WAGGA WAGGA LOCAL FLOOD PLAN

A SUB-PLAN OF THE
WAGGA WAGGA LOCAL DISASTER PLAN
(DISPLAN)

ENDORSED

Chair, Local Emergency Management Committee

SES Local Controller

JANUARY 2006 EDITION

TO BE REVIEWED NO LATER THAN JANUARY 2011
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**AMENDMENT LIST**

Suggestions for amendments to this plan should be forwarded to:

The Local Controller  
Wagga Wagga State Emergency Service  
208 Fernleigh Rd, Wagga Wagga 2650

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
ARI  Average Recurrence Interval (Years)
ALERT  Automated Local Evaluation in Real Time
AWRC  Australian Water Resources Council
CB  Citizens’ Band
CBD  Central Business District
CBM  Commonwealth Bureau of Meteorology
DCF  Dam Crest Flood
DSC  Dams Safety Committee
DISPLAN  Disaster Plan
DIPNR  Department of Infrastructure Planning and Natural Resources
DoCS  Department of Community Services
DSEP  Dam Safety Emergency Plan
DVR  Disaster Victim Registration
GIS  Geographic Information System
GRN  Government Radio Network
HF  High Frequency
MR  Main Road
PMF  Probable Maximum Flood
RTA  Roads and Traffic Authority
SES  State Emergency Service
SEWS  Standard Emergency Warning Signal
UHF  Ultra High Frequency
VHF  Very High Frequency
VRA  Volunteer Rescue Association
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.

**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.

**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.

**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.

**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 Commonwealth 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 liable 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.

**Flood Plan.** A plan that deals specifically with flooding and is a sub-plan of a Disaster Plan. Flood plans describe agreed roles, responsibilities, functions, actions and management arrangements for the conduct of flood operations and for preparing for them.

**Floodplain Management Plan.** A plan developed in accordance with the principles and guidelines in the New South Wales Floodplain Management 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.

**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 BoM will also attempt to estimate the magnitude of likely flooding in terms of the adopted flood classifications. Flood Watches are normally issued 24 to 26 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.

**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.

**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 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 Commonwealth 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.

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

**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.

**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 Wagga Wagga City Council area. 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 Murrumbidgee SES Division Controller and the Wagga Wagga City Council Local Emergency Management Committee.

1.3 Area Covered By The Plan

1.3.1 The area covered by the plan is the Wagga Wagga City Council area which includes the major urban centre of Wagga Wagga, the towns of Tarcutta, Forest Hill and Uranquinty, the villages of Humula, Gumly Gumly, Ladysmith, Mangoplah, Collingullie, Galore, Oura and Currawarna and intervening rural areas.

1.3.2 The council area includes the Murrumbidgee River from Eringoarrah to Berembed Weir. It also includes tributary creeks and streams entering the river between these locations. These are Tarcutta, Kyeamba, Houlaghans, Sandy, Bullenbung and Beaver / Old Man Creeks.

1.3.3 The council area and its principal rivers and creeks are shown in Map 1.

1.3.4 The council area is in the Murrumbidgee SES Division and for emergency management purposes is part of the Riverina Emergency Management District.

1.4 Description Of Flooding And Its Effects

1.4.1 The nature of flooding in the Wagga Wagga City 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 Local Disaster Plan (DISPLAN). 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 **Wagga Wagga SES Local Controller** The Wagga Wagga SES Local Controller is responsible for dealing with floods as detailed in the State Flood Plan, and will:

a. Control flood 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.

b. Maintain a Local Headquarters at 208 Fernleigh Road, Wagga Wagga in accordance with the SES Controllers’ Handbook and the SES Operations Manual.

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

d. Develop and operate a flood intelligence system.

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

f. Participate in floodplain management initiatives organised by the Wagga Wagga City Council.

g. Coordinate a public education program so that residents of flood prone areas can be made aware of the flood threat.

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

i. Activate this flood plan and begin operations.

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

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 flood bound people and/or communities.

o. 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.

p. 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.
• Moving farm animals.

q. Assist the Wagga Wagga City Council to organise temporary repairs or improvements to levees.

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

s. If SES resources are available, assist with emergency fodder supply operations conducted by NSW Department of Primary Industries.

t. If SES resources are available, assist the Police and Council with road closure and traffic control operations.

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

v. Submit Situation Reports to the Murrumbidgee SES Division Headquarters and agencies assisting within the council area.

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

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

y. Ensure that appropriate debriefings are held after floods.

z. Assist in the establishment and deliberations of the Recovery Coordinating Committee after floods.

1.5.3 Wagga Wagga SES Unit Members

a. Carry out flood response tasks. These may include:
• The management of the Wagga Wagga SES Local Headquarters Operation Centre.
• Gathering flood intelligence.
• Flood rescue.
• Evacuation.
• Providing immediate welfare for evacuated people.
• Delivery of warnings and information.
• Resupply.
• Levee monitoring.
• Sandbagging.
• Lifting and/or moving household furniture and commercial stock.
• Moving farm animals.
• Assisting in repairing or improving levees.
• Assisting with road closure and traffic control operations.
• Assisting with emergency fodder supply operations.

b. Assist with flood preparedness activities.

c. Undertake training in flood operations.

1.5.4 Wagga Wagga City Local Emergency Operations Controller (LEOCON)

a. Monitor flood operations.

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

1.5.5 NSW Police Service, Wagga Wagga

a. Assist with the delivery of evacuation warnings.

b. Assist with the conduct of evacuation operations.

c. Conduct road and traffic control operations in conjunction with council and/or the Roads and Traffic Authority (RTA).

d. Coordinate the registration of all evacuees.

e. Secure evacuated areas.

1.5.6 Wagga Wagga City Council Local Emergency Management Officer (LEMO)

a. Provide executive support to the LEOCON in accordance with the Wagga Wagga City Council Local Disaster Plan.
b. At the request of the SES, advise appropriate agencies and officers of the activation of this plan.

1.5.7 Wagga Wagga City Council

a. Maintain a plant and equipment resource list for the council area.
b. Contribute to the development and implementation of a public education program on flooding within the council area.
c. At the request of the SES, deploy personnel and resources for flood related activities.
d. Close and reopen council roads (and other roads nominated by agreement with the RTA) and advise the Wagga Wagga SES Local Controller, the Police and people who telephone the council for road information.
e. Provide filled sandbags to urban and village areas in which flooding is expected.
f. Provide back-up radio communications.
g. Provide for the management of health hazards associated with flooding. This includes maintaining water supply and sewerage systems and removing debris and waste.
h. Ensure premises are fit and safe for reoccupation and assess any need for demolition.
i. Deploy manpower and resources for levee maintenance, repair or improvement tasks.
j. Ensure that all levee floodgates operate properly.
k. Assist with the removal and return of caravans from flood prone parks.

1.5.8 Commonwealth Bureau of Meteorology (CBM)

a. Provide Flood Watches for the Murrumbidgee River Basin.
b. Provide Flood Warnings, incorporating height-time predictions, for the Jugiong (410022), Gundagai (410004) and Wagga Wagga (410001) river gauges.

1.5.9 NSW Fire Brigades, Wagga City and Turvey Park

a. Assist with the delivery of evacuation warnings.
b. Assist with the conduct of evacuations.
c. Provide equipment for pumping flood water out of buildings and from low-lying areas.
d. Assist with the removal and return of caravans to and from caravan parks.

e. Assist with clean up operations including the hosing out of flood affected buildings and the washing down of streets and footpaths.

f. Consider the deployment of Fire Brigade resources to isolated areas based on requests from the SES.

1.5.10 **Rural Fire Service (RFS), Wagga Wagga Fire Control**

a. Provide personnel in rural areas and villages to:
   - inform the Wagga Wagga SES Local Controller about flood conditions and response needs in their own communities, and
   - disseminate flood information.

b. Provide personnel and high-clearance vehicles for flood related activities.

c. Assist with the delivery of evacuation warnings.

d. Assist with the conduct of evacuations.

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

f. Provide back-up radio communications.

g. Assist with the removal and return of caravans to and from caravan parks.

h. Assist with clean up operations including the hosing out of flood affected buildings and the washing down of streets and footpaths.

i. Assist with resupply operations.

1.5.11 **Volunteer Rescue Association (VRA), Wagga Wagga**

Assist the Wagga Wagga SES Local Controller with flood operations.

1.5.12 **Country Energy**

a. Provide advice to the Wagga Wagga SES Local Controller of any need to disconnect power supplies or of any timetable for reconnection.

b. Clear or make safe any hazard caused by power lines or electrical reticulation equipment.

c. Assess the necessity for and implement the disconnection of customers’ electrical installations where these may present a hazard.
d. Advise the public with regard to electrical hazards during flooding and to the availability or otherwise of the electricity supply.

e. Inspect, test and reconnect customers’ electrical installations as conditions allow.

1.5.13 Telstra, Wagga Wagga

a. Maintain telephone services.

b. Repair and restore telephone facilities damaged by flooding.

c. Provide additional telecommunications support for the Wagga Wagga SES Local Headquarters as required.

1.5.14 NSW Department of Primary Industries, Wagga Wagga

a. Provide immediate animal relief services and continuing rehabilitation assistance to primary producers.

b. Assist with the support of participating and supporting organisations, provide animal care services for wildlife, domestic animals and companion animals (pets) of evacuees.

c. Provide financial, welfare and damage assessment assistance to flood affected farm people.

d. In the event of evacuations, set up and operate animal shelter compound facilities for the domestic pets and companion animals of evacuees.

1.5.15 Department of Community Services (DoCS), Wagga Wagga

a. Manage evacuation centres

b. Provide welfare services as stated in the Wagga Wagga City DISPLAN for flood affected people including stranded travellers.

1.5.16 Ambulance Service of NSW, Wagga Wagga

a. Assist with the evacuation of elderly and/or infirm people.

b. Assist with the evacuations of patients from hospitals and nursing homes as required.

c. Consider the deployment of ambulance resources to isolated areas based on requests from the SES.

1.5.17 Roads and Traffic Authority (RTA), Wagga Wagga

Close and reopen the Hume Highway, Sturt Highway and Olympic Way affected by flood waters and advise the Wagga Wagga SES Local Controller.
1.5.18 Rail Corp

a. Close and re-open railway lines as necessary and advise the Wagga Wagga SES Local Controller.

b. Arrange trains for evacuations, commuting and or resupply purposes.

1.5.19 Transport Services Coordinator

Arrange transport facilities for evacuations and/or commuting purposes.

1.5.20 Department of Education and Training NSW, Wagga Wagga:

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.

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

c. Assist with the coordination of the evacuations of schools.

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

1.5.21 Catholic Education Office, Wagga Wagga:

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.

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

c. Assist with the coordination of the evacuations of schools.

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

1.5.22 Private Schools and Childcare Centres:

a. The following schools and child care centres are to be contacted by the SES in the event of imminent flooding:

- Wagga Wagga Christian College
- The Riverina Anglican College
- Lutheran Primary School
- ABC Development Learning Centre, Morgan St
- Hampden Bridge Childcare Centre Inc, Fitzmaurice St
- Possums Playground Occasional Care, Forsyth St
- Wagga Wagga Family Day Care, Cnr of Baylis St and Morrow St
- Wiradjuri Aboriginal Corporation Community Childcare Centre, Docker St
- Central Wagga Child Care Centre, Evans St
- Koala Pre School, Trail St
- Kookaburra Pre School, Coleman St
- Rainbow Lorikeet Pre School, George St (North Wagga)
- St Lukes Pre School, Docker St

b. When notified the schools and childcare centres should:
   - Liaise with the Wagga Wagga SES Local Controller and consider the early release of students whose travel arrangements are likely to be disrupted by flooding and/or road closures.
   - Assist with the evacuation of pupils.
   - Pass information to school bus companies on expected or actual impacts of flooding.

1.5.23 *Riverina Australian Rules Football Club, Wagga Wagga:*

Provide space for an evacuation centre.

1.5.24 *Charles Sturt University, Estella:*

Provide space for an evacuation centre and for the storage of furniture belonging to North Wagga Wagga residents.

1.5.25 *SES Flood Wardens, Oura, Mangoplah, Flowerdale, Gumly Gumly, Ladysmith, Uranquinty, Collingullie, Currawarna and Galore:*

Act as the SES representatives for their respective communities.

a. Inform the Wagga Wagga SES Local Controller about flood conditions and response needs.

b. Conduct flood operations as directed by the Wagga Wagga SES Local Controller.

c. Disseminate flood information, including flood and evacuation warnings.
1.5.26 Caravan Park Proprietors: Easts Van Parks Riverview, Horseshoe Motor Village & Wagga Wagga Beach Caravan Park.


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 when floods are rising.

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.

1.5.27 Talbingo Dam (Snowy Hydro Ltd.):

a. Maintain and operate the Dam Failure Warning System for Talbingo Dam.

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

c. Provide information of the likely affects of dam failure.

1.5.28 Blowering Dam (State Water):

a. Monitor storage levels at Blowering Dam.

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

c. Liaise with SES on significant water releases from Blowering Dam, both controlled and uncontrolled.

d. Provide information on the likely affects of dam failure to the SES.

1.5.29 Service and Sporting Clubs, Rotary Club of Wagga Wagga, Lions Club of Wagga Wagga, Quota International, South Wagga Rotary, Kooringal Rotary, Sunrise Rotary, South Wagga Apex. Assist with:

a. Lifting and/or moving household furniture and commercial stock.

b. Management of facilities for the storage of household furniture and commercial stock.

c. Monitoring of levees.

d. Sandbagging.
e. Delivery of evacuation warnings.

f. Conduct of evacuations.

1.5.30 **Fearnes Buses.** Assist with the provision of:

Bus transport and drivers for evacuation, resupply or commuting purposes.

**1.6 Cross-Border Assistance Arrangements**

1.6.1 A local cross-border mutual assistance arrangement exists in which the Wagga Wagga SES and the Junee SES, The Rock SES will deploy resources to support each other.

1.6.2 Operations involving the Oura area will be conducted by the Junee SES Unit when the community is isolated by flood waters from Wagga Wagga
PART 2 - PREPAREDNESS

2.1 Maintenance Of This Plan

2.1.1 The Wagga Wagga 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:
      
      • After each flood operation.
      
      • When significant changes in land-use or community characteristics occur.
      
      • When new information from flood studies become available.
      
      • When flood control or mitigation works are implemented or altered.
      
      • 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 Management

2.2.1 Participation in floodplain management activities organised by the Wagga Wagga City Council produces the following emergency management benefits:

   a. Sources of information for flood intelligence.
   
   b. Development of warning services.
   
   c. Development of strategies for flood mitigation.
   
   d. Development of strategies to reduce damage through better design and location of present and future residential, commercial and community land uses.

2.2.2 The Wagga Wagga SES Local Controller will ensure that the SES:

   a. Participates in floodplain management committee activities when those committees are formed.
b. Consults with the flood prone community about the nature of the flood problem and its management.

c. Informs the Murrumbidgee SES Division Headquarters of involvement in floodplain management activities.

2.3 Development Of Flood Intelligence

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

a. Inundation (leading to a need for evacuation and/or property protection).

b. Isolation (creating a need for resupply and/or rescue).

c. Disruption to community activities (for example, disruptions brought about by the loss of transport routes).

2.3.2 Flood intelligence is obtained by the process of gathering and assessing information for the purpose of estimating the likely impacts of pending and future floods. It is used to facilitate operational decision making and the provision of warnings and information to agencies and the public.

2.3.3 The SES will develop and maintain a flood intelligence system incorporating the following elements:

a. Records of gauges monitored. These gauges are listed in Annex C along with flood classifications, ownership details, reading arrangements and other information.

b. Flood intelligence records. These include records of the effects of flooding at different heights, the peak heights reached by past floods and the peak height relationship between these gauges (Note: These may not be available in all cases). This intelligence is collected from agencies and the public.

c. SES Flood Wardens. A network of community members on the Murrumbidgee River who regularly report on flood levels and effects.

2.4 Development Of Warning Systems

2.4.1 The SES will establish and/or maintain a 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 (ie. 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 Wagga Wagga SES Local Controller, with the assistance of the Wagga Wagga City Council, the Murrumbidgee SES Division 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.

2.6 Training

2.6.1 Throughout this document there are references to functions that must be carried out by the members of the Wagga Wagga SES. The Wagga Wagga 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 Wagga Wagga SES Local Controller is responsible for maintaining the condition and state of readiness of SES equipment and the Wagga Wagga SES Local Headquarters.
PART 3 - RESPONSE

3.1 Control

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.

3.2 Operations Centres

3.2.1 The Wagga Wagga SES maintains an Operations Centre at 208 Fernleigh Road, Wagga Wagga.

3.2.2 The Wagga Wagga City Council Emergency Operations Centre is located at 208 Fernleigh Road.

3.2.3 The SES will operate an after hours duty officer system whenever flood operations are not being conducted.

3.3 Liaison

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

3.3.2 Liaison officers are to:

a. have the authority to deploy the resources of their parent organisations at the request of the Wagga Wagga SES Local Controller,

b. advise the Wagga Wagga SES Local Controller on resource availability for their service, and

c. be able to provide communications to their own organisations.

3.4 Communications

3.4.1 The primary means of office-to-office communications is by telephone, facsimile and e-mail.

3.4.2 The primary means of communication to and between deployed SES resources is by mobile phone and local SES UHF radio network.

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

3.4.4 Back-up communications are provided as follows:

a. Rural Fire Service UHF radio network

b. Wagga Wagga City Council UHF radio network
3.5 Start of Response Operations

3.5.1 Response operations will begin:

a. On receipt of a Bureau of Meteorology Preliminary Flood Warning, Flood Warning, Flood Watch or Severe Weather Warning for Flash Flooding.

b. On receipt of dam-failure warnings for Burrinjuck, Blowering or Talbingo Dams

c. When other evidence leads to an expectation of flooding within the council area.

3.5.2 On activation, contact with the Bureau of Meteorology to discuss the development of flood warnings will normally be through the Murrumbidgee SES Division Headquarters.

3.5.3 The following persons and organisations will be advised that response operations have been initiated regardless of the location and severity of the flooding anticipated:

a. Wagga Wagga City Council Local Emergency Operations Controller (for transmission to the NSW Police Local Area Command Headquarters).

b. Wagga Wagga SES Unit.

c. Murrumbidgee SES Division Headquarters.

d. Wagga Wagga City Council Local Emergency Management Officer (for transmission to appropriate council officers and departments).

e. Wagga Wagga City Council Mayor.

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

3.6 Flood Intelligence

3.6.1 Sources of flood intelligence during times of flooding are:

a. Bureau of Meteorology. The Bureau provides:

- Flood Watches, which give an early appreciation of developing meteorological situations that could lead to flooding. These are normally provided on a whole-catchment basis for the Murrumbidgee River catchment.
• Flood Warnings, which include river height readings and height-time predictions. The gauges for which predictions are provided for are listed in Annex C.

• Severe Weather Warnings for Flash Flooding

• Key gauge level information is available from the BoM website, www.bom.gov.au.

b. **Murrumbidgee SES Division Headquarters.** The Division Headquarters provides information on flooding and its consequences, including those in nearby council areas.

c. **Wagga Wagga City Council.** The Wagga Wagga City Council will advise of road closures within the council area.

d. **Talbingo, T3 Intake Structure and Jounama Dam-Failure Warning System.** This system provides information on Talbingo and Jounama Dams and the likely affects of failure. This system is operated by Snowy Hydro Ltd.

e. **Blowing Dam Storage Level Recorder.** This system provides storage level information on Blowing Dam. This system is operated by State Water.

f. **Burrinjuck Dam Storage Level Recorder.** This system provides storage level information on Burrinjuck Dam. This system is operated by State Water.

g. **Department of Infrastructure Planning and Natural Resources, Leeton Office.** This office will advise flow rates and rates of rise for the Murrumbidgee River. Daily river level report are available on-line at http://waterinfo.dlwc.nsw.gov.au/riis/drr/index.html.

h. **Active Reconnaissance.** The SES monitors the following areas:

• Flowerdale flats
• Main town levee
• Eastern section of the Sturt Hwy
• Wagga Wagga Beach Caravan Park
• North Wagga levee
• Gumly Gumly levee
• Uranquinty levee
• Tarcutta levee
3.7 Preliminary Deployments

3.7.1 When flooding is expected to be severe enough to cut road access to towns, within towns and/or rural communities, the Wagga Wagga SES Local Controller will ensure that resources are in place for the distribution of foodstuffs and medical supplies to the areas that could become isolated.

3.7.2 When towns and villages are expected to become isolated the Wagga Wagga SES Local Controller will advise appropriate agencies so that resources (including sandbags, fire fighting appliances, ambulances, etc.) are deployed to ensure that operational capability is maintained. Pre-deployments may be required for up to one week.

3.8 Protection of Resources

3.8.1 When the Wagga Wagga levee is predicted to overtop or fail, the Wagga Wagga SES Local Controller will advise emergency services and essential agencies located on the floodplain to relocate resources to flood free locations.

3.9 Warnings

3.9.1 Warning services operate according to the following arrangements:

a. The Wagga Wagga SES Local Headquarters:
   - Provides advice to the Murrumbidgee SES Division Headquarters on current and expected impacts of flooding.
   - Coordinates the delivery of warnings to the community by door-knocking, telephone, mobile public address systems, local radio stations and two-way radio.
   - Confirmation of evacuation actions

b. The Murrumbidgee SES Division Headquarters issues warning information in the form of SES Division Flood Bulletins to media organisations and agencies listed in Annex D.

3.9.2 Warnings are provided as follows:

a. **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 Wagga Wagga SES Local Controller will advise the Murrumbidgee SES Division Headquarters which will issue SES Livestock and Equipment Warnings to radio stations as indicated in Annex D. The Murrumbidgee SES also
maintains a list of landholders along the Murrumbidgee River and its tributaries.

b. **Bureau of Meteorology Flood Watches.** If there are signs of impending floods, Flood Watches will be incorporated in SES Flood Bulletins released to radio stations by the Murrumbidgee SES Division Headquarters.

c. **Bureau of Meteorology Flood Warnings.** Flood Warnings are issued for the locations detailed in Annex C. On receipt of such warnings, the Wagga Wagga SES Local Controller will:

- Advise the Wagga Wagga City Council and the Wagga Wagga City Council Local Emergency Operations Controller.
- Provide the Murrumbidgee SES Division Headquarters with information for inclusion in SES Flood Bulletins on the estimated impacts of flooding at the predicted heights.

d. **Bureau of Meteorology Severe Weather Warnings for Flash Flooding.** Provides 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. This product may be issued concurrently with flood warnings and flood watches. Severe weather warnings for flash flooding will be incorporated into SES Flood Bulletins issued by the Murrumbidgee SES Division Headquarters.

e. **SES Local Flood Advices.** The SES may issue Local Flood Advices for the gauges listed in Annex C. These are issued in SES Division Flood Bulletins and/or direct from the Wagga Wagga SES Local Controller via facsimile.

f. **Evacuation Warnings.** These will be issued when an evacuation is required. A template guide to the content of evacuation warning messages is at Annex E.

g. **Dam-Failure Warnings.** Special arrangements apply in the case of severe flooding that may have the potential to cause the failure of Burra, Talbingo and Blowering Dam. Details of these arrangements are described in Annex I. Dam failure warnings will be issued to media outlets by the Murrumbidgee SES Division Headquarters.

h. **Standard Emergency Warning Signal (SEWS).** This signal may be played over radio and television stations to alert communities to Evacuation Warnings, Special Warnings or Dam-Failure Warnings. Approval to use the signal will be obtained by the Wagga Wagga SES Local Headquarters from the Murrumbidgee SES Division Headquarters.
3.10 Information

3.10.1 The Murrumbidgee SES Division Headquarters issues SES Flood Bulletins to media outlets and agencies on behalf of all SES units in the Division. SES Flood Bulletins contain the following information relating to all council areas in which flooding is occurring:

a. Current warnings, together with indications of the likely impact of flooding at any predicted heights.

b. Current flood heights and flood behaviour.

c. Details of conditions and closures of main roads.

d. Advice on safety matters and means of protecting property.

3.10.2 The Murrumbidgee SES Division Headquarters maintains pre-written flood bulletins for key heights.

3.10.3 The Wagga Wagga SES Local Headquarters provides a ‘phone-in’ information service for the community in relation to current warnings, river heights, flood behaviour, road conditions and closures of local and main roads and advice on safety matters and means of protecting property.

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

a. The Wagga Wagga SES Local Controller provides road status reports for main roads in the council area to the Murrumbidgee SES Division Headquarters Road Information Cell and to the Wagga Wagga Police Local Area Command Headquarters. The Road Information Cell obtains information from the Police, Council and RTA.

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

c. The Road Information Cell also provides a ‘phone-in’ service to the public.

3.10.5 The Wagga Wagga SES Local Controller is to ensure that the Murrumbidgee SES Division Controller is regularly briefed on the progress of operations and on future resource needs.

3.11 Road Control

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

3.11.2 The council closes and re-opens its own roads. The council also is responsible for closing the Sturt Highway within the urban centre of Wagga Wagga.
3.11.3 The NSW Police has the authority to close and re-open roads but will normally only do so (if the council or the RTA have not already acted) if public safety requires such action.

3.12 Traffic Control.

3.12.1 In the event of major flooding, the Wagga Wagga SES Local 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).

3.12.2 Assistance will be provided by the Wagga Wagga City Council in the erection of barricades and signs.

3.13 Flood Rescue

3.13.1 The Wagga Wagga SES Local Controller controls flood rescues, which are carried out using high clearance vehicles, flood boats and (under some circumstances) helicopters.

3.13.2 Additional flood boats and crews can be requested through the Murrumbidgee SES Division Headquarters.

3.14 Evacuations

3.14.1 Evacuation arrangements for the Wagga Wagga City Council area are listed in Annexes F to O.

3.15 Essential Services

3.15.1 The Wagga Wagga SES Local Controller will ensure that the providers of essential services (electricity, water, sewerage, medical and public health) are kept advised of the flood situation. Essential service providers must keep the Wagga Wagga SES Local Controller abreast of their status and ongoing ability to provide those services.

3.15.2 Infrastructure at risk of flood damage is listed in Annex B.

3.16 Logistics

3.16.1 The Wagga Wagga SES Local Headquarters maintains a small stock of sandbags, and back-up supplies are available through the Murrumbidgee SES Division Headquarters. A motorised sandbag-filling machine is available from Murrumbidgee Division Headquarters. Alternatively, local concrete trucks may be used.
3.17 Aircraft Management

3.17.1 Aircraft can be used for a variety of purposes during flood operations including evacuation, rescue, re-supply, reconnaissance and emergency travel. However, should only be used if other transport means are not available or not suitable.

3.17.2 Air support operations will be conducted under the control of the Murrumbidgee SES Division Headquarters, which may allocate aircraft to units if applicable. The Wagga Wagga SES Local Controller may task aircraft allocated by the Division Headquarters for flood operations within the council area.

3.17.3 Access from Wagga Wagga to the Wagga Wagga Airport at Forest Hill is flood free via Inglewood Rd.

3.18 Resupply

3.18.1 Resupply arrangements are detailed in Annex Q.

3.19 Assistance for Animals

3.19.1 Matters relating to the welfare of livestock, companion animals and wildlife (including feeding and rescue) are to be referred to NSW Department of Primary Industries.

3.19.2 Requests for emergency supply and/or delivery of fodder to stranded livestock, or for livestock rescue, are to be passed to NSW Department of Primary Industries.

3.20 Stranded Travellers

3.20.1 Flood waters can strand travellers. Travellers seeking assistance will be referred to Department of Community Services for the arrangement of temporary accommodation.

3.21 End of Response Operations

3.21.1 When response operations have concluded other agencies and the community will be advised. The recovery committee if established will be briefed on the situation and any need to issue an ‘all clear’ for evacuees to return to their homes.
PART 4 - RECOVERY

4.1 Welfare

4.1.1 The Department of Community Services will provide for the long-term welfare of people who have been evacuated.

4.2 Recovery Coordination

4.2.1 The Wagga Wagga SES Local Controller will ensure that planning for long-term recovery operations begins at the earliest opportunity. This is to be done by briefing the chairman of the Wagga Wagga City Council Local Emergency Management Committee on the details of the flooding and assisting in the establishment of a Recovery Coordinating Committee.

4.2.2 The Recovery Coordinating Committee is to prepare an outline plan for recovery operations and be prepared to recommend how such operations would best be controlled and Coordinated.

4.3 Debriefing Arrangements

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

4.3.2 The Wagga Wagga SES Local Controller will ensure that adequate arrangements are in place to record details of the debrief 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 Wagga Wagga City Council Local Emergency Management Committee.
ANNEX A - THE FLOOD THREAT

THE MURRUMBIDGEE CATCHMENT

Description

1. The Murrumbidgee River rises in the Snowy Mountains at an altitude of approximately 1,600 metres in steep, high-rainfall country. The river flows initially southeast and turns north near Cooma. It flows through the Australian Capital Territory and west into Burrinjuck Dam. Numerous tributaries above the dam join the river.

2. From Burrinjuck Dam the river flows through undulating foothills country to the urban centre of Wagga Wagga, being joined by several tributaries along the way. The most important of these is the Tumut River which contains the Blowering and Talbingo dams and which enters the Murrumbidgee above Gundagai. The Tumut River, although only occupying five percent of the total Murrumbidgee catchment area, contributes about a third of river runoff.

3. Other tributaries entering the river above Wagga Wagga are Jugiong, Muttama, Adelong, Billabong, Hillas, Tarcutta and Kyeamba creeks. On these tributaries and on the main river above Wagga Wagga there are various areas of floodplain.

4. From Wagga Wagga the river traverses open plains country. This lower section of the valley within the council area, most of which is below 200m elevation, is very flat and features numerous anabranches and effluent creeks. The main tributaries joining the river within the council area below Wagga Wagga are Houlaghans, Sandy and Bullenbung Creeks. A significant tributary of the Bullenbung Creek is Burkes Creek. Beaver/Old Man Creek is an anabranch of the river, which is joined by Bullenbung Creek.

5. Kyeamba Creek is a tributary to the Murrumbidgee which flows through the Ladysmith area. The creek has two arms the Kyeamba Creek and Obriens Creek.

6. Tarcutta Creek is a tributary of the Murrumbidgee River which flows through the foothills east of Wagga Wagga in the Tarcutta and Boorambola areas. The creeks has three main tributaries, Oberne Creek, Umbargo Creek and Keajura Creek.

7. Marshalls Creek is a small tributary of the Murrumbidgee River which flows through the eastern sections of Wagga Wagga. The headwaters of the catchment are located in the Gregadoo Hills, where water than flows into Lake Albert and then into Marshalls Creek.
Characteristics of Flooding

8. Floods upstream of Wagga Wagga may last several days and the areas that are inundated are not large. Flood waters take a couple of days to travel from Burrinjuck Dam to Wagga Wagga, however this time may be shorter in more severe floods.

9. The storage dams located in the upper Murrumbidgee valley can affect the severity of flooding on the Murrumbidgee. In particular these dams can reduce the peak flood discharge, resulting in lower peak flood heights but longer flood durations. This may be done by deliberately storing the flood peak for later release, or by pre-releasing water to create extra space in the dam ahead of an approaching flood. These actions, however, do not mitigate floods and their effectiveness is dependent upon dam levels.

10. Downstream from Wagga Wagga the area subject to inundation is very extensive, water movement is slow and inundation can last for several weeks.

11. Numerous small creeks flowing through the council area tend to rise and fall quickly. There are no warning systems for any creeks within the council area.

12. At Wagga Wagga, the rate of rise of floods can vary significantly between events, although is generally slow and delayed, but can be up to 30cm per hour in large events.

Flood Mitigation Systems

13. Flood mitigation is in the form of several levees. These levees are built in Wagga Wagga, North Wagga, Gumly Gumly, Uranquinty and Tarcutta.

14. The Wagga Wagga levee shown in Map 5 protects Central Wagga Wagga and the Central Business District up to a height of 10.7 metres (Design Height) on the Wagga Wagga gauge (1 in 60 year flood). Potential levee overtopping locations include Copland St and Hammond Ave, the sections upstream and downstream of Hampden Bridge, and some sections near Narrung St. Assuming that sandbagging at Copland St and Hammond Ave is effective, the first place that would be overtopped is the section between Wagga Beach and the Hampden Bridge. This would then be followed by the section downstream of Hampden Bridge and then a low point near Narrung St. It should be noted, however, that the actual overtopping location will be determined by the actual flood gradient (Source: Wagga Wagga Flood Study, 2004)

15. Water overtopping the levee would move to the lowest lying areas of Central Wagga, including the western areas near the Olympic Way and Flowerdale Lagoon. Once the levee is over-topped it will take approximately 12 hours to inundate most of Central Wagga Wagga.

16. Storm water runoff within Central Wagga Wagga cannot drain during floods due to the obstruction of the levee, hence resulting in ponding inside the levee. To manage this problem the Wagga Wagga City Council maintains and operates various pumping stations around Central Wagga Wagga.
17. The Wagga Wagga levee has approximately 0.3 to 0.5 metres of freeboard.

18. The **North Wagga levee** shown in Map 5 is a ring levee which surrounds North Wagga. The levee protects North Wagga from flooding up to a height of 9.9 metres (Design Height) on the Wagga Wagga gauge. The levee has approximately 0.3 metres of freeboard.

19. The **Gumly Gumly levee** shown in Map 5, has a design of height of 9.6 metres. This levee has approximately 0.15 to 0.3 metres of freeboard.

20. The **Uranquinty levee**, located on the south side of Uranquinty is designed to prevent inundation from Sandy Creek up to the 1% AEP flood level. There is no flood warning system on Sandy Creek, hence the levee must be carefully monitored to assess the risk of overtopping during flood events.

21. The **Tarcutta levee**, located in the southern section of the town, protects Tarcutta from flooding up to a gauge height of 3.7 metres on the Tarcutta gauge. This levee has no freeboard.

22. Though levees are designed to prevent inundation, they do not offer absolute protection and will be over-topped during severe floods, necessitating evacuations. Levees can also fail through piping, seepage and erosion of the levee.

**Peak Height Flow Times**

23. The following times are indicative of peak height flow times. Note that times listed may be shorter for severe floods.

   a. Burrinjuck Dam to Wagga Wagga: 42 to 76 hours
   b. Tumut to Wagga Wagga: 33 to 61 hours
   c. Gundagai to Wagga Wagga: 19 to 52 hours
   d. Wagga Wagga to Narranda: 3.5 to 5 days

24. During extreme floods a minimum of 20 hours warning time should be available.

**Storage Dams**

25. **Talbingo Dam**, consists of a 161 metre high rockfill structure with a central clay core. The dam has a gross capacity of 921,400 megalitres, with an active capacity of 160,400 megalitres. Releases from the dam are through the Tumut 3 Intake Structure, which has a discharge capacity of 1.133 megalitres per second. The dam’s spillway is an ungated crest in a deep unlined channel excavation on the western rim of the reservoir, with a discharge capacity of 4.248 megalitres per second. Discharges via the spillway are avoided whenever possible as it has no scour protection. Releases from Talbingo Dam flow through Jounama Pondage to Blowering Dam. Talbingo Dam is normally operated as close to full supply as practicable.
26. **Jounama Pondage**, consists of a 44 metre rockfill structure with a central clay core. The dam has a gross capacity of 43,500 megalitres with an active capacity of 27,800. Jounama has a gated spillway capable of discharging 3,965 megalitres per second. The dam collects discharges from Talbingo Dam, Jounama and Buddong Creeks to form a pumping pool to aid in electricity production at Tumut 3 Power Station and maintain a small degree of flow regulation into Blowering Dam. It is subjected to moderate water level fluctuations and currents which make it unsuitable for recreation. Due to Jounama’s small size the likely impact of its failure would be minimal with discharges being absorbed by Blowering Dam.

27. **Blowering Dam**, completed in 1968, consists of a 112 metre high earth and rockfill structure with a central clay core, concrete chute spillway, four outlet valves and a 80MW hydro-electric power station. At full supply level the lake formed has a surface area of 4460 hectares. The dam has a catchment area of 1,630 square kilometres and a storage capacity of 1,630,000 megalitres. A further 190,000 megalitres is available for flood storage to reduce flooding in downstream areas. The dam stores water that has been released from upstream storages. The large amount of water released from those storages to meet the demand for electricity in winter, is held in Blowering until summer when it is needed by farmers for irrigation. Releases are controlled by the four outlet valves and the Hydro-electric power station, which have a combined capacity of 23,000 ML/day. Blowering’s spillway has a capacity of 203,000 ML/day. The dam can safely pass a flood of only half the PMF without overtopping the dam wall. Releases flow down the Tumut River, towards Tumut.

28. **Burrinjuck Dam**, is a concrete gravity dam located in a narrow gorge downstream of Canberra. The dam was constructed between 1907 and 1928 to store water for irrigation in the Murrumbidgee Irrigation Areas and for hydro-electric power generation. The Dam’s catchment is 13,000 square kilometres and a submerged storage area, at full supply level of 5500 ha. The maximum height of the dam wall is 93m above the lowest point of the foundation. The spillways are located on either side of the main wall and consist of side channel spillways at the left and right abutments and three spillway chutes controlled by sector gates. Since upgrade works in 1994 the dam is no longer considered to be deficient and is now capable of safely passing the PMF.

29. The shear magnitude of the volume of floodwaters generated by the catchment means that it is impossible to significantly reduce peak flood flows, even with the existence of large dams within the catchment.

**Weather Systems and Flooding**

30. Floods within the Wagga Wagga council area can be caused by the following types of weather systems;

   a. Sequences of southern air masses coming from the Antarctic region and moving in north easterly direction over the catchment. This is the principal flood producing mechanism and operates primarily between the months of April and October.
b. Low-pressure systems located over the east coast of Australia and causing moist airflows over the Snowy Mountains.

c. Short duration, high intensity convective thunderstorms that occur over small areas during summer. These may cause town drainage systems to surcharge and minor creeks to rise rapidly. Such thunderstorms do not cause mainstream riverine flooding.

Flood History

31. There is a recorded history of flooding on the river going back to the mid-19th century, but reliable records are available only since 1891. At Wagga Wagga, about twenty floods since 1844 have reached the currently defined major level (9.6 metres). The highest recorded flood at Wagga Wagga since European settlement occurred in 1844 when a height of 10.97 metres is thought to have been reached. The second highest flood was experienced in July 1853 when a height of 10.9 metres is believed to have been reached.

32. The largest flood in recent times occurred August 1974, reaching a height of 10.75 metres at Wagga Wagga. This flood was the largest since 1853. During this event Burrinjuck Dam had been filled to capacity by rainfall greater than 300 mm and record snowfalls. North Wagga Wagga, unprotected by levees, suffered inundation, necessitating evacuations, with flood depths in some areas reaching more than 1 metre. Evacuations also took place in Gumly Gumly, whilst some residents in central and west Wagga Wagga prepared to leave their homes, fearing that levees would overtop or fail.

33. The following table lists floods, which have reached heights greater than 9 metres at the Wagga Wagga gauge.

<table>
<thead>
<tr>
<th>Date</th>
<th>Height (m)</th>
<th>Date</th>
<th>Height (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 January 1844</td>
<td>10.97</td>
<td>28 October 1934</td>
<td>9.14</td>
</tr>
<tr>
<td>25 June 1852</td>
<td>10.67</td>
<td>24 March 1950</td>
<td>10.13</td>
</tr>
<tr>
<td>3 July 1853</td>
<td>10.90</td>
<td>6 April 1950</td>
<td>9.07</td>
</tr>
<tr>
<td>4 July 1867</td>
<td>9.32</td>
<td>19 June 1952</td>
<td>9.78</td>
</tr>
<tr>
<td>4 April 1870</td>
<td>10.67</td>
<td>29 June 1956</td>
<td>9.60</td>
</tr>
<tr>
<td>15 May 1870</td>
<td>9.91</td>
<td>24 October 1959</td>
<td>9.14</td>
</tr>
<tr>
<td>5 June 1870</td>
<td>9.22</td>
<td>30 August 1974</td>
<td>10.74</td>
</tr>
<tr>
<td>20 September 1879</td>
<td>9.35</td>
<td>7 September 1974</td>
<td>9.19</td>
</tr>
</tbody>
</table>
Table 1 Historical flood heights greater than 9 metres at the Wagga Wagga gauge.

<table>
<thead>
<tr>
<th>Date</th>
<th>Height (m)</th>
<th>Date</th>
<th>Height (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>29 June 1891</td>
<td>10.47</td>
<td>28 October 1975</td>
<td>9.55</td>
</tr>
<tr>
<td>23 April 1894</td>
<td>9.17</td>
<td>20 October 1976</td>
<td>9.35</td>
</tr>
<tr>
<td>7 July 1900</td>
<td>9.96</td>
<td>16 April 1989</td>
<td>9.41</td>
</tr>
<tr>
<td>29 May 1925</td>
<td>10.11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Floods in Wagga Wagga have historically occurred during late autumn, winter and early spring months. The following graph shows the seasonal distribution of floods greater than 9 metres at the Wagga Wagga gauge.

Figure 1 Seasonal distribution of floods greater than 9 metres at the Wagga Wagga gauge.

**Extreme Flooding**

On rare occasions, flooding of extreme proportions can occur. Extreme floods can reach far greater heights than previously recorded, flooding areas without any previous flood history. In addition, such floods are generally both faster to rise and more dangerous in terms of depth and velocity than previous floods. Extreme flooding can result from dam failure, extreme rainfall events or both. The estimated probable
maximum flood height for Wagga Wagga is estimated at 16 metres on the Wagga Wagga gauge. Such a flood would over-top the Wagga Wagga levee by five metres.

36. Flooding occurring as result of dam failure can be of even greater severity, resulting in large-scale property destruction. The resulting flood waters would be deep and fast flowing, consisting of large amounts of debris. The probability of dam failure occurring is very low. Three dam failure scenarios exist as follows:

a. Failure of Blowering Dam

b. Failure of Talbingo Dam

c. Failure of Talbingo Dam resulting in the failure of Jounama and Blowering dams (Cascade Failure).
ANNEX B - EFFECTS OF FLOODING ON THE COMMUNITY

COMMUNITY PROFILE

1. According to the 2001 census the total population of the Wagga Wagga City council area is approximately 55,056 people, of this number approximately 44,451 live in Wagga Wagga. The following table provides a brief overview of the demographic characteristics of the Wagga Wagga City council area.

<table>
<thead>
<tr>
<th>Census Description</th>
<th>Result (2001 Census)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total persons</td>
<td>55,056</td>
</tr>
<tr>
<td>Total persons aged 65 years and over</td>
<td>6,088</td>
</tr>
<tr>
<td>Total persons aged below 15 years</td>
<td>12,434</td>
</tr>
<tr>
<td>Total persons of indigenous origin</td>
<td>1,767</td>
</tr>
<tr>
<td>Total persons using Internet</td>
<td>20,099</td>
</tr>
<tr>
<td>Single parent families</td>
<td>2,338</td>
</tr>
<tr>
<td>Persons living alone</td>
<td>4,544</td>
</tr>
<tr>
<td>Total persons who do not speak English well</td>
<td>109</td>
</tr>
<tr>
<td>Households without vehicles</td>
<td>2,338</td>
</tr>
<tr>
<td>Total persons residing in caravans, cabins or houseboats</td>
<td>127</td>
</tr>
<tr>
<td>Mean household size</td>
<td>2.6 persons</td>
</tr>
</tbody>
</table>

2. It is significant that 11 percent of the population is aged above 65 years. Elderly people are often frail and unable to respond quickly without assistance. Some of them may also be socially isolated, resulting in them being unaware of evacuation warnings or unable to decide on a course of action. Areas with particularly high proportions of elderly residents should be targeted for doorknocking and the provision of transport.

3. There is a large number of single-parent families in Wagga. Single-parent families are often characterised by low adult-children ratios, which makes evacuation more difficult. Areas with particularly high proportions of single parent families should be targeted in doorknocking and for the provision of transport.

4. Due to the lack of recent floods in Wagga Wagga, the flood awareness and preparedness of the community is considered low.
AREAS AT RISK

5. Numerous urban and rural areas across the Wagga Wagga City Council area are susceptible to the affects of flooding. Towns and villages affected by flooding include Central Wagga Wagga, Ashmont, Flowerdale - Edward Street West, East Wagga, North Wagga, Gumly Gumly, Oura, Ladysmith and Tarcutta.

Central Wagga Wagga

6. Central Wagga Wagga (pop. 8500) consists of approximately 3000 properties all of which are prone to flooding. The area includes the central business district, industrial areas, hospitals, nursing homes, schools, childcare facilities and emergency service headquarters. Central Wagga Wagga is protected by a levee preventing inundation to a height of 10.7 metres. These levees prevented inundation during the 1974 flood.

Ashmont

7. Ashmont, a suburb located in the west of Wagga Wagga, includes some properties that can be affected during extreme flooding, caused either by dam failure or extreme rainfall events. Streets affected include Truscott Dr, Veale St, Montgomery St, Sturt Hwy and the western end of Ashmont Ave.

Flowerdale – Edward St West

8. Immediately to the west of Central Wagga Wagga approximately 10 properties are located outside the Wagga Wagga levee in Edward St West and Flowerdale Rd. Floodwater begins to enter this area before approximately 7.6 metres on the Wagga Wagga gauge.

East Wagga

9. Located outside the Wagga Wagga levee to the east of Wagga Wagga on the Sturt Hwy, East Wagga comprises approximately 150 light industrial properties and 20 residential properties. Flooding in this area begins at approximately 9.5 metres on the Wagga Wagga gauge.

North Wagga

10. Located on the northern side of the Murrumbidgee River, North Wagga (pop. 600) consists of approximately 200 residential properties and several businesses which are prone to flooding. North Wagga is protected by a series of levees to a height of 9.9 metres on the Wagga Wagga gauge. Road access is lost between North Wagga and Central Wagga Wagga at a height of 9.0 metres, requiring pre-deployment and resupply operations. North Wagga last flooded in 1974, though the 1991 flood closed road access to North Wagga.

11. In addition to North Wagga village there is approximately 25 rural properties located outside the levee. These properties will require warning of the likely
affects of flooding and the necessary response actions required. Flooding begins in the Parkan Pregan Lagoon area at about 7.0 metres on the Wagga Wagga gauge. The majority of the floodplain North West of North Wagga floods at approximately 8.7 to 8.85 metres on the Wagga Wagga gauge. Flooding upstream of North Wagga occurs between 8.9 metres and 9.3 metres on the Wagga Wagga gauge when breakouts occur upstream of the Eunony Bridge. Livestock and equipment in these areas will need to be moved to high ground.

**Gumly Gumly**

12. Gumly Gumly is located east of Wagga Wagga, on the Sturt Hwy between Wagga Wagga and Forest Hill. The area consists of approximately 50 rural acreages, 30 residential houses, a school and a small number of motels and other businesses all of which are prone to flooding. The village is protected from flooding by a levee. The design of height of the levee is 9.6 metres plus 0.15 to 0.3 metres of freeboard.

**Oura**

13. Oura is located 15 kilometres east of Wagga Wagga. The village consists of approximately 25 residential properties which are prone to flooding. Low-lying areas to the south of the village are affected by river heights greater than 8.0 metres at Wagga Wagga. Buildings within the village begin to become affected when flood heights rise above 10 metres at Wagga Wagga. A large proportion of the village was flooded in August 1974, with buildings in Short, Mitchell, Adams, Oura, Wagga Wagga, Davidson and Barney Streets affected. Surrounding farmland to the east and west of Oura is also prone to flooding and should be warned to relocate livestock and equipment.

14. High ground is available immediately to the east of Oura and although access to Wagga Wagga maybe lost, access to Junee usually remains open, though can flood due to localised heavy rainfall.

**Ladysmith**

15. Ladysmith is a small village located east of Wagga Wagga on the Tumbarumba Rd. Ladysmith may be flooded from water emanating from Kyeamba Creek. Low-lying areas adjacent to the creek are flooded in most flood events, requiring the movement of livestock and equipment. Major floods affect the western sections of Tywong Rd and Keajura St. During large floods up to eight houses may require evacuation.

**Tarcutta**

16. Tarcutta is located approximately 40 kilometres east of Wagga Wagga on the Hume Hwy. The major source of floodwaters is the Tarcutta Creek, though minor flooding of the south eastern portion of the village can occur independently of Tarcutta Creek when Keajura Creek over-flows its banks. A levee bank protects the town against floods on the Tarcutta Creek up to a level of 3.7 metres on the Tarcutta gauge. If this levee, which has no freeboard, was to be overtopped, the water pumping station, the hotel, shops, a service station
and up to six residences would be inundated. About 40 people could require evacuation. Surrounding farmland, adjacent to the creeks should be warned to relocate livestock and equipment. During large floods the Hume Highway may close potentially stranding motorists travelling between Sydney and Melbourne. There is no formal warning system for the town.

**Collingullie**

17. Collingullie (pop. 150) is located west of Wagga Wagga along the Sturt Highway. The main section of the village on the southern side of the Sturt Highway is not subject to flooding. However, land on the northern perimeter of the village is subject to flooding from the Old Man Creek. Some farm houses in the area required evacuation in 1974. The village can become isolated from Wagga Wagga, Coolamon and Narrandera during large floods, though access to The Rock should remain open. Surrounding farmland should be warned to relocate livestock and equipment.

**Currawarna**

18. Currawarna (pop. 40) is located west of Wagga Wagga on the Old Narrandera Road. The village area is not subject to flooding, however, adjoining farmland to the perimeter of the village is flood prone. Two houses in the area were evacuated in 1974. The village can become isolated from Wagga Wagga during large floods, however, road access should still be available to Coolamon, via Ganmain. Surrounding farmland should be warned to relocate livestock and equipment.

**Uranquinty**

19. Uranquinty is located approximately 15 kilometres south of Wagga Wagga on the Olympic Way. The village is protected on its south side from flooding on Sandy Creek by a levee, which is designed to hold out the 1% AEP flood. South of the levee, three residences are frequently isolated. If the levee was overtopped, at least 60 residences would require evacuation. Flooding of Uranquinty would also close the Olympic Way which is the main traffic route between Wagga Wagga and Albury. Flooding can also occur inside the levee due to storm runoff, from the North East.

**Galore**

20. Galore and its surrounds would be partly flooded in an extreme event, a quarter of the settlement being inundated and about four households having to be evacuated. No evacuations were necessary in 1974. Surrounding farmland, adjacent to the river should be warned to relocate livestock and equipment. The village can become isolated from Wagga Wagga during large floods, requiring resupply.
Forest Hill

21. Forest Hill is only affected by extreme flooding, when it is possible that a small number of low-lying dwellings may be inundated. Access to Forest Hill can be cut via the Sturt Hwy; however, access should remain, via, Inglewood Rd.

Rural Areas

22. Farmland along the Murrumbidgee River and its tributaries including Tarcutta Creek, Sandy Creek, the Collingullie Watercourse and Kyeamba Creek can be flooded. During minor floods low-lying farmland can be inundated, requiring the movement of livestock and equipment. In larger floods rural properties may become isolated for several weeks. In severe floods farm buildings and farmhouses may be inundated and evacuation necessary.

Camping Reserves

23. There are numerous camping reserves along the Murrumbidgee River. These are affected at low levels of flooding and require warning and evacuation.

ROAD CLOSURES

24. The following roads are subject to closure during flooding within the Wagga Wagga City Council area.

- a. Collingullie to Lockhart Rd
- b. Sturt Hwy, at Sandy Creek and between Wagga Wagga and Forest Hill
- c. Hampden Ave, between Wiradjuri Bridge and Cartwrights Hill
- d. Old Narrandera Rd (Wagga Wagga to Narrandera), from North Wagga to Dukes Creek Bridge and other locations to the west.
- e. Wagga Wagga – Oura Road, from North Wagga to Paterson Rd and at other locations to the east.
- f. Collingullie – Coolamon Road, at Mundowie Bridge.
- g. Eunony Bridge Rd (Sturt Hwy to Wagga Wagga – Oura Rd) along virtually its entire length.
- h. Boorooma St (Old Narrandera Rd to Davidson St)
- i. Edward St West / McNickle Rd (Sturt Hwy to Roach Rd)
- j. Olympic Way at Uranquinty

EFFECTS ON UTILITIES AND INFRASTRUCTURE

25. Utility services would be vulnerable in extreme floods. The water supply pumping station is on the Murrumbidgee River south bank with reservoirs and
storage in Wagga Wagga, plus local storage in the other council areas. A number of water supply pumping stations would be affected by a 12 metre flood at Wagga Wagga and adjacent bores would similarly be affected.

26. Electricity supply is distributed from the Copland Street switchyard, Wagga Wagga, and would be inundated by a flood reaching 14 metres on the Wagga Wagga gauge. Sewerage treatment works in Wagga Wagga would be reduced to primary treatment in events above the threshold for major flooding. All treatment would cease at Wagga Wagga and Forest Hill in extreme events.

27. Other public services such as police, fire, ambulance, VRA and health will be affected if the Central Wagga Wagga levee overtops or fails.

28. The loss of key infrastructure and basic public services, such as clean water, sewerage disposal and electricity will impact a large area extending beyond the vicinity of the inundated areas. Evacuations of non-inundated areas may be necessary to avoid problems relating to health conditions.
## ANNEX C - GAUGES MONITORED BY THE WAGGA WAGGA SES LOCAL HEADQUARTERS

<table>
<thead>
<tr>
<th>Gauge Name</th>
<th>Type</th>
<th>AWRC No</th>
<th>Stream</th>
<th>Flood Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Min</td>
</tr>
<tr>
<td>Jugiong (Pump Station) *‡</td>
<td>Auto</td>
<td>410022</td>
<td>Murrumbidgee</td>
<td></td>
</tr>
<tr>
<td>Gundagai*‡</td>
<td>Auto</td>
<td>410004</td>
<td>Murrumbidgee</td>
<td>6.1</td>
</tr>
<tr>
<td>Oura Park†</td>
<td></td>
<td>10284</td>
<td>Murrumbidgee</td>
<td></td>
</tr>
<tr>
<td>Gumly Gumly†</td>
<td></td>
<td>10169</td>
<td>Murrumbidgee</td>
<td></td>
</tr>
<tr>
<td>Wagga Wagga*‡</td>
<td>Auto</td>
<td>410001</td>
<td>Murrumbidgee</td>
<td>7.3</td>
</tr>
<tr>
<td>Tarcutta††</td>
<td></td>
<td>10366</td>
<td>Tarcutta Creek</td>
<td></td>
</tr>
<tr>
<td>Tumut‡</td>
<td>Auto</td>
<td>410006</td>
<td>Tumut River</td>
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<td>Mucklebar</td>
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<td>10248</td>
<td>Murrumbidgee</td>
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<tr>
<td>Book Book</td>
<td>Auto</td>
<td>410156</td>
<td>Kyeamba Creek</td>
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<tr>
<td>Ladysmith</td>
<td>Manual</td>
<td>410048</td>
<td>Kyeamba Creek</td>
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<tr>
<td>Wagga Water Works</td>
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<td>Murrumbidgee</td>
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<tr>
<td>Mundowey (Beavers Creek)</td>
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<td>410137</td>
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<tr>
<td>Mundowey</td>
<td>Manual</td>
<td>410139</td>
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<tr>
<td>Berembed Weir</td>
<td>Manual</td>
<td>410023</td>
<td>Murrumbidgee</td>
<td></td>
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<tr>
<td>Old Borambola</td>
<td>Auto</td>
<td>410047</td>
<td>Tarcutta Creek</td>
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<td>Humula</td>
<td>Manual</td>
<td>410095</td>
<td>Umbango Creek</td>
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<td>Belmore Bridge</td>
<td>Manual</td>
<td>410155</td>
<td>Oberne Creek</td>
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</tr>
<tr>
<td>Eringoarrah</td>
<td>Auto</td>
<td>410143</td>
<td>Murrumbidgee River</td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

1. The Bureau of Meteorology provides flood warnings for the gauges marked with an asterisk (*).
2. Wagga Wagga SES Local Flood Advices are provided for the gauges marked with a single cross (†).
3. The SES holds a Flood Intelligence Card for the gauges marked with a double cross (‡).
ANNEX D - DISSEMINATION OF SES FLOOD BULLETINS

The Murrumbidgee SES Division Headquarters distributes SES Flood Bulletins and other flood related information (including Flood Warnings) to the following regional media outlets:

Television Stations:

<table>
<thead>
<tr>
<th>Station</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime Television</td>
<td>Wagga Wagga</td>
</tr>
<tr>
<td>Win Television</td>
<td>Wagga Wagga</td>
</tr>
<tr>
<td>Capital Television</td>
<td>Wagga Wagga</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>STAR FM</td>
<td>Wagga Wagga</td>
<td>93.1 FM</td>
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<tr>
<td>2WG</td>
<td>Wagga Wagga</td>
<td>1152 AM</td>
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</tr>
<tr>
<td>ABC Radio Riverina</td>
<td>Wagga Wagga</td>
<td>90.3 FM</td>
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<tr>
<td>2AAA</td>
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Newspapers:

<table>
<thead>
<tr>
<th>Name</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Riverina Leader</td>
<td>Wagga Wagga</td>
</tr>
<tr>
<td>Daily Advertiser</td>
<td>Wagga Wagga</td>
</tr>
</tbody>
</table>

Other Agencies:

All other agencies and organisations listed with responsibilities under this plan.
ANNEX E - TEMPLATE EVACUATION WARNING MESSAGE FOR [ENTER NAME OF AREA]

Evacuation Warning for [ ]

Date/Time of Issue: [ ]

Authorised By: [ ]

The Bureau of Meteorology has predicted a flood level of [ ] metres at [ ] (place) at [ ] (time). This means that the following area(s) may be inundated [ ].

It is recommended that you prepare to evacuate/for evacuation within the next [ ] hours. If you leave it later, the roads may be congested or closed.

To prepare for evacuation, you should:

- Raise belongings by placing them on tables, beds and benches. Put electrical items on top. Some items may be able to be placed in ceilings.
- Gather medicines, personal and financial documents and mementos together to take with you.
- Listen to radio stations [ ] for further information and to confirm this warning.
- If possible, check to see whether your neighbours need help.
- Make arrangements for care of pets or other animals.

If evacuation is necessary:

- Turn off the electricity, gas and water.
- Take three days’ supply of clothes with you.
- If you have a car, drive to the evacuation centre at [ ] (specify route if appropriate).
- If you don’t have a car, buses will operate where possible on normal routes. Special transport can also be provided on request if necessary, telephone [ ].
- So that you can be accounted for, it is important that you register at the evacuation centre.
- After registering, you may go to the house of a friend or relative. Alternatively, accommodation will be arranged for you.
- The Police will provide security for your property while you are away.
ANNEX F - EVACUATION ARRANGEMENTS FOR THE WAGGA WAGGA CITY COUNCIL AREA

BACKGROUND

1. During large floods, evacuations can become necessary in Wagga Wagga, North Wagga and surrounding villages and rural areas.

2. Evacuation operations in Wagga Wagga and North Wagga Wagga will involve large numbers of people having to move or be moved to safety in relatively short periods of time.

3. In event of a levee failure or overtopping up to 3000 residences (~10,000 persons) and the central business district may need to be evacuated. In addition complete evacuation of the Wagga Wagga Base hospital, numerous nursing homes, motels and caravan parks would be required. Police, Ambulance, Volunteer Rescue Association and Fire Brigade Headquarters would also need to be evacuated and relocated.

4. In extreme events the flooding of various utilities may necessitate evacuations based upon public health concerns.

5. In some cases evacuation routes are lost before inundation of homes and businesses occurs. Evacuations should be completed before evacuation routes are closed.

6. While numerous elevated buildings on the floodplain have floor levels likely to remain all but the most extreme floods, these buildings cannot be considered safe refuges because of likely water supply, sewerage and telephone system failure. Residents of highset houses will therefore need to evacuate when severe floods are predicted so as to avoid the necessity for later operations to rescue them.

7. This annex provides a summary of the flood evacuation plan for the Wagga Wagga City Council area. Evacuation plans for specific areas within the council area can be found in annexes G to O.

ARRANGEMENTS

Control

8. During floods evacuations will be controlled by the NSW SES. Small-scale evacuations will be controlled by the Wagga Wagga SES Local Controller. Should the evacuations operations escalate beyond the capabilities of local resources control may be handed over to the Murrumbidgee SES Division Controller.
Operational Sectors

9. For the purpose of managing evacuations during severe floods, the Wagga Wagga City Council area may be divided into the following operational sectors.
   a. North Wagga
   b. Oura
   c. Tarcutta
   d. Uranquinty
   e. East Wagga / Gumly Gumly / Forest Hill / Alfredtown and Ladysmith
   f. Central Wagga Wagga
   g. Flowerdale / Edward St West
   h. Collingullie and Galore
   i. Currawarna and Euberta.

Responsibilities

10. Wagga Wagga SES Unit
    a. Control evacuation operations.
    b. Conduct evacuations.

11. Wagga Wagga City Local Emergency Operations Controller
    Coordinate Support to the SES if requested to do so.

12. NSW Police
    a. Assist with the delivery of evacuation warnings.
    b. Assist with the conduct of evacuation operations.
    c. Ensure all evacuees are registered.
    d. Secure evacuated areas.
    e. Provide traffic control.

13. Wagga Wagga VRA
    a. Assist with the delivery of evacuation warnings.
    b. Assist with the conduct of evacuation operations.
14. NSW Rural Fire Service
   a. Assist with the delivery of evacuation warnings.
   b. Assist with the conduct of evacuation operations.

15. NSW Fire Brigade
   a. Assist with the delivery of evacuation warnings.
   b. Assist with the conduct of evacuation operations.

16. Ambulance Service of NSW
    Assist with the evacuation of elderly and infirm residents.

17. Department of Community Services
    Manage evacuation centres

18. Service Clubs
    a. Assist with delivery of evacuation warnings.
    b. Assist with the conduct of evacuations.
    c. Assist with the movement of household and business contents.

Decision to Evacuate

19. The responsibility for issuing any general evacuation order during flooding rests with the Wagga Wagga 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 Murrumbidgee SES Division Controller.

20. When deciding to evacuate the following should be considered:
    a. The predicted flood level and rate of rise.
    b. The rainfall situation and rainfall predictions.
    c. The condition of levee banks.
    d. The condition of evacuation routes.
    e. Characteristics of the at risk population.
    f. Time of day.
    g. Likely duration of evacuation operations and time available to conduct evacuations.
21. As far as possible, evacuations will be carried out before inundation occurs.

**Evacuation Triggers**

22. The following conditions are triggers for evacuation.

   a. **Failure of Essential Services.** The failure of public utilities such as sewerage, power, telephones and water pose a significant health risk to residents on the floodplain or in flood affected areas. In the event of any or all of these systems failing or potentially failing, the need for evacuations will be discussed with the members of the LEMC.

   b. **Flooding affecting properties.** Evacuations are to occur, if it is likely properties will be flooded. Specific gauge height triggers are listed in sector specific annexes.

   c. **Isolation of properties.** Persons who are not prepared for isolation or unsuited due to medical conditions etc, should be encouraged to evacuate.

   d. **Dam Failure.** A Red Alert Dam Failure Warning will require the evacuation of all at risk persons.

**Conduct**

23. Evacuations will be conducted by SES, NSW Police, NSW Fire Brigade, Ambulance Service of NSW, VRA, NSW Rural Fire Service and service and sporting club personnel in four phases:

   a. Phase 1 - Warning.

   b. Phase 2 – Withdrawal.

   c. Phase 3 – Shelter.

   d. Phase 4 – Return.

**Phase 1 – Warning**

24. **Evacuation warnings.** As soon as possible after the decision to evacuate is made, the Wagga Wagga SES Local Controller will issue evacuation warnings to the ‘at risk’ residents, indicating what people should do before evacuating and when actually doing so.

25. **Content of Evacuation Warnings.** A template guide to the content of evacuation warning messages is at Annex E. The Murrumbidgee SES Division Headquarters also maintains prewritten flood bulletin messages. These are disseminated via:
a. The radio and TV stations listed in Annex D.
b. Door-knocks by emergency service personnel.
c. Public address systems from emergency service vehicles.
d. Telephone.
e. Two-way radio.
f. SES Flood Bulletins.

26. **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.

**Phase 2 – Withdrawