SES Warning Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>May be a structural anomaly. May be increased monitoring in response to a heavy rainfall event</td>
<td>Notification of support agencies Monitoring areas at risk downstream Check operational readiness</td>
<td>This is a preliminary alert to assists the SES in its preparation. This is not normally a public alert.</td>
</tr>
<tr>
<td>Amber</td>
<td>Failure possible if storage level continues to rise or structural anomaly not fixed</td>
<td>Warn downstream population at risk to prepare to evacuate</td>
<td>SES Evacuation Warning</td>
</tr>
<tr>
<td>Red</td>
<td>Failure imminent or occurred</td>
<td>Evacuation of downstream populations</td>
<td>SES Evacuation Order</td>
</tr>
</tbody>
</table>

3.9.17 The SES will disseminate dam failure warnings. Refer to Evacuation Arrangements for Dungog Shire Council Area in Annex F – Evacuation Arrangements for the Dungog Shire.

3.9.18 Special arrangements apply in the case of severe flooding that may have the potential to cause the failure of Chichester Dam. Details of these arrangements are described in Annex H of this plan. The warning system consists of:

a. A water level sensor at Chichester Dam to measure the depth of water above the spillway crest. When particular, pre-set levels are reached there are three modes of notification. An automatic alarm sounds at the dam, an alarm is triggered on the SCADA system to Hunter Water Corporation Dispatch Centre and a message is paged to the residence of the dam caretaker on duty (via modem).

b. Arrangements for notifying Hunter Water Corporation and the SES as floods are rising. These arrangements apply in relatively minor flood events as well as in the more severe ones.

c. Arrangements for advising people who would need to evacuate from properties downstream of the dam if dam failure became possible. These arrangements apply only to the more severe floods.
d. Further information on warning and notification procedures for potential failure of Chichester Dam are contained in Annex H of this plan.

3.9.19 **Standard Emergency Warning Signal (SEWS).** This signal may be played over radio and television stations to alert communities to Evacuation Warnings, Evacuation Orders, Special Warnings or Dam-Failure Warnings. Approval to use the signal is associated with who approves the warning/order message.

3.9.20 **The Public Information and Inquiry Centre** (operated by the NSW Police Force) will answer calls from the public regarding registered evacuees.

3.9.21 **The Disaster Welfare Assistance line** is a central support and contact point for disaster affected people inquiring about welfare services advice and assistance.

3.9.22 **The RMS Traffic Information Line** will provide advice to callers on the status of roads. The RTA website (http://www.rms.nsw.gov.au) also lists road closure information.

3.9.23 **Dungog Shire Council** website (http://www.dungog.nsw.gov.au) and /or telephone service will provide information on the status of roads.

3.9.24 Collation and dissemination of road information is actioned as follows:

a. As part of Situation Reports, the Dungog SES Incident Controller provides road status reports for main roads in the Council area to the Hunter SES Region Headquarters.

b. The Hunter SES Region Headquarters distributes information on main roads to SES units, media outlets and agencies as part of SES Flood Bulletins.

**OPERATIONS**

3.10 **AIRCRAFT MANAGEMENT**

3.10.1 Aircraft can be used for a variety of purposes during flood operations including evacuation, rescue, resupply, reconnaissance and emergency travel.

3.10.2 Air support operations will be conducted under the control of the SES Region Headquarters, which may allocate aircraft to units if applicable.

3.10.3 **Helicopter Landing Points.** Suitable landing points are located at:

<table>
<thead>
<tr>
<th>Area</th>
<th>Helicopter Landing Point</th>
<th>Coordinates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandon Grove</td>
<td>School of Arts Hall</td>
<td>32° 17.670 S</td>
</tr>
<tr>
<td></td>
<td></td>
<td>151° 42.818 E</td>
</tr>
<tr>
<td></td>
<td>Chichester Dam Road</td>
<td></td>
</tr>
<tr>
<td>Chichester Dam</td>
<td>Above Dam Office</td>
<td>32° 14.547 S</td>
</tr>
<tr>
<td></td>
<td></td>
<td>151° 41.198 E</td>
</tr>
<tr>
<td>Area</td>
<td>Helicopter Landing Point</td>
<td>Coordinates</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------------------------------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Chichester Dam Area</td>
<td>Ferndale Park Camping Area</td>
<td>32’ 14.501 S 151' 41.806 E</td>
</tr>
<tr>
<td></td>
<td>Chichester Dam Road via Dungog</td>
<td></td>
</tr>
<tr>
<td>Clarence Town</td>
<td>Reg Ford Oval</td>
<td>32’ 35.120 S 151' 46.580 E</td>
</tr>
<tr>
<td></td>
<td>Durham Street, Clarence Town</td>
<td></td>
</tr>
<tr>
<td>Dungog</td>
<td>Dungog Hospital</td>
<td>32’ 24.070 S 151' 44.747 E</td>
</tr>
<tr>
<td></td>
<td>Hospital Road Dungog</td>
<td></td>
</tr>
<tr>
<td>Dungog</td>
<td>Rural Fire Service Shed</td>
<td>32’ 24.167 S 151' 45.272 E</td>
</tr>
<tr>
<td></td>
<td>Lord Street, Dungog</td>
<td></td>
</tr>
<tr>
<td>Dungog</td>
<td>Bennett Park</td>
<td>32’ 24.251 S 151' 45.179 E</td>
</tr>
<tr>
<td></td>
<td>Abelard Street, Dungog</td>
<td></td>
</tr>
<tr>
<td>Dungog</td>
<td>Dungog Showground</td>
<td>32’ 24.440 S 151' 45.022 E</td>
</tr>
<tr>
<td></td>
<td>Corner of Abelard and Chapman Streets, Dungog</td>
<td></td>
</tr>
<tr>
<td>Gresford</td>
<td>Gresford Sporting Complex</td>
<td>32’ 26.055 S 151' 33.246 E</td>
</tr>
<tr>
<td></td>
<td>Park Street (Gresford Road)</td>
<td></td>
</tr>
<tr>
<td>Lostock</td>
<td>Lostock Dam Heliport</td>
<td>32’ 19.847 S 151' 27.565 E</td>
</tr>
<tr>
<td></td>
<td>Paterson River Road, Lostock</td>
<td></td>
</tr>
<tr>
<td>Paterson</td>
<td>Paterson Sportsground (next to golf course) Webber Creek Road, Paterson</td>
<td>32’ 36.216 S 151’ 36.616 E</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacy</td>
<td>Vacy Sports Oval</td>
<td>32’ 32.470 S 151’ 34.637 E</td>
</tr>
<tr>
<td></td>
<td>Gresford Road, Vacy</td>
<td></td>
</tr>
</tbody>
</table>

### 3.11 ASSISTANCE FOR ANIMALS

#### 3.11.1 Matters relating to the welfare of livestock, companion animals and wildlife are to be referred to Agriculture and Animal Services.
3.11.2 Requests for emergency supply and/or delivery of fodder to stranded livestock, or for livestock rescue, are to be referred to Agriculture and Animal Services.

3.11.3 Requests for animal rescue should be referred to the SES.

3.12 COMMUNICATION SYSTEMS

3.12.1 The primary means of communications between fixed locations is by telephone, email and facsimile.

3.12.2 The primary means of communication to and between deployed SES resources is by the Government Radio Network (GRN) and/or SES PMR.

3.12.3 All liaison officers will provide their own communications link back to their parent agencies.

3.12.4 All other organisations will provide communications as necessary to their deployed field teams.

3.12.5 Back-up communications are provided as follows:
   a. UHF Citizens Band Radio.
   b. Dungog Shire Council radio network.
   c. Dungog Rural Fire Service (RFS) radio network.

3.13 ROAD AND TRAFFIC CONTROL.

3.13.1 A number of roads within the Council area are affected by flooding. Details are provided in Annex B.

3.13.2 The Council closes and re-opens its own roads.

3.13.3 The NSW Police Force has the authority to close and re-open roads but will normally only do so (if the council have not already acted) if public safety requires such action.

3.13.4 When resources permit, the SES assists Council or the Police by erecting road closure signs and barriers.

3.13.5 In flood events, the Dungog SES Incident Controller may direct the imposition of traffic control measures. The entry into flood affected areas will be controlled in accordance with the provisions of the State Emergency Service Act, 1989 (Part 5, Sections 19, 20, 21 and 22) and the State Emergency Rescue Management Act, 1989 (Part 4, Sections 60KA, 60L and 61).

3.13.6 Police or Council officers closing or re-opening roads or bridges affected by flooding are to advise the Dungog SES Local Headquarters, which will then provide a road information service to local emergency services, the public and the Hunter SES Region Headquarters. All such information will also be passed to the Police, RTA and the Council.
3.14 STRANDED TRAVELLERS

3.14.1 Flood waters can strand travellers within the Dungog LGA. Travellers seeking assistance will be referred to the Department of Family and Community Services for the arrangement of temporary accommodation.

3.15 MANAGING PROPERTY PROTECTION OPERATIONS

Strategy

3.15.1 Protect the property of residents and businesses at risk of flood damage.

Actions

3.15.2 The SES is the responsible agency for the coordination of operations to protect property.

3.15.3 Property may be protected from floods by:

3.15.4 Lifting or moving of household furniture

3.15.5 Lifting or moving commercial stock and equipment

3.15.6 Sandbagging to minimise entry of water into buildings

3.15.7 The Dungog SES Local Headquarters maintains a small stock of sandbags, and back-up supplies are available through the Hunter SES Region Headquarters. A motorised sandbag-filling machine is on site at the SES Local Headquarters. Other machines may be available through the Hunter SES Region Headquarters. Alternatively, local concrete trucks may be used.

3.16 MANAGING FLOOD RESCUE OPERATIONS

Strategy

3.16.1 Rescue of people from floods.

Actions

3.16.2 The Dungog SES Incident Controller controls flood rescue in the Dungog Shire Council LGA.

3.16.3 Flood rescues, may be carried out by accredited units in accordance with appropriate standards.

3.16.4 Additional flood boats and crews can be requested through the Hunter SES Region Headquarters

3.17 MANAGING EVACUATION OPERATIONS

Strategy

3.17.1 When there is a risk to public safety, evacuation is the primary strategy. Circumstances may include:
a. Evacuation of people when their homes or businesses are likely to flood.

b. Evacuation of people who are unsuited to living in isolated circumstances, due to flood water closing access.

c. Evacuation of people where essential energy and utility services have failed or where buildings have been made uninhabitable

**Actions**

3.17.2 The evacuation operation will have the following stages:

a. Decision to evacuate

b. Mobilisation (mobilisation may begin prior to the decision to evacuate)

c. Evacuation Warning/Order Delivery

d. Withdrawal

e. Shelter

f. Return

3.17.3 During floods, evacuations will be controlled by the SES. Small-scale evacuations will be controlled by the Dungog SES Incident Controller. Should the scale of evacuation operations be beyond the capabilities of local resources, control may be escalated to the Hunter SES Region Incident Controller.

**Decision to evacuate**

3.17.4 In most cases the decision to evacuate rests with the Dungog SES Incident Controller who exercises his/her authority in accordance with Section 22(1) of the State Emergency Service Act 1989. However, the decision to evacuate will usually be made after consultation with the Hunter SES Region Incident Controller and the Local Emergency Operations Controller.

3.17.5 In events that require large scale evacuations, the decision to evacuate may be escalated to the Region or the State Incident Controller.

3.17.6 Some people will make their own decision to evacuate earlier and move to alternate accommodation, using their own transport. This is referred to as self-motivated evacuation.

**Mobilisation**

3.17.7 The Dungog SES Incident Controller will mobilise the following to provide personnel for doorknock teams for designated Sectors/locations:

a. Dungog SES Unit members,

b. RFS Lower Hunter Zone

c. Local Police Force officers

3.17.8 The Hunter SES Region Incident Controller will mobilise any additional personnel required to assist with doorknock teams using:
a. SES members from the Hunter SES Region and surrounding SES Regions
b. FRNSW personnel arranged via the FRNSW Liaison Officer located at Hunter SES Region Headquarters
c. RFS personnel arranged via the RFS Liaison Officer located at Hunter SES Region Headquarters

3.17.9 The Dungog SES Incident Controller will request the Dungog LEMO to provide Council personnel to assist with traffic coordination within the sectors as required.

3.17.10 If required, the Hunter SES Region Incident Controller will mobilise the required number of buses for sectors via the Transport Services Functional Area Coordination Centre.

Delivery of Evacuation Warnings and Evacuation Orders

3.17.11 The SES will advise the community of the requirements to evacuate. The SES will issue an Evacuation Warning when the intent of an SES Incident Controller is to warn the community of the need to prepare for a possible evacuation. The SES will issue an Evacuation Order when the intent of the SES Incident Controller is to instruct a community to immediately evacuate in response to an imminent threat. A template guide to the content of evacuation warning and evacuation order messages is provided at Annex E.

3.17.12 The Dungog SES Incident Controller will distribute Evacuation Warnings/Orders to:
   a. Sector Command Centres (where established)
   b. Dungog Local Emergency Operations Centre
   c. Dungog Shire Council
   d. Central Hunter and Port Stephens Police Local Area Commands
   e. Other local agencies and specified individuals

3.17.13 The Hunter SES Region Incident Controller will distribute Evacuation Warnings/Orders to:
   a. The SES State Operations Centre
   b. The Dungog SES Incident Controller
   c. Media outlets and agencies as identified in Annex D.

3.17.14 Evacuation Warnings and Orders may be delivered through:
   a. Radio and television stations (see Annex D)
   b. Doorknocking by emergency service personnel
   c. Public address systems (fixed or mobile)
   d. Telephony-based systems (including Emergency Alert)

3.17.15 The Standard Emergency Warning Signal (SEWS) may be used to precede all Evacuation Orders broadcast on radio and television stations.
3.17.16 Sector Command Centres, where established, will distribute Evacuation Orders via Emergency Service personnel in doorknock teams to areas under threat of inundation.

3.17.17 Doorknock teams will work at the direction of:
   a. The Sector Commander if a Sector Command Centre is established.
   b. The relevant Division Commander where a Sector Command Centre has not been established.

3.17.18 Field teams conducting doorknocks will record and report back the following information to their Sector Commander:
   a. Addresses and locations of houses doorknocked and/or evacuated.
   b. The number of occupants.
   c. Details of support required (such as transport, medical evacuation, assistance to secure house and/or property and raise or move belongings).
   d. Details of residents who refuse to comply with the Evacuation Order.

3.17.19 Refusal to evacuate. Field teams cannot afford to waste time dealing with people who are reluctant or refuse to comply with any Evacuation Order. These cases are to be referred to the NSW Police Liaison Officer who will arrange for Police to ensure their evacuation.

Withdrawal

3.17.20 In each Sector, evacuations will generally be carried out in stages starting from the lowest areas, low flood islands and low trapped perimeters; and progressively from higher areas.

3.17.21 The most desirable method of evacuation is via road using private transport. This may be supplemented by buses for car-less people. However, other means of evacuation may also be used if available and as necessary (eg by foot, rail, air).

3.17.22 Evacuees who require accommodation or welfare assistance will be directed to designated evacuation centres. Evacuees who have their own accommodation arrangements will not be directed to Evacuation Centres. It is not possible to determine in advance how many will fall into this category.

3.17.23 Evacuees will:
   a. Move along the suburban/regional road network to allocated Evacuation Centres.

3.17.24 **Health Services.** The Health Services Functional Area will coordinate the evacuation of hospitals, health centres and aged care facilities (including nursing homes).

3.17.25 **Schools.** School administration offices (Department of Education and Training, Catholic Education Office and Private Schools) will coordinate the evacuation of schools if not already closed.
3.17.26 **Caravan parks.** The caravan parks known to be flood liable are listed in Annex G, along with arrangements relating to the evacuation of residents and the removal of caravans.

3.17.27 **Assistance Animals, Pets and Companion Animals of Evacuees:** Assistance animals (guide dogs, hearing assistance animals, etc) will remain in the care of their owners throughout the evacuation. This includes transport and access into evacuation centres etc. Due to safety restrictions, it may not be possible to allow companion animals to accompany their owners when being transported via aircraft or flood rescue boats. Agriculture and Animal Services will make separate arrangements for the evacuation and care of companion animals.

3.17.28 **Transport and storage:** Transport and storage of furniture from flood threatened properties will be arranged as time and resources permit.

3.17.29 **Security:** The NSW Police Force will provide security for evacuated areas.

3.17.30 The Dungog SES Incident Controller is to provide the following reports to the SES Hunter SES Region Headquarters:

a. Advice of commencement of the evacuation of each Sector;
b. Half-hourly progress reports (by Sectors) during evacuations;
c. Advice of completion of the evacuation of each Sector.

**Shelter**

3.17.31 **Evacuation centres / assembly areas.** The usual purpose of evacuation centres is to meet the immediate needs of disaster affected people following evacuation from an emergency situation, not to provide them with accommodation. Evacuees will be advised to go to or be taken to the nearest accessible evacuation centre or temporary assembly area, which may initially be established at the direction of the SES Dungog Incident Controller, but managed as soon as possible by Welfare Services.

3.17.32 The following locations are suitable for use as flood evacuation centres:

a. Clarence Town School of Arts, 48 Grey Street Clarence Town
b. Dungog High School Multi Purpose Centre, Eloiza Street Dungog
c. Dungog Hospital Day Care Centre, Hospital Road Dungog
d. Doug Walters Pavilion, 60 Mackay Street Dungog.
e. Dungog Showground, Abelard Street Dungog
f. Gresford School of Arts, 42 Park Street East Gresford
g. Gresford Showground, Park Street Gresford
h. St Anne’s Church Hall, Church Street Gresford
i. Martins Creek School of Arts, 58 Grace Avenue Martins Creek
j. Paterson School of Arts, 8 Duke Street Paterson
k. Paterson Public School, Webbers Creek Road Paterson
l. Vacy Public School, Gresford Road Vacy
m. Vacy School of Arts, 779 Gresford Road Vacy

3.17.33 **Registration:** The NSW Police Force will ensure that all evacuees are registered on arrival at the designated evacuation centres.

3.17.34 **Animal shelter compounds:** Animal shelter compounds will be set up for the domestic pets and companion animals of evacuees if required. Facilities will be managed by Agriculture and Animal Services.

**Return**

3.17.35 Once it is considered safe to do so, the Dungog SES Incident Controller will authorise the return of evacuees to their normal or alternative place of residence. This decision will be made in consultation with the following:

a. Health Service Functional Area Coordinator (public health),
b. Engineering Services Functional Area Co-coordinator (electrical safety of buildings, structural integrity of levees/dams),
c. Transport Services Functional Areas Coordinator (status of railway lines),
d. Dungog Shire Council (public health, status of local roads).
e. SES Region Incident Controller

3.17.36 The return will be controlled by the Dungog SES Incident Controller and may be conducted, at their request, by the Recovery Coordinator.

**3.18 EVACUATIONS**

3.18.1 In most minor floods within the Dungog Shire Council area, no evacuations are necessary. Major floods may create a need for small numbers of evacuations from rural areas and from low-lying areas in the towns of Dungog, Paterson and Clarence Town. Evacuations may also be required from the villages and townships of Vacy, Gresford and Martins Creek if these areas are isolated by flood waters.

3.18.2 A failure of Chichester Dam would lead to the evacuation of about 100 dwellings in Dungog and approximately 24 dwellings in rural areas upstream of the town. Details of the warning and evacuation procedures for potential failure of Chichester Dam are shown in Annex H of this plan.

3.18.3 All three caravan parks located in the Dungog Shire may be inundated during flooding (Ferndale Caravan Park at Chichester via Dungog, Frank Robinson Memorial Park at Dungog and the Williams River Holiday Park in Clarence Town). Arrangements for the evacuation of residents and the removal of caravans are shown at Annex G of this flood plan.

3.18.4 Evacuations in the Dungog Shire will be controlled by the Dungog SES Local Controller.
3.18.5 The evacuation arrangements for the Dungog Shire are detailed in Annex F of this plan.

3.19 MANAGING RESUPPLY OPERATIONS

3.19.1 The SES is responsible for the coordination of the resupply of isolated communities and properties.

3.19.2 If isolation is expected to occur, residents should be encouraged to consider their needs and suitability for an unknown period of isolation.

3.19.3 If properties/communities are going to remain in locations expected to become isolated, households/retailers should be encouraged to stock up on essential supplies.

3.19.4 Where practicable, once supplies are delivered to the SES designated loading point, the Dungog SES Incident Controller will arrange for the delivery of essential foodstuffs, fuels or urgent medical supplies required by an isolated property or community.

3.19.5 All reasonable effort will be made to deliver supplies, however where necessary the SES will prioritise the delivery of items.

Resupply of Isolated Towns and Villages

**Strategy**

3.19.6 Minimise disruption upon the community by resupplying towns and villages which have become isolated as a consequence of flooding.

**Actions**

3.19.7 The SES is responsible for the coordination of the resupply of isolated communities.

3.19.8 If flood predictions indicate that areas are likely to become isolated, the Dungog SES Incident Controller should advise retailers that they should stock up.

3.19.9 When isolation occurs, retailers will be expected to place orders with suppliers where they have a line of credit and to instruct those suppliers to package their goods and deliver them to loading points designated by the SES.

3.19.10 The SES is prepared to deliver mail to isolated communities but may not be able to do so according to normal Australia Post timetables.

3.19.11 The SES will assist hospitals with resupply of linen and other consumables where able.

Resupply of Isolated Properties

**Strategy**

3.19.12 Ensure supplies are maintained to properties by coordinating the resupply of properties which have become isolated as a consequence of flooding.
**Actions**

3.19.13 The resupply of isolated properties is a common requirement during floods and coordination can be difficult because requests can emanate from a variety of sources. Isolated properties may call their suppliers direct, place their orders through their own social networks or contact the SES.

3.19.14 The principles to be applied when planning for the resupply of isolated properties are:

a. The SES will coordinate resupply and establish a schedule.

b. Some isolated households will not have the ability to purchase essential grocery items due to financial hardship. If an isolated household seeks resupply from the SES and claims to be, or is considered to be, in dire circumstances, he/she is to be referred to Welfare Services for assessment of eligibility. Where financial eligibility criteria are met, Welfare Services will assist with the purchase of essential grocery items. Welfare Services will deliver the essential grocery items to the SES designated loading point for transport.

c. Local suppliers will liaise with the SES regarding delivery of resupply items to the designated loading point.

d. Local suppliers are responsible for packaging resupply items for delivery.

3.19.15 A flowchart illustrating the Resupply Process of shown in Annex I. Please note that the flowchart outlines the resupply process but does not encompass all potential situations/outcomes.
PART 4 - RECOVERY

4.1 RECOVERY COORDINATION AT THE LOCAL LEVEL

4.1.1 The Dungog SES Local Controller will ensure that planning for long-term recovery operations begins at the earliest opportunity, initially through briefing the Local Emergency Management Committee (LEMC). As soon as possible the LEMC will meet to discuss recovery implications including the need for a Local Recovery Committee. The LEMC will consider any impact assessment in determining the need for recovery arrangements. This is conveyed in the first instance to the State Emergency Operations Controller (SEOCON) for confirmation with the State Emergency Recovery Controller (SERCON).

4.1.2 Once the need for recovery has been identified, the SERCON, in consultation with the SEOCON, may recommend the appointment of a Local Recovery Coordinator and nominate an appropriate candidate to the Minister for Emergency Services.

4.1.3 The SERCON may send a representative to the LEMC and subsequent recovery meetings to provide expert recovery advice and guidance.

4.1.4 The Dungog SES Local Controller and Local Emergency Operations Controller (LEOCON) attend recovery meetings to provide an overview of the emergency response operation.

4.1.5 The Hunter SES Region Incident Controller, the District Emergency Management Officer (DEMO) and appropriate District Functional Area Coordinators will be invited to the initial local meeting and to subsequent meetings as required.

4.1.6 The recovery committee will:
   a. develop and maintain a Recovery Action Plan with an agreed exit strategy
   b. monitor and coordinate the activities of agencies with responsibility for the delivery of services during recovery
   c. ensure that relevant stakeholders, especially the communities affected, are involved in the development and implementation of recovery objectives and strategies and are informed of progress made
   d. provide the SERCON with an end of recovery report
   e. ensure the recovery is in line with the National Principles of Disaster Recovery and the NSW tenets

4.2 RECOVERY COORDINATION AT THE DISTRICT AND STATE LEVEL

4.2.1 In the event that an emergency affects several local areas, a District Emergency Management Committee (DEMC) will meet to discuss recovery implications including the need for a District Recovery Committee. This is conveyed in the first instance to the SEOCON for confirmation with the SERCON.
4.2.2 In the event of an emergency which affects multiple districts, or is of state or national consequence, or where complex, long term recovery and reconstruction is required, it may be necessary to establish a State Recovery Committee and the appointment of a State Recovery Coordinator.

4.3 ARRANGEMENTS FOR DEBRIEFS / AFTER ACTION REVIEWS

4.3.1 As soon as possible after flooding has abated, the Dungog SES Local Controller will advise participating organisations of details of response operation after action review arrangements.

4.3.2 The Dungog SES Local Controller will ensure that adequate arrangements are in place to record details of the after action review and each item requiring further action is delegated to an organisation or individual to implement.

4.3.3 Follow-up to ensure the satisfactory completion of these actions will be undertaken by the Dungog Local Emergency Management Committee.
ANNEX A - THE FLOOD THREAT

LANDFORMS AND RIVER SYSTEMS

A1. OVERVIEW

1. The Hunter Valley is one of the prominent geographical features of eastern New South Wales extending from the coast into the highlands of the Great Dividing Range. The Dungog Shire is located in the Lower Hunter Valley and includes the following (see Map 2 for further detail):

   a) The Paterson River system (excluding some tributary headwaters) including the Allyn River. The Allyn River is the main tributary of the Paterson River.

   b) The Williams River system: From its headwaters to a point about five kilometres downstream of the village of Clarence Town. The main tributaries of the Williams River are the Chichester and Wangat Rivers which are also within the Council area.

   c) NOTE: The Wangat River is also known as the Little River.

   d) Lostock Dam situated on the Paterson River upstream of Gresford.

   e) Chichester Dam located at the confluence of the Chichester and Wangat (Little) Rivers, upstream of the town of Dungog.

2. Floods in the Dungog Shire Council area can occur on the Paterson and Williams Rivers and their tributaries (Map 2). The headwaters of these systems are in the rugged, forested country of the Barrington Plateau at altitudes ranging to above 1,500 metres. In their upper sections, both rivers are incised with narrow, steep-walled valleys, which gradually widening downstream. The catchments of the Paterson and Williams Rivers are separated by the low hills of the Williams and Wallarobba Ranges.

3. Both the Paterson and Williams Rivers flow in a generally north-south direction to join the Hunter River downstream of the Council area, the Paterson River near Morpeth and the Williams at Raymond Terrace. The channels which the Hunter, Williams and Paterson Rivers have cut in the previously submerged valley floors are not large enough to accommodate the high flow rate occurring periodically as a result of heavy rains on the catchments. As a consequence, these flows frequently spill over the banks, flooding large areas of the river flats.
4. Whilst the Paterson, Allyn, Williams and Chichester Rivers drain an area comprising little more than one-tenth of the entire Hunter Basin, they contribute almost half of its annual flow.

A2. THE PATERSON RIVER SYSTEM

1. The Paterson River is located within the Lower Hunter Valley in a long narrow catchment covering approximately 1,000 square kilometres. The headwaters of the Paterson River and its main tributary, the Allyn River, rise in the Mt. Royal and Allyn Ranges at high elevations. The two rivers flow parallel to each other in a generally southerly direction through steep-walled narrow valleys. These valleys gradually widen and become less steep in the vicinity of East Gresford where the two streams are separated by only a few kilometres. The steeper areas are characterised by forests, with pastures in the remainder of the catchment.

2. The Paterson River then flows through a major storage reservoir, Lostock Dam, before joining the Allyn River at Vacy, approximately 18 kilometres downstream of East Gresford. The Paterson River maintains its southerly course through the town of Paterson and joins the Hunter River near Morpeth in the Maitland City Council area.

3. Other tributaries of the Paterson River are the Boonabilla and Webbers Creeks. Shell Brook, Masseys and Lewingbrook Creeks are significant tributaries of the Allyn River.

4. Most of the floodplain development is in the vicinity of and downstream from the village of Vacy, with much low-lying land near the village of Paterson. Major floodplains start to develop downstream of Paterson township in the Maitland City and Port Stephens Shire Council areas.

A3. THE WILLIAMS RIVER SYSTEM

1. The upper reaches of the Williams River catchment are formed by two branches of similar size (approximately 20,000 hectares each).

2. The headwaters of the first branch, the Upper Williams River, are on the slopes of Careys Peak, Mt McKenzie and Mt Nelson in the Barrington Tops and Chichester State Forests to the east of the Allyn River Headwaters. The Upper Williams River flows through the predominantly cleared, hilly and rolling Tillegra Valley in a generally south east direction. This floodplain gradually widens and become less rugged as the river progresses.

3. The other arm formed by the confluence of the Chichester and Wangat (Little) Rivers, is located in the rugged heavily vegetated areas. These two streams merge and feed into a storage lake created by Chichester Dam, below which
the outflow waters join the Williams River at Bandon Grove, approximately 21 kilometres upstream of the town of Dungog. Downstream of this confluence, the Williams River flows in a southerly direction to Fosterton where the valley narrows slightly before taking an increasingly meandering path which reaches three kilometres in width through broad, swampy lowlands near Clarence Town.

4. Upstream of Dungog, the Williams River is joined by several other streams including Carowiry and Main Creeks from the north and Myall Creek from the west. South of Dungog, the river is joined by the Wallarobba Creek from the west and Black Camp Creek from the east. Sugarloaf, Thalaba and Verges Creeks are also tributaries of the Williams River.

5. Myall Creek, which joins the Williams River upstream of the town of Dungog, has a major influence on flooding within the town. Not only can Myall Creek flood independently of the Williams River, but this flooding can be made worse when the Williams River is in flood because discharge from the creek is restricted.

6. The flats and hills adjacent to the Williams River and its tributaries have largely been cleared and are dominated by open grassy country and open woodlands. The entire Williams River system drains a catchment area of 131,000 hectares, most of it within the Dungog Shire Council area. The catchment is approximately 100 km long and 40 km wide.

7. The Williams River joins the Hunter River at Raymond Terrace in the Port Stephens Council area.

A4. STORAGE DAMS

1. Dam locations are shown on Map 2, Dungog LGA Map.

Chichester Dam

2. Chichester Dam is owned by the Hunter Water Corporation and is a major water supply dam for communities in the lower Hunter area. It is a concrete dam located at the confluence of the Chichester and Wangat (Little) Rivers, just upstream of the town of Dungog. The outflow from the dam flows into the Williams River at Bandon Grove. It is estimated that the Chichester Dam can safely pass 4,500 cubic metres per second, equivalent to 94% of the likely flow during a PMF event.

3. A water level sensor at the dam measures water above the spillway crest. If particular pre-set levels at the spillway are reached, this triggers the transmission of alarms from the dam site to the Hunter Water Corporation (HWC) for actioning.
### Table 1: Chichester Dam Statistics

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Catchment area</td>
<td>197 square km</td>
</tr>
<tr>
<td>Available Capacity</td>
<td>21,500 megalitres</td>
</tr>
<tr>
<td>Surface area of dam</td>
<td>180 hectares</td>
</tr>
<tr>
<td>Maximum water depth</td>
<td>37 metres</td>
</tr>
<tr>
<td>Average daily supply</td>
<td>90 megalitres</td>
</tr>
<tr>
<td>Spillway</td>
<td>Is un-gated and situated in the centre of the dam wall</td>
</tr>
<tr>
<td>Spillway length</td>
<td>112 metres</td>
</tr>
<tr>
<td>Thickness crest</td>
<td>3.7 metres</td>
</tr>
<tr>
<td>Thickness bass</td>
<td>27.4 metres</td>
</tr>
<tr>
<td>Full Supply Level RL(reduced level)</td>
<td>156.2 metres ASL (above sea level)</td>
</tr>
</tbody>
</table>

#### Construction

The wall is 254m long and 43m high, and is a ‘cyclopean’ system of interlocking concrete blocks and large boulders, each approximately 230 cubic metres. The wall is anchored to the bedrock below the wall by 93 stressed tendons. The dam was completed in 1926 and has undergone a number of upgrades and modifications in 1965, 1985, 1995 and 2003.

**Lostock Dam**

4. Lostock Dam is owned by State Water and provides water for town supplies, irrigation and environmental flows. The dam is situated on the Paterson River and commands approximately 25% of the catchment upstream of Vacy. By itself, this dam is unlikely to provide sufficient flood storage to have any noticeable impacts on downstream flood behaviour because:
5. Flows from the large upstream catchment of the Allyn River would remain uncontrolled as the dam is located upstream of the confluence of the Paterson and Allyn Rivers.

6. The volume of storage required to effectively mitigate the 1% AEP flood is approximately six times the storage capacity of Lostock Dam.

<table>
<thead>
<tr>
<th>Table 2: Lostock Dam Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Catchment area</strong></td>
</tr>
<tr>
<td><strong>Available Capacity</strong></td>
</tr>
<tr>
<td><strong>Surface area of dam</strong></td>
</tr>
<tr>
<td><strong>Maximum water depth</strong></td>
</tr>
<tr>
<td><strong>Spillway capacity</strong></td>
</tr>
<tr>
<td><strong>Full Supply Level</strong></td>
</tr>
<tr>
<td><strong>Construction</strong></td>
</tr>
</tbody>
</table>

**A5. WEATHER SYSTEMS AND RAINFALL PATTERNS**

1. Average annual rainfall exceeds 1,000 mm over most of the catchment areas of the Paterson and Williams Rivers. The headwaters receive about 1,500mm per annum whilst Dungog receives the lowest rainfalls in the area (about 994mm on average. The comparatively low rainfalls received at Dungog can be attributed to the absence of the influences of the coast and highlands which affect rainfalls in the lower and upper catchments respectively.

2. Rainfall is fairly evenly distributed across the seasons, although the July-October period is generally drier than others. Heavier falls are usually recorded in the period between December and April (in part due to increased thunderstorm activity) and over 50 percent of the annual average rainfall is received during these months. High rainfall totals are also received in the Chichester catchment from January to March as a result of much higher summer rainfall in this part of the upper catchment.
3. Heavy rainfall may occur however, at any time of year and some very heavy one-day and three-day falls have been recorded. For example, Clarence Town received 525mm in a three-day period in January, 1971.

4. Long periods of drought are also experienced, and the Williams River has been known not to flow for as long as seven months at Glen Martin, downstream of Dungog.

5. Numerous flood-producing mechanisms can be responsible for flooding in the Dungog Shire Council area. These are:

   a) **East coast low-pressure systems.** When these depressions are deep and stationary, a cool, moist, south-easterly airstream produces heavy rain over the catchments of the Paterson and Williams Rivers. This mechanism is especially prevalent in the autumn and winter months, particularly between March and July, though such systems can occur at other times. Recent examples which have caused minor to major flooding within the Council area were in June 2007 and April 2008.

   b) **Ex-tropical cyclonic systems.** These systems originate in the Coral Sea and move southwards along the Queensland and NSW coasts. Occasionally, such systems move far enough south to bring heavy rain to the Dungog Shire resulting in major flooding in the Williams and Paterson rivers. Ex-tropical cyclonic systems occur in the summer and early autumn months, particularly in February and March. Ex-tropical cyclone Nancy, in February 1990, is a recent example. This weather system resulted in major flooding in the Dungog Shire causing numerous road closures, extensive inundation of rural land and inundation of properties in the town of Dungog.

   c) **Monsoonal depressions** forming over tropical Australia and moving in a south-easterly direction, depositing heavy rain as they do so and intensifying as they approach the coast. On rare occasions, such depressions may penetrate as far south and east as the Dungog Shire. These systems occur in the summer and early autumn months. The catastrophic flood in the Hunter River catchment in February, 1955 was caused by such a weather system resulting in major flooding on the Paterson River at the Gostwyck Bridge gauge and moderate flooding on the Williams River at the Mill Dam Falls gauge.

   d) **High-intensity, short-duration convective thunderstorms.** These bring intense rain for very short periods over limited areas, causing flash flooding on minor creeks and the surcharging of artificial drainage systems in built-up areas. These systems don’t last long enough or cover sufficiently large areas to cause significant rises on the Paterson and
Williams Rivers. Thunderstorm activity is largely confined to the late spring, summer and early autumn months.

**Seasonal Flood Patterns**

6. Most floods in the Dungog Shire Council area have occurred in the January to July period. Approximately 80% of the floods above minor recorded on the Paterson and Williams Rivers have occurred in the first seven months of the year as illustrated in Figures 1 to 3 below.

![Figure 1: Floods above the minor flood classification Level (4.90 metres) recorded on the Dungog Gauge (210903) since 1950 to 2008 by month](image-url)
Figure 2: Floods above the minor flood classification level (6.10 metres) recorded on the Mill Dam Falls gauge (210010) since 1928 to 2008 by month

Figure 3: Floods above the minor flood classification level (9.10 metres) recorded on the Gostwyck Bridge gauge (210902) since 1928 by month

A6. FLOOD HISTORY

1. The worst floods recorded on both the Paterson and the Williams Rivers in recent times were in March 1963 and March 1978.

2. Four floods above the major flood level (8.50 metres) have been recorded on the Dungog Gauge (210903) on the Williams River since it was installed in 1950,
as shown in Figure 4 below. The most recent major flood occurred in February 1990 and reached a peak of 9.10 metres on the Dungog gauge.

Figure 4: Floods above the major flood classification level (8.50 metres) recorded at the Dungog gauge (210903)

3. The worst flood in recent times on the Williams River at Mill Dam Falls (Glen Martin) occurred in March 1963 which reached 11.58 metres on the gauge. It is likely that the flood of 1893 was even higher.

4. Fourteen major floods have been recorded at the Mill Dam Falls gauge since 1927, with the most recent being in June 2007 (9.15 metres).

5. The February 1955 flood on the Williams River was comparatively small (8.84 metres), with less than half the flow that was recorded at Mill Dam Falls in 1963.

Figure 5: Floods above the major flood classification level (9.10 metres) recorded at the Mill Dam Falls Gauge (210010) Williams River
Twenty seven major floods have been recorded on the Gostwyck Bridge gauge on the Paterson River since its installation in 1928. The most recent of these occurred in April 2008 and reached a peak height of 12.80 metres. Much higher floods were recorded in March 1963 (14.50 metres), October 1985 (15.02 metres) and February 1990 (14.72 metres). The largest flood recorded on the Paterson River, was the March 1978 flood which peaked at 15.24 metres. This flood resulted from high rainfall over the Paterson River catchment and the duration of flooding in this event was relatively short. The 1978 flood on the Paterson River is thought to have had an Annual Exceedence Probability (AEP) of 1%.

### A7. FLOOD RECURRENCE FREQUENCY

1. The return frequency of floods in the Paterson area is shown in the Table below:

**Table 3: Return Frequency of Historical Floods at the Gostwyck Bridge Gauge (210902)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Height (metres)</th>
<th>Average Recurrence Interval (years)</th>
<th>Annual Exceedence Probability (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 1978</td>
<td>15.24</td>
<td>1 in 100</td>
<td>1%</td>
</tr>
<tr>
<td>March 1963</td>
<td>14.50</td>
<td>1 in 75</td>
<td>1.5%</td>
</tr>
<tr>
<td>February 1990</td>
<td>14.72</td>
<td>1 in 33</td>
<td>3%</td>
</tr>
</tbody>
</table>
2. Design flood heights at Dungog on the Williams River are shown in the Table below:

Table 4: Annual Exceedence Probabilities at Dungog (2008 Williams River Flood Study, BMT WBM)

<table>
<thead>
<tr>
<th>Level (mAHD)</th>
<th>Gauge Staff Height (m)</th>
<th>DNR Gauge Level (m)</th>
<th>Annual Exceedence Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>49.91</td>
<td>8.81</td>
<td>8.69</td>
<td>20%</td>
</tr>
<tr>
<td>50.35</td>
<td>9.25</td>
<td>9.13</td>
<td>10%</td>
</tr>
<tr>
<td>50.87</td>
<td>9.77</td>
<td>9.65</td>
<td>5%</td>
</tr>
<tr>
<td>51.35</td>
<td>10.25</td>
<td>10.13</td>
<td>2%</td>
</tr>
<tr>
<td>51.88</td>
<td>10.78</td>
<td>10.66</td>
<td>1%</td>
</tr>
<tr>
<td>52.40</td>
<td>11.30</td>
<td>11.18</td>
<td>0.5%</td>
</tr>
<tr>
<td>56.63</td>
<td>15.53</td>
<td>15.41</td>
<td>PMF</td>
</tr>
</tbody>
</table>

A8. FLOW CHARACTERISTICS AND TIMES

1. In general, floods within the Council areas are relatively fast to rise (generally less than twelve hours from the onset of rainfall) and fall, though inundation lasting a few days could occur in the low-lying areas in the south of the Council area in the more serious events. Warning times are short, especially in the upper areas of the Paterson and Williams river catchments.

2. Indicative peak travel times for floods are given in Table 2 below. It should be noted that flow times vary significantly from event to event and are usually shorter in the more severe floods as flow velocities and volumes will be higher.
Table 5: Indicative Peak Flow Travel Times in the Dungog Shire

<table>
<thead>
<tr>
<th>River</th>
<th>From</th>
<th>To</th>
<th>Distance (km)</th>
<th>Flow Time (hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paterson River</td>
<td>Gresford</td>
<td>Paterson</td>
<td>29</td>
<td>3</td>
</tr>
<tr>
<td>Williams River</td>
<td>Dungog</td>
<td>Clarence Town</td>
<td>35</td>
<td>3½</td>
</tr>
</tbody>
</table>

3. The construction in 1967 of Seaham Weir (downstream of the Council area) substantially increased the magnitude, frequency and duration of minor flooding on the nearby upstream farm properties on the Williams River. Although floodgates constructed in 1978 have reduced the length of flooding and resulted in no increases of large floods, minor flooding is still substantially above pre-weir conditions.

A9. EXTREME FLOODING

1. The worst floods ever recorded in the Dungog Shire Council area since European settlement should not be regarded as the most severe which can occur there. Floods worse than have been seen by present residents are possible. Such floods will be rare, but they may reach considerably greater heights than have previously been experienced. In addition, they are likely to be both faster to rise and more dangerous in terms of depth and velocity than previous events.

2. At the Gostwyck Bridge gauge on the Paterson River for example, the difference between the 1% AEP flood level (15.24 metres) and the extreme flood level is 7.5 metres (i.e.: three building storeys). Extreme flooding could lead to extensive building damage (including complete destruction) and closure of evacuation routes from isolated communities and individual houses.

3. There is a remote possibility, in an extreme flood on the Chichester and Wangat (Little) Rivers, that Chichester Dam could fail leading to unprecedented flooding in the Dungog Shire. Further information on the potential effects of dam failure flooding on the downstream community is included in Annex B. Details of the dam failure warning and evacuation procedures for Chichester Dam are contained in Annex H of this plan.
ANNEX B - EFFECTS ON THE COMMUNITY

B1. COMMUNITY PROFILE

<table>
<thead>
<tr>
<th>Census Description</th>
<th>LGA</th>
<th>Clarence Town</th>
<th>Dungog</th>
<th>Gresford East &amp; Gresford West</th>
<th>Paterson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Persons</td>
<td>8061</td>
<td>793</td>
<td>2101</td>
<td>289</td>
<td>345</td>
</tr>
<tr>
<td>Total Dwellings</td>
<td>2920</td>
<td>288</td>
<td>860</td>
<td>111</td>
<td>128</td>
</tr>
<tr>
<td>Total persons aged 65 years and over</td>
<td>1256</td>
<td>87</td>
<td>505</td>
<td>59</td>
<td>43</td>
</tr>
<tr>
<td>Total persons aged below 15 years</td>
<td>1701</td>
<td>191</td>
<td>380</td>
<td>55</td>
<td>72</td>
</tr>
<tr>
<td>Total persons with a need for assistance (profound / severe disability)</td>
<td>413</td>
<td>30</td>
<td>193</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Total persons of indigenous origin</td>
<td>175</td>
<td>24</td>
<td>62</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Total persons using Internet</td>
<td>1600</td>
<td>139</td>
<td>347</td>
<td>59</td>
<td>71</td>
</tr>
<tr>
<td>Single parent families</td>
<td>273</td>
<td>40</td>
<td>94</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>Persons living alone</td>
<td>664</td>
<td>56</td>
<td>284</td>
<td>29</td>
<td>34</td>
</tr>
<tr>
<td>Total persons who do not speak English well</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total persons who lived at a different address 5 years ago</td>
<td>2195</td>
<td>227</td>
<td>542</td>
<td>57</td>
<td>87</td>
</tr>
<tr>
<td>Households without vehicles</td>
<td>145</td>
<td>7</td>
<td>91</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Total persons residing in caravans, cabins or houseboats</td>
<td>39</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mean household size</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 6: Census of Housing and Population data (2006)

B2. GENERAL

1. Flooding can affect urban, village and rural properties in the Dungog Shire through inundation and isolation as well as closing numerous roads.
B3. FLOODING IN RURAL AREAS

1. Farmlands are especially prone to inundation, with stock and pumps needing to be relocated in advance of flooding and fences and irrigation pipes periodically being damaged. It is likely that the expansion of hobby farming and rural residential development is increasing the number of people exposed to the flood risk in the rural parts of the Council area.

2. Evacuations have not been required from rural areas in recent times, and resupply has also not been necessary though both are possible in major floods. Some rural dwellings in the Council area may also be isolated for short periods.

B4. EFFECTS OF FLOODING ON TOWNS AND VILLAGES

DUNGOG

1. Dungog (2006 Census urban area population 2,101): Flooding within the town of Dungog can result from the Williams River or Myall Creek (a tributary of the Williams River that joins the main river in town) or a combination of both. Flooding is usually made worse when both streams are in flood, as discharge from the creek into the river backs up. Inundation generally occurs on the northern and eastern edges of the town. The area around the Frank Robinson Memorial Park adjacent to the Cooreei Bridge (MR 101) begins to experience inundation at approximately 6.1 metres on the Dungog gauge (see Annex G, Arrangements for the Evacuation of Caravan Parks and the Relocation of Caravans).

2. Major flooding may necessitate evacuation from a small number of dwellings and businesses in low-lying areas in Hooke, Dowling, Brown and Windeyer Streets. Substantial flooding from Myall Creek can cause inundation of three of the lower units in the Alison Court Retirement Village and one house in Brown Street. The Fosterton Road (Dungog to Fosterton) may close at approximately 8.0 metres on the Dungog gauge, isolating up to 32 residential properties for up to 24 hours. This road can also close in a number of locations because of localised flooding.

3. Historically Dungog could have become isolated at approximately 9.0 metres on the Dungog gauge, when floodwaters closed Clarence Town Road at the Union Creek Bridge Wirragulla. The Union Creek Bridge was replaced in 2010 and the new bridge is higher than its predecessor. The height at which the new bridge will close is not known.
CLARENCE TOWN

4. Clarence Town (2006 Census urban area population 793): Some evacuations are known to have been necessary from Clarence Town in past floods. Inundation occurs from the southern edge of the village, mostly from backwater flooding but almost the entire village is on high ground which is free from flooding. The lower levels of the Williams River Holiday Park, which is adjacent to the William the IV Bridge, are inundated even before the minor flood level is reached (6.1 metres on the Mill Dam Falls gauge). The campers and temporary caravans on these lower levels will need to be moved to higher ground within the park before this height is reached. Permanent caravan sites are located on high ground within the park and will not be affected.

5. Paterson (2006 Census urban area population 345): Paterson is the largest of the flood affected settlements on the Paterson River within the Dungog Shire. It is a substantial rural village with an extensive urban zoned area located on a bend of the Paterson River on the western banks, about 23 kilometres upstream of the confluence of the Paterson and Hunter Rivers. The village can be completely isolated by road in flood events when the river reaches 11.7 metres on the Gostwyck gauge (210902). During major floods, some evacuations from Paterson may be necessary.

6. Flooding may also affect various rural residences in the vicinity of Paterson and there is significant potential for destruction of crops, pasture and infrastructure by inundation. Water will begin to overtop the North Coast Railway line (Sydney to Brisbane) at approximately 13.0 metres on the Gostwyck gauge (10.3 metres on the Paterson Gauge), resulting in the possible closure of the line.

7. Martins Creek: This village is located just north of Paterson. Some of the larger rural residential areas include those located immediately to the south of Martins Creek and to the north-west of the town of Paterson. There are also areas developed for small hobby farms, with the largest areas being located immediately to the west and north of Martins Creek, adjacent to the Paterson River. These areas may also be isolated by floods on the Paterson River. Properties in Glenburn and Keppies Roads can become isolated by ungauged creek rises along Martins Creek Road.
Schools and childcare centres

8. The following schools and childcare centres are to be contacted by the SES in the event of possible flooding:

- Clarence Town Public, Queen Street Clarence Town
- Clarence Town Pre-School, Prince Street
- Dungog Primary, Chapman Street Dungog
- Dungog High, Eloiza Street Dungog
- Dungog Pre-School, Chapman Street
- Tilly’s Play and Development Centre, Moore Street, Dungog
- St Joseph’s Primary, Brown Street Dungog
- Glen William Public, Clarence Town Road Glen William
- Gresford Public, Durham Road Gresford
- Martins Creek Public, Cook Street Martins Creek
- Paterson Public, Webbers Creek Road Paterson
- Paterson Pre-School, Webbers Creek Road
- Vacy Public, Gresford Road Vacy

Potential Effects of Dam Failure Flooding on the Community

9. There is a remote chance, in an extreme flood on the Chichester and Wangat (Little) Rivers that Chichester Dam could fail. If such an event were to occur the following areas within the Dungog Shire may be at risk from extreme flooding and substantial evacuations would be required:

a) The Ferndale Caravan Park, located just below the dam.
b) 23 dwellings located in rural areas between the dam and Dungog.
c) Frank Robinson Memorial Park (Cooreei Bridge, Dungog),
d) Up to 100 homes in the town of Dungog itself, mainly in the northern and eastern sections of town.
e) A small number of farm houses downstream of Dungog.
f) The school and a small number of homes in Clarence Town

10. Such a flood would have severe effects all the way down the Williams River to its confluence with the Hunter River.
11. Annex H of this plan contains details of the warning and evacuation procedures for residents at risk from dam failure flooding in the Dungog Shire.

**B5. ROAD CLOSURES**

1. A number of roads within the Council area can be closed by flooding, though usually only for periods of several hours. Major floods on the Lower Hunter River, however, could isolate the Council area from Maitland for a number of days due to road closures in the Maitland City Council. If roads and bridges are damaged by flood water, the period of isolation may be even longer.

2. The roads known to be subject to closure are shown in the Table below.

<table>
<thead>
<tr>
<th>ROAD</th>
<th>CLOSES AT</th>
<th>COMMENTS/ IMPLICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fosterton Road (from Dungog to Fosterton)</td>
<td>Newell Crossing at Fosterton (over the Williams River)</td>
<td>This is a loop road and access will still be available to properties until the moderate flood level of 8.0 metres on the Dungog gauge is reached and access to Dungog is lost. This will result in 32 residential properties being isolated for up to 24 hours.</td>
</tr>
<tr>
<td>Main Creek Road (from Dungog to Main Creek)</td>
<td>Carowiry Creek at The Cedars (Cox’s Bridge)</td>
<td>Up to 30 rural properties may be isolated in the Main Creek area.</td>
</tr>
<tr>
<td>Alison Road (from Dungog to Alison, off MR 101)</td>
<td>Near the Frank Robinson Memorial Caravan Park, adjacent to the Cooreei Bridge, Dungog</td>
<td>Closes between 8.5 and 9.0m on Dungog gauge (may close earlier due to local creek flooding).</td>
</tr>
<tr>
<td>Alison Road (from Dungog to Alison, off MR 101)</td>
<td>At the Thalaba Bridge, Alison</td>
<td>No isolation of Alison as there are alternate routes available.</td>
</tr>
<tr>
<td>MR 101 (from Dungog to Stroud)</td>
<td>At the Frank Robinson Memorial Caravan Park adjacent to the Cooreei Bridge, Dungog</td>
<td>May close at 7.6m on Dungog gauge.</td>
</tr>
<tr>
<td>MR 101 – Tocal Road (from Dungog to Maitland)</td>
<td>John Tucker Park (Swamp Hollow) at the dip below Albert Street, Paterson.</td>
<td>Closes at approximately 11.5 metres on Gostwyck Bridge gauge (8.6 metres on the Paterson gauge). A detour is available via Sloane Street. This detour will remain viable until the road closes at Clements Bridge.</td>
</tr>
<tr>
<td>ROAD</td>
<td>CLOSES AT</td>
<td>COMMENTS/ IMPLICATIONS</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>MR 101 - Tocal Road (from Dungog to Maitland)</td>
<td>Between 1 and 3 kilometres south of Paterson, just before Clements Bridge</td>
<td>Closes at approximately 11.8 metres on Gostwyck Bridge gauge (9.0 metres on the Paterson gauge). Alternative may be available via Paterson Road, depending on local flooding.</td>
</tr>
<tr>
<td>MR 301 (from Clarence Town to Wirragulla)</td>
<td>Union Creek Bridge, over the Union Creek (a tributary of the Williams River)</td>
<td>Historically closes at approximately 9.0 metres on Dungog gauge, however a new and higher bridge installed in 2010. The height at which this will now close is unknown. Can also close from a flood on Union Creek. This closure will isolate Dungog.</td>
</tr>
<tr>
<td>Clarence Town Road</td>
<td>At the intersection of Woerdens Road</td>
<td>Flooding occurs from the ungauged Stoney Creek and results in the closure of the road from Dungog to Clarence Town.</td>
</tr>
<tr>
<td>Pine Brush Road (from Glen William to Glen Martin)</td>
<td>Banfield Bridge, Glen Martin (over the Williams River)</td>
<td>No alternatives available.</td>
</tr>
<tr>
<td>Glen William Road (from Dungog to Glen William)</td>
<td>Glen William</td>
<td>Closes at 3.0 metres on the Mill Dam Falls gauge.</td>
</tr>
<tr>
<td>Seaham Road</td>
<td>Seaham</td>
<td>This is the normal road access between Clarence Town and Maitland/Raymond Terrace. It closes at 8.6 metres on the Mill Dam Falls gauge. An alternative route may be available via Limeburners Creek Road.</td>
</tr>
<tr>
<td>Glen Martin Road</td>
<td>Boatfall Bridge (2km from intersection with Limeburner Creek Road)</td>
<td>May close at heights above approximately 9.0 metres on the Mill Dam Falls gauge.</td>
</tr>
<tr>
<td>MR 7764: Bingleburra Road (from Dungog to Gresford)</td>
<td>0.5km from the T-intersection of the Allyn River Road.</td>
<td>Closes intermittently. Detour may be available via MR 101 and Gresford Road via Vacy.</td>
</tr>
<tr>
<td>Paterson Road (from Woodville to Paterson)</td>
<td>Dunns Creek and Iona</td>
<td>Closes at approximately 11.70 metres on the Gostwyck Bridge gauge. When this road closes, Paterson is isolated.</td>
</tr>
<tr>
<td>Woodville – Seaham Road</td>
<td>Taylors Bridge (Woodville)</td>
<td>Closes at approximately 11.70 metres on the Gostwyck Bridge gauge.</td>
</tr>
</tbody>
</table>

NOTE: The list of road closures in this table is not comprehensive and many other minor roads and private roads in the upland areas are subject to closure at low causeways and as a result of landslips, even during minor flooding. There is also a possibility that additional roads that have remained flood free in past events will be closed during major floods.
ANNEX C - GAUGES MONITORED BY THE DUNGOG SES LOCAL HEADQUARTERS

<table>
<thead>
<tr>
<th>Gauge Name</th>
<th>Type</th>
<th>AWRC No.</th>
<th>Stream</th>
<th>Flood classification</th>
<th>Reading Arrangements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lostock Dam</td>
<td>Manual</td>
<td>210102</td>
<td>Paterson River</td>
<td></td>
<td>Dam Caretaker</td>
</tr>
<tr>
<td>Lostock Dam D/S</td>
<td>Telemeter</td>
<td>210021</td>
<td>Paterson River</td>
<td></td>
<td>DWE</td>
</tr>
<tr>
<td>Upper Allyn</td>
<td>Manual</td>
<td>210072</td>
<td>Allyn River</td>
<td></td>
<td>DWE</td>
</tr>
<tr>
<td>Halton</td>
<td>Telemeter</td>
<td>210022</td>
<td>Allyn River</td>
<td></td>
<td>DWE</td>
</tr>
<tr>
<td>*‡Gostwyck Bridge</td>
<td>Telemeter</td>
<td>210902</td>
<td>Paterson River</td>
<td>9.1 10.7 12.2</td>
<td>Bureau</td>
</tr>
<tr>
<td>Gostwyck (Vacy)</td>
<td>Telemeter</td>
<td>210079</td>
<td>Paterson River</td>
<td></td>
<td>DWE</td>
</tr>
<tr>
<td>‡Paterson</td>
<td>Telemeter</td>
<td>210406</td>
<td>Paterson River</td>
<td>6.1 7.6 9.1</td>
<td>MHL</td>
</tr>
<tr>
<td>Tilligra</td>
<td>Manual</td>
<td>210011</td>
<td>Williams River</td>
<td></td>
<td>DWE</td>
</tr>
<tr>
<td>Chichester Dam</td>
<td>Manual</td>
<td>210007</td>
<td>Chichester River</td>
<td></td>
<td>DWE</td>
</tr>
<tr>
<td>*‡Dungog (Mill Race)</td>
<td>Telemeter</td>
<td>210903</td>
<td>Williams River</td>
<td>4.9 7.6 8.5</td>
<td>Bureau</td>
</tr>
<tr>
<td>*‡Mill Dam Falls</td>
<td>Telemeter</td>
<td>210010</td>
<td>Williams River</td>
<td>6.1 7.6 9.1</td>
<td>DWE</td>
</tr>
<tr>
<td>Clarence Town</td>
<td>Manual</td>
<td>210417</td>
<td>Williams River</td>
<td></td>
<td>MHL</td>
</tr>
</tbody>
</table>

Table C-1: Gauges monitored by the Dungog SES Local Headquarters

Notes: The Bureau of Meteorology provides flood warnings for the gauges marked with an asterisk (*). SES Local Flood Advices are provided for the gauges marked with a single cross (†). The SES holds a Flood Intelligence Card for the gauges marked with a double cross (‡).
ANNEX D - DISSEMINATION OPTIONS FOR SES FLOOD INFORMATION AND WARNING PRODUCTS

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

**Television Stations:**

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBN 3</td>
<td>Newcastle</td>
</tr>
<tr>
<td>Prime</td>
<td>Newcastle</td>
</tr>
<tr>
<td>Southern Cross Ten</td>
<td>Coffs Harbour</td>
</tr>
</tbody>
</table>

**Radio Stations:**

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
<th>Frequency</th>
<th>Modulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABC</td>
<td>Newcastle West</td>
<td>1233</td>
<td>AM</td>
</tr>
<tr>
<td>2HD</td>
<td>Sandgate</td>
<td>1143</td>
<td>AM</td>
</tr>
<tr>
<td>NEW FM</td>
<td>Sandgate</td>
<td>105.3</td>
<td>FM</td>
</tr>
<tr>
<td>KO FM</td>
<td>Charlestown</td>
<td>102.9</td>
<td>FM</td>
</tr>
<tr>
<td>NX FM</td>
<td>Charlestown</td>
<td>106.9</td>
<td>FM</td>
</tr>
<tr>
<td>2NUR-FM</td>
<td>Callaghan</td>
<td>103.7</td>
<td>FM</td>
</tr>
</tbody>
</table>

**Newspapers:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newcastle Herald</td>
<td>Newcastle</td>
</tr>
<tr>
<td>Maitland Mercury</td>
<td>Maitland</td>
</tr>
</tbody>
</table>

**Other Agencies:**

- All other agencies listed with responsibilities under this plan.
ANNEX E - TEMPLATE EVACUATION WARNING, EVACUATION ORDER AND ALL CLEAR
Radio stations are asked to immediately broadcast this message and repeat it.

Use of the Standard Emergency Warning Signal (SEWS) with this message is authorized.

Flood Evacuation Warning for [Enter location/s]

Authorised By: [ (name and operational position title) ]

As a result of the flood level predicted by the Bureau of Meteorology for [ location ] at [date/time] the State Emergency Service recommends that residents within the nominated areas should prepare to evacuate within the next [number] hours.

Residents should monitor the situation and be prepared to evacuate when instructed to do so. A Flood Evacuation Order will be issued by the SES if evacuation is required.

You can choose to go to friends or relatives. Alternatively, evacuation centres will be established at [ location/s ] where you can obtain temporary accommodation and other help.

To prepare for possible evacuation you should:

- Raise belongings by placing them on tables, beds and benches. Put electrical items on top. You may be able to place light weight items in the roof space.
- Collect together medicines, personal and financial documents, mementos and photos
- If possible, check to see if your neighbours need help
- Make arrangements for care of pets or other animals, or take your pets with you when you evacuate
- Take three days’ supply of clothing and medicines
- Find out where to turn off the electricity and gas
- Continue to listen to a local radio station for updates

Don’t walk ride or drive through floodwaters – this is the main cause of death and injury during floods

For emergency assistance telephone the SES on 132 500

Web site: www.ses.nsw.gov.au

End SES Flood Evacuation Warning
Flood Evacuation Order

Hunter SES Region Headquarters

72 Turton Street
METFORD NSW 2323

Issued [day] [date] at [time (am,pm)]

Radio stations are asked to immediately broadcast this message and repeat it.

Use of the Standard Emergency Warning Signal (SEWS) with this message is authorized.

Flood Evacuation Order for [Enter locations]

Authorised By: [ (name & operational position title) ]

As a result of the flood level predicted by the Bureau of Meteorology for [ location ] at [date/time] the State Emergency Service is directing residents within the nominated areas to evacuate within the next [number] hours.

Do not delay your evacuation. Roads will be congested or closed. You could become trapped and need rescue. Remaining in flooded areas is dangerous and may place your life at risk.

You can choose to go to friends or relatives. Alternatively, evacuation centres will be established at [ location/s ] where you can obtain temporary accommodation and other help.

Delete as required {If you don’t have a car, buses may operate where possible on normal routes. Special transport can also be provided on request if necessary, telephone [telephone number]}

As you evacuate you should:

- Take your important documents, mementos and photos
- Take your spare clothing and medicines
- If possible, check to see if your neighbours need help
- Turn off the electricity and gas
- Don’t walk ride or drive through floodwater
- Continue to listen to a local radio station for updates

For emergency assistance telephone the SES on 132500

SES web site: www.ses.nsw.gov.au

End SES Flood Evacuation Order

This Flood Evacuation Order remains current until the All Clear has been issued
Dam Failure Evacuation Warning

Hunter SES Region Headquarters

72 Turton Street
METFORD NSW 2323

Telephone: (02) 4931 3222
Fax: (02) 4931 3200
Email: hur.ops@ses.nsw.gov.au

Issued [day] [date] at [time (am,pm)]

Radio stations are asked to immediately broadcast this message and repeat it.

Use of the Standard Emergency Warning Signal (SEWS) with this message is authorised

Dam Failure Evacuation Warning for [Enter location/s]

Authorised by: [ name & operational position title ]

The dam failure warning system for Chichester Dam has issued an Amber Alert. The dam is not expected to fail at this level but if the water keeps rising, a Red Alert could be triggered and major flooding of the following areas is possible [location/s].

Residents should monitor the situation closely and be prepared to evacuate immediately when instructed to do so. A specific Dam Failure Evacuation Order will be issued by the SES if necessary.

If flooding does occur in your area, remaining within your home or business will be dangerous and your life may be placed at risk.

Evacuation centres will be established at [location/s] where you can obtain temporary accommodation and other help. You can also choose to go to friends or relatives.

To prepare for possible evacuation you should:

- Raise belongings by placing them on tables, beds and benches. Put electrical items on top. You may be able to place light weight items in the roof space.
- Collect together medicines, personal and financial documents, mementos and photos
- If possible, check to see if your neighbours need help
- Make arrangements for care of pets or other animals, or take your pets with you when you evacuate
- Take three days’ supply of clothing and medicines
- Find out where to turn off the electricity and gas
- Continue to listen to a local radio station for updates

Don’t walk, ride or drive through floodwaters – this is the main cause of death and injury during flooding.

For emergency assistance telephone the SES on 132 500

SES web site: www.ses.nsw.gov.au
<table>
<thead>
<tr>
<th>End Dam Failure Evacuation Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Enter update and currency details]</td>
</tr>
</tbody>
</table>
The dam failure warning system for Chichester Dam has issued a Red Alert, for areas downstream of the dam. This alert means dam failure is imminent. Failure of the dam will result in extremely dangerous flooding of the following areas [locations].

The State Emergency Service directs residents within these areas to evacuate within the next [number] hours. Do not delay your evacuation. Roads may be congested or closed. You could become trapped and need to be rescued. Remaining in flooded areas is dangerous and may place your life at risk.

Evacuation centres will be established at [location/s ] where you can obtain temporary accommodation and other help. You can also choose to go to friends or relatives.

If you don’t go to an evacuation centre please telephone [telephone number] to report your safety.

As you evacuate you should:
- Take your important documents, mementos and photos
- Take your spare clothing and medicines
- If possible, check to see if your neighbours need help
- Turn off the electricity and gas
- Do not walk, ride or drive through floodwater
- Continue to listen to a local radio station for updates

End Dam Failure Evacuation Order

This Dam Failure Evacuation Order remains current until the All Clear has been issued
ALL CLEAR

Hunter SES Region Headquarters

72 Turton Street
METFORD NSW 2323

Issued [day] [date] at [time (am,pm)]

Radio stations are asked to immediately broadcast this message and repeat it.

All Clear for [Enter locations]

Authorised By: [ (name & operational position title) ]

[Describe the condition that justify the All Clear including any special precautions/conditions and safety advices that people must take]

The SES has issued the ALL CLEAR for [enter locations] at [time / date]. This means that it is now safe to return to [enter locations].

People with access to transport can return to their properties now.

[People who/If you] require transport assistance you should contact [insert contact details] for further information on arrangement for return.

For emergency assistance telephone the SES on 132500

SES web site: www.ses.nsw.gov.au

End SES All Clear
ANNEX F - EVACUATION ARRANGEMENTS FOR THE DUNGOG SHIRE

F1. BACKGROUND

1. Major floods may create a need for small numbers of evacuations from rural areas and from low-lying properties in the townships of Dungog, Paterson and Clarence Town.

2. A failure of Chichester Dam would lead to the evacuation of about 100 dwellings in Dungog and approximately 24 dwellings in rural areas upstream of the town as well as the Ferndale Park and Frank Robinson’s Memorial Park.

3. Further details of the effects of flooding on the community are shown in Annex B of this plan.

4. Details of the warning and evacuation procedures for potential failure of Chichester Dam are included in Annex H of this plan.

F2. ARRANGEMENTS

1. Control. During floods, evacuations will be controlled by the NSW SES. Small-scale evacuations will be controlled by the Dungog SES Local Controller. Should the evacuations operations escalate beyond the capabilities of local resources, control may be handed over to the Hunter SES Region Controller.

2. Conduct. Evacuations will be controlled by the SES and conducted in four phases:
   a) Phase 1 - Warning.
   b) Phase 2 – Withdrawal.
   c) Phase 3 – Shelter.
   d) Phase 4 – Return.

3. Tasks
   a) Dungog SES Unit Members
      - Coordinate door knocking operations.
      - With the assistance of the Transport Services Coordinator, coordinate the transport for evacuees without their own transport.
   b) NSW Police Force
      - Control traffic flow from the evacuated areas.
      - At the request of the Dungog SES Local Controller, assist with the door knocking of specific households where residents refuse to leave.
• Coordinate the registration of evacuees.
• Provide security to evacuated areas.

c) **NSW Rural Fire Service**
• Assist with door knocking.
• Provide communications in isolated communities.

d) **Fire and Rescue NSW**
• Assist with door knocking.

e) **Dungog Shire Council**
• Assist with traffic control.
• Provide vehicles for the evacuation of residents and transport of property.

f) **Community Services**
• Establish evacuation centres.

### F3. DECISION TO EVACUATE

1. **The decision to evacuate.** The responsibility for issuing any general evacuation order during flooding rests with the Dungog SES Local Controller who exercises his/her authority in accordance with Section 22(1) of The State Emergency Service Act 1989. However, the decision to evacuate will usually be made after consultation with the Local Emergency Operations Controller and the Hunter SES Region Controller.

2. **When evacuation should occur.** As far as possible, evacuation will be carried out before inundation occurs.

3. **Self-motivated evacuation.** Some people will make their own decision to evacuate earlier and move to alternative accommodation using their own transport. These evacuees will be advised, via the media, to inform the Police or SES of their evacuation and their temporary address.

4. **Evacuation Triggers.** Evacuations in the Dungog Shire may be required under the following circumstances:

   a) **Caravan Parks and Camping Areas.** Evacuation of caravan parks and camping grounds in the Dungog Shire may be required even in minor flooding.

      • If a peak of 6.1 metres is predicted for the Dungog gauge, visitors to the Frank Robinson Memorial Park in Dungog must move their vans and belongings to higher ground before this height is reached as the park will be inundated.
• If a peak of 5.5 metres (below minor) is predicted for the Mill Dam Falls gauge, campers and caravans in low-lying areas in the Williams River Holiday Park will need to move to higher ground within the park.

b) **Dungog.** When heavy rainfall over the Dungog Township and Myall Creek catchment area causes local flooding. Under these circumstances, approximately nine houses, two businesses and four aged care units in Hooke, Dowling and Brown Streets Dungog may require evacuation. Flooding in these areas may be made worse by high flows on the Williams River which restrict the discharge of Myall Creek. Evacuations from these areas during Williams River flooding may be required when peaks of approximately 7.0 metres or greater are predicted on the Dungog gauge.

c) Evacuations may be required from low-lying residences on the Fosterton Road (Dungog to Fosterton Road) if a peak of 8.0 metres or greater is predicted at the Dungog gauge. This road closes at various locations between 2.0 and 8.0 metres on the Dungog gauge, isolating approximately 32 properties. No isolations result from the first road closure at 2.0 metres, however access will progressively become restricted as this road closes at further locations up to a height of 8.0 metres on the gauge. Evacuations must be complete before road access to the properties at risk is lost and it is likely that this evacuation will be carried out in stages depending upon the predicted gauge height and the location of the properties in relation to low points on the road.

d) **Dam Failure Alerts for Chichester Dam.** In the event of potential failure of Chichester Dam, evacuation of the Ferndale Park, Frank Robinson Memorial Park and a number of streets in the town of Dungog and in the village of Clarence Town would be required. Further evacuations would be necessary from rural properties along the Williams River between the dam and the confluence of the Williams River with the Hunter River.

e) **Failure of Essential Services.** Evacuation of towns and villages and rural properties may be required if essential services including power, wastewater and water fail or are likely to fail during flooding. Under these circumstances, living conditions can become uncomfortable and unsafe, even if flood waters have not inundated or isolated the town or property.

**F4. PHASE 1 - WARNING**

1. **Evacuation Warnings and Evacuation Orders.** On the receipt of flood warnings predicting peak heights of 7.0 metres and above at the Dungog gauge; the Dungog SES Local Controller will consult as necessary to determine the level of the threat and the need to consider evacuations. As soon as possible after the decision to evacuate is made, the Dungog SES Local Controller will issue
evacuation warnings to the ‘at risk’ residents, indicating what people should do before evacuating and when actually doing so.

2. **Content of Evacuation Warnings and Evacuation Orders.** A template guide to the content of evacuation warning and evacuation order messages is at Annex E. These are disseminated via:
   - The radio and TV stations listed in Annex D.
   - Door-knocks by emergency service personnel.
   - Public address systems from emergency service vehicles.
   - Telephone (including the Emergency Alert System).
   - SES Flood Bulletins

**F5. PHASE 2 – WITHDRAWAL**

1. **Introduction.** Withdrawal involves the actual removal of the community/individuals from dangerous or potentially dangerous areas to safer areas.

2. **Movement.** Evacuees are to be encouraged to move using their own transport where possible. The Dungog SES Local Controller will arrange transport for those people without their own vehicles.

3. **Special Needs Groups.** A large proportion of Dungog’s aged population resides in Dowling and Brown Streets. Alison Court Retirement Village is situated in Brown Street, Dungog.

4. **Animals.** Assistance animals (guide dogs, hearing assistance animals, etc) will remain in the care of their owners throughout the evacuation. This includes transport and access into evacuation centres etc. Due to safety restrictions, it may not be possible to allow companion animals to accompany their owners when being transported via aircraft or flood rescue boats. Industry and Investment NSW will make separate arrangements for the evacuation and care of companion animals.

5. **Doorknocking.** Field teams conducting doorknocks will record and report the following information back to the Operations Centre:
   - Addresses and locations of houses doorknocked and/or evacuated.
   - The number of occupants.
   - Details of support required (such as transport, medical evacuation, assistance to secure house and/or property and raise or move belongings).
   - Details of residents who refuse to comply with the evacuation order.
6. **Refusal to evacuate.** Field teams should not waste time dealing with people who are reluctant or refuse to comply with any evacuation order. These cases should be referred to the LEOCON who will arrange for the NSW Police Force to ensure their evacuation.

7. **Security.** The NSW Police Force will provide security for evacuated areas.

8. **Transport and storage.** Transport and storage of furniture from flood threatened properties will be arranged as time and resources permit.

---

**F6. PHASE 3 – SHELTER**

1. **Evacuation centres.** The usual purpose of evacuation centres is to meet the immediate needs of victims, not to provide them with accommodation. Evacuees will be advised to go to or be taken to the nearest accessible evacuation centre, which may initially be established at the direction of the Dungog Local Controller but managed as soon as possible by Community Services. Any or all of the sites listed in table 5 below may be used as evacuation centres:

<table>
<thead>
<tr>
<th>Town/Village</th>
<th>Evacuation Centre</th>
<th>Address</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarence Town</td>
<td>Clarence Town School of Arts</td>
<td>48 Grey Street Clarence Town</td>
<td></td>
</tr>
<tr>
<td>Dungog</td>
<td>Multi Purpose Centre, Dungog High School</td>
<td>Eloiza Street Dungog</td>
<td></td>
</tr>
<tr>
<td>Dungog</td>
<td>Dungog Hospital/Day Care Centre</td>
<td>Hospital Road Dungog</td>
<td>Includes facilities for elderly evacuees</td>
</tr>
<tr>
<td>Dungog</td>
<td>Doug Walters Pavilion</td>
<td>60 Mackay Street Dungog</td>
<td></td>
</tr>
<tr>
<td>Dungog</td>
<td>Dungog Showground</td>
<td>Abelard Street, Dungog</td>
<td>Camping &amp; caravans only.</td>
</tr>
<tr>
<td>Gresford</td>
<td>Gresford School of Arts</td>
<td>42 Park Street East Gresford</td>
<td>RSL Club and preschool adjoining.</td>
</tr>
<tr>
<td>Gresford</td>
<td>St Anne’s Church Hall</td>
<td>Church Street Gresford</td>
<td></td>
</tr>
<tr>
<td>Gresford</td>
<td>Gresford Showground</td>
<td>Park Street Gresford</td>
<td>Camping &amp; caravans only.</td>
</tr>
<tr>
<td>Martins Creek</td>
<td>Martins Creek School of Arts</td>
<td>58 Grace Avenue Martins Creek</td>
<td></td>
</tr>
<tr>
<td>Paterson</td>
<td>Paterson Public School</td>
<td>Webbers Creek Road Paterson</td>
<td></td>
</tr>
<tr>
<td>Paterson</td>
<td>Paterson School of Arts Hall</td>
<td>Duke Street Paterson</td>
<td></td>
</tr>
<tr>
<td>Vacy</td>
<td>Vacy Public School</td>
<td>Gresford Road Vacy</td>
<td></td>
</tr>
<tr>
<td>Vacy</td>
<td>Vacy School of Arts</td>
<td>779 Gresford Road Vacy</td>
<td></td>
</tr>
</tbody>
</table>
2. **Action on arrival.** On arrival, evacuees will be:
   - registered;
   - medically checked, if necessary; and
   - provided with their immediate welfare needs.

3. **Registration.** The NSW Police Force will ensure that all evacuees are registered on arrival at the designated evacuation centres.

4. **Animal shelter compounds.** Animal shelter compounds will be set up for the domestic pets and companion animals of evacuees. These facilities will be operated by Dungog Shire Council.

**F7. PHASE 4 – RETURN**

1. Once it is considered safe to do so, the Dungog SES Local Controller will authorise the return of evacuees to their normal or alternative place of residence. This decision will be made in consultation with appropriate officers in regard to matters such as the electrical safety of buildings.

2. The return will be controlled by the Dungog SES Local Controller and may be conducted, at his/her request, by Community Services.
ANNEX G - DETAILS OF THE DAM FAILURE WARNING SYSTEM FOR CHICHESTER DAM

This Annex describes the downstream consequences and specific notification and warning arrangements for the failure of Chichester Dam and should be read in conjunction with the response arrangements detailed in this plan.

G1. INTRODUCTION

1. The Chichester Dam is located just upstream of Dusodie at the confluence of the Chichester and Wangat (Little) Rivers. It has been calculated that the Chichester Dam can safely pass flows up to 4,500 cubic metres per second which represents more than 94% of the likely flow in a Probable Maximum Flood (PMF) event at the dam site. Such a flow is more than four times that which has ever been recorded at the dam which was built in 1925. However, in an extreme flood on the Chichester and Wangat Rivers, the Chichester Dam could fail.

2. The dam is relatively small (21,500 megalitres) and in the worst case it is possible that within four hours of the onset of rain it could fill and overtop the dam to the point of causing failure.

3. It must be stressed that following the remedial work which has been carried out at the dam (post-tensioning, raising of the wall, sealing the left abutment and construction of flood aprons), the chance of dam failure is extremely small. Such a flood has an Annual Exceedence Probability (AEP) of 0.01% or one chance in 10,000 every year.

4. This annex describes the warning system for the dam and the evacuation arrangements which have been devised to accompany its operation.

G2. EFFECTS OF DAM FAILURE FLOODING

1. If dam failure were to occur, the flooding throughout the course of the Williams River within the Dungog Shire would be of unprecedented severity. Flood flows would be of much higher velocity than have been recorded in past events on the river and the flooding would reach much higher levels, more rapidly than has ever been experienced in the past. It is also likely that flood waters would remain in the lower-lying rural areas from Dungog to below Clarence Town for longer periods than would be the case in episodes of non-dam failure flooding.

2. It has been estimated that flood levels will increase between five and eight metres above existing flood conditions at Dungog. In the town of Dungog, inundation would occur from low velocity backwater flooding which would
generally be of short duration but water levels would rise more rapidly than in any previous floods in the area.

**G3. FLOOD TRAVEL TIMES**

1. If such an extreme event were to occur, the flood wave resulting from failure would reach Dusodie after 10 minutes, Bandon Grove after 30 minutes and Dungog after one hour.

**G4. RESIDENTS AT RISK FROM DAM FAILURE FLOODING**

1. Should failure of Chichester Dam occur, the Ferndale Caravan Park, located just below the dam, 24 dwellings located in rural areas between the dam and Dungog and about 100 dwellings in Dungog itself would be at risk of flooding. Streets in the northern and eastern sections of the town of Dungog (Dowling, Hooke, Brown, Mackay, Abelard, Lord, Windeyer, Myles and Gladstone Streets and Fosterton Road) could be affected. In addition, a few farmhouses further downstream could be at risk of inundation.

2. At Clarence Town, the school and nearby residential areas at the lower end of King Street (between Sheriff and Marshall Streets) could also experience inundation in a dam failure flood.

3. Such a flood would have severe effects all the way down the Williams River to its confluence with the Hunter River. Apart from causing substantial evacuations, the flood waters would remain in the lower-lying rural areas from Dungog to below Clarence Town for longer periods than would be the case in flooding without dam failure.

**G5. PURPOSE OF THE EARLY WARNING SYSTEM**

1. The Dam Failure Warning System for properties downstream of Chichester Dam is designed to provide early warning of very severe floods which could cause the dam to fail. The system involves a water level sensor at the dam which measures water above the spillway crest. If particular pre-set levels at the spillway are reached, this triggers the transmission of alarms from the dam site to the Hunter Water Corporation (HWC) for actioning.

**G6. THE WARNING SYSTEM – OPERATION AND PROCEDURES**

1. The warning system consists of:
   
a) A water level sensor at Chichester Dam to measure the depth of water above the spillway crest.

   b) At pre-set water levels at the dam, an automatic audible alarm sounds at the dam, an alarm is triggered on the SCADA system to HWC’s Dispatch
Centre and a message is paged to the residence of the dam caretaker on duty (via modem).

c) Arrangements by which HWC advises Dungog SES Local Headquarters as floods are rising. These arrangements apply in relatively minor flood events as well as in the more severe ones.

d) Arrangements for advising people who would need to evacuate if dam failure becomes possible.

**G7. EVACUATION ARRANGEMENTS**

1. People advised to evacuate will be asked to move to pre-designated locations as follows:

   a) Residents of Ferndale Park camping ground below Chichester Dam evacuate to Chichester Dam Office above the dam.

   b) Residents of 23 dwellings between Chichester Dam and Dungog evacuate to either the Chichester Dam Office above the dam or to high ground around their properties.

   c) Residents of approximately 100 dwellings in and downstream of Dungog evacuate to an evacuation centre in Dungog or Clarence Town (see list included in Annex F of this plan).

**G8. EVACUATION PROCEDURE SUMMARY**

1. A summary of procedures for notification, warning and evacuation is provided in the table on the following page.

   Note that:

2. Actions indicated as occurring at particular water levels may be brought forward if the development of a flood event warrants it.

3. The 'minimum time until failure' is an estimate of the worst case dam failure flood.
<table>
<thead>
<tr>
<th>ALERT LEVEL</th>
<th>DEFINING CONDITION</th>
<th>ARRANGEMENTS AND ACTIONS</th>
<th>PEOPLE AT RISK</th>
</tr>
</thead>
</table>
| GREEN       | Water level at RL 156.2m (spillway crest) | HUNTER WATER CORPORATION (HWC)  
DUNGOG SES LOCAL UNIT.  
HUNTER SES REGION HEADQUARTERS (RHQ)  
COMMUNITY SERVICES | N/A  
N/A  
N/A  
N/A |
| “WHITE” Emergency Services notification level and initial warning. Requires notification to downstream landholders. | Water level at RL 157.0m (0.8m above spillway crest). Flow = 180 cubic metres per second. | HUNTER WATER CORPORATION (HWC)  
DUNGOG SES LOCAL UNIT.  
HUNTER SES REGION HEADQUARTERS (RHQ)  
COMMUNITY SERVICES | Informed of WHITE alert by HWC.  
Issues Evacuation Warning to Ferndale Park Camping Ground and eight properties between dam and Bandon Grove by telephone  
Advises Hunter RHQ, the Dungog Shire LEOCON and other emergency services of the situation at the dam.  
Informed of WHITE alert by Dungog SES Local Unit.  
Informed of WHITE alert by SHQ.  
Ensures appropriate warnings and advices are broadcast over local radio stations.  
Ensures Ferndale Park Camping Ground and eight properties between dam and Bandon Grove notified of WHITE alert. |

N/A  
N/A  
N/A  
At risk people at Ferndale Park Camping Ground prepare to evacuate.  
At risk people at the other eight properties between dam and Bandon Grove to monitor the situation and prepare to evacuate.
### ALERT LEVEL

<table>
<thead>
<tr>
<th>DEFINING CONDITION</th>
<th>ARRANGEMENTS AND ACTIONS</th>
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<tbody>
<tr>
<td>“ORANGE” Evacuation Level for Ferndale Park Camping Ground and eight properties between dam and Bandon Grove</td>
<td><strong>HUNTER WATER CORPORATION (HWC)</strong>&lt;br&gt;Water level at RL 157.7m (1.5m above spillway crest).&lt;br&gt;Flow = 450 cubic metres per second.&lt;br&gt;♦ Dam Maintenance Employee advises the Dungog SES Local Unit of the water level at this time and rate of rise at the dam every 30 minutes from this point in time&lt;br&gt;♦ Emergency Response Coordinator confirms water level with SES SHQ Communications Centre.</td>
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<td><strong>DUNGOG SES LOCAL UNIT.</strong>&lt;br&gt;♦ Informed of ORANGE alert by HWC.&lt;br&gt;♦ Issues Evacuation Order for Ferndale Park Camping Ground and eight properties between dam and Bandon Grove.&lt;br&gt;♦ Issues Evacuation Warnings for 15 at-risk properties between Bandon Grove and Dungog and other low-lying areas within Dungog.&lt;br&gt;♦ Advises Hunter RHQ, the Dungog Shire LEOCON and other emergency services of the situation at the dam.&lt;br&gt;♦ Confirms evacuation of Ferndale Park Camping Ground and eight properties between dam and Bandon Grove.&lt;br&gt;♦ Assemble and brief door-knocking teams for Dungog.&lt;br&gt;♦ Monitor properties in low-lying areas of the town of Dungog.</td>
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<td><strong>HUNTER SES REGION HEADQUARTERS (RHQ)</strong>&lt;br&gt;♦ Informed of ORANGE alert by HWC Local Unit.&lt;br&gt;♦ Informed of ORANGE alert by SHQ.&lt;br&gt;♦ Ensures appropriate warnings and advice are broadcast over local radio stations.&lt;br&gt;♦ Ensures Ferndale Park Camping Ground and eight properties between dam and Bandon Grove evacuated.&lt;br&gt;♦ Ensures Evacuation Warnings issued to properties between Bandon Grove and Dungog.</td>
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<td><strong>COMMUNITY SERVICES</strong>&lt;br&gt;♦ Make evacuation centres ready at Dungog and Clarence Town.&lt;br&gt;♦ Receive evacuees and provide welfare and support as necessary.</td>
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<td></td>
<td><strong>PEOPLE AT RISK</strong>&lt;br&gt;♦ Immediately evacuate Ferndale Park Camping Ground and eight properties between dam and Bandon Grove to the appropriate evacuation points.&lt;br&gt;♦ All at risk properties between Bandon Grove and Dungog and low lying areas within Dungog are to prepare to evacuate.</td>
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<td>ALERT LEVEL</td>
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<td>♦ Dam Maintenance</td>
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<td>Employee advises</td>
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<td>SES Local Unit.</td>
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<td>♦ Advise Hunter</td>
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<td>Region RHQ, the</td>
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<td>Dungog Shire</td>
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<td>♦ Residents in low-lying areas</td>
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<td>ALERT LEVEL</td>
<td>DEFINING CONDITION</td>
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<td>DAM FAILURE</td>
<td>Evacuation level for areas downstream of Dungog.</td>
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<td>Water level at RL 160.9m (4.7m above spillway).</td>
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<td>Flow = 3200 cubic metres per second.</td>
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<td>This can occur at any time after the spillway crest level at the dam is reached.</td>
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Table G-1: Notification, warning and evacuation arrangements for a potential failure of Chichester Dam
ANNEX H - ARRANGEMENTS FOR THE EVACUATION OF CARAVAN PARKS AND THE RELOCATION OF CARAVANS

H1. GENERAL

1. The following caravan parks and camping grounds are flood liable:
   a) Ferndale Park Chichester Road, via Dungog.
      - The park has 30 powered caravan sites and there is normally a minimum of 12 caravans left on site. The maximum number of people in both caravans and tents during peak season would be 300.
      - The park is situated on the banks of the Chichester River and is just below Chichester Dam. Sections of the park could be subject to inundation when the dam is at White Alert. This may involve relocations to higher ground within the park.
      - A failure of Chichester Dam would completely inundate the park and evacuations would be necessary.
   b) Frank Robinson’s Memorial Park, Dowling Street, Dungog.
      - This park has eight powered sites and 20 tent sites.
      - At gauge heights of 6.1 metres and higher on the Dungog gauge, the whole park will be inundated by water from the Williams River and visitors must be warned to evacuate the park prior to this height being reached.
   c) Williams River Holiday Park, Clarence Town.
      - The park can hold up to 300 people in tents and caravans.
      - The permanent van sites within the park are not flood liable.
      - The temporary caravan and camping areas may be inundated. If a peak of 5.5m (below Minor) is predicted on the Mill Dam Falls gauge, temporary caravans and campers in low lying areas will need to move to higher ground within the park.
      - Information and advice should be provided to the manager/owner by telephone, by the Dungog SES Local Controller.

H2. ADVISING PROCEDURES

1. Caravan Park and camping ground managers will ensure that the owners and occupiers of caravans and campers are:
   a) Made aware that the caravan park/camping ground is flood liable by:
b) Handing a printed notice to occupiers taking up residence. The notice will indicate that the caravan park/camping ground is liable to flooding and outline the evacuation and van relocation arrangements.

c) Displaying this notice prominently in each caravan where this is relevant.

2. Made aware that if they are expecting to be absent from their caravans for extended periods, they must:

   a) Provide the manager with a key to the van enclosed in a sealed envelope. If staying at the Frank Robinson Memorial Park, a key to the van, enclosed in a sealed envelope is to be left with the Dungog Visitors Information Centre.

   b) Provide a contact address and telephone number.

   c) Inform the manager if a vehicle will be required to relocate the van during flood time.

   d) Leave any mobile van in a condition allowing it to be towed in an emergency (i.e.: tyres inflated, jacks wound up, personal effects secured and annexes and lines for water, sewer, electricity and gas readily detachable).

3. Informed when a flood is rising. At this time, occupiers and campers will be advised to:

   a) Ensure that they have spare batteries for their radios.

   b) Listen to a local radio station for updated flood information.

   c) Prepare for evacuation and relocation.

4. The Dungog SES Local Controller will ensure that the managers of caravan parks and camping grounds are advised of flood warnings and the details of any evacuation order.

**H3. EVACUATION OF OCCUPANTS AND RELOCATION OF VANS**

1. Caravan park managers should consider installing flood depth indicators and road alignment markers within their caravan parks.

2. When an evacuation order is given occupiers of non-movable vans should:

   a) Secure their vans by tying them down to prevent flotation.

   b) Isolate power to their vans.

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

   d) Lift the other contents of their vans as high as possible within the van.
e) Move to the designated evacuation centre if they have their own transport, or move to the caravan office to await transport.

3. Where possible, vans that can be moved will be relocated by their owners. Park managers will arrange for the relocation of mobile vans whose owners do not have a vehicle. Council and SES personnel may assist if time and resources permit and may be able to provide additional vehicles. Vans are to be moved to the following locations:

a) Caravans from Ferndale Park can either relocate to Chichester Dam or the Dungog Showground, corner of Abelard and Chapman Streets, Dungog.

b) Caravans from the Frank Robinson’s Memorial Park can be relocated to the Dungog Showground, corner of Abelard and Chapman Streets, Dungog.

c) Caravans from the Williams River Holiday Park will be relocated to higher ground within the park.

4. Campers should pack their tents and belongings and move to higher ground or evacuate the park altogether.

5. Caravan Park and camping ground managers will:

a) Ensure that their caravan park/camping ground is capable of being evacuated within one (1) hour.

b) Advise the Dungog SES Local Controller of:
   • The number of people requiring transport.
   • Details of any medical evacuations required.
   • Whether additional assistance is required to effect the evacuation.

c) Check that no people remain in non-removable caravans that are likely to be inundated.

d) Inform the Dungog SES Local Controller when the evacuation of the caravan park/camping ground has been completed.

e) Provide the Dungog SES Local Controller with a register of people that have been evacuated.

H4. RETURN OF OCCUPANTS AND VANS

1. The Dungog SES Local Controller, using Council resources as necessary, will advise when it is safe for the caravan parks/camping grounds to be re-occupied.

2. Caravans will be towed back to the caravan parks by van owners or by vehicles and drivers arranged by the park managers. Again, Council and SES personnel will assist if available.
ANNEX I - RESUPPLY FLOWCHART

Figure 7: Resupply Flowchart. Please note that the flowchart outlines the resupply process but does not encompass all potential situations and/or outcomes.
ANNEX J - DAM FAILURE ALERT NOTIFICATION ARRANGEMENTS FLOWCHART

Notification Arrangements for Potential Dam Failure

DAM OWNER/OPERATOR ISSUES WHITE/AMBER/RED ALERT

PRIMARY CONTACT

SES State Operations Communications Centre (OCC)
Ph: (see note 4 below)

ALTERNATE CONTACT (To be used ONLY if SES cannot be contacted)

District Emergency Management Offices
(DEMOns)
Confirm DEMOns is aware of dam failure warning and that SES is Combat Agency

NSW SES Region HQ Operations Controller / After Hours Duty Officer

Duty Officer, State Emergency Operations Centre (SEOC)
Ph: (see note 4 below)

Local Emergency Operations Controller(s) (LEOCON/s)

Response Controlled through Local Flood Plans with reference to DSEP for potential inundation area

Activation of the Local Flood Plan includes notification to the LEOCON and activation of supporting arrangements within the Local DISPLAN

NOTES:
1. Dam owners should only contact the SEOC if the SES State Operations Communications Centre (OCC) cannot be contacted.

2. The first priority for notification is to contact the next SES HQ or the next level of EOC down the flowchart. The second notification should always be across the flowchart to confirm the message is received. If the first priority notification fails or is not picked up for any reason, the second priority notification should be made before any further attempts to contact the first priority (this is why an alternate or backup system of contacts is in place).

3. The triple zero (000) number for emergency services should not be used unless contact cannot be made with SES or the SEOC, as it is likely the triple zero (000) operators will have difficulty dealing with the very unusual case of potential or actual dam failure.

4. Dam owners must contact the SES State Headquarters during the preparation of the DSEP to obtain the appropriate emergency contact numbers.
ANNEX K - MAPS

MAP 1 - HUNTER RIVER BASIN
MAP 4 - CLARENCE TOWN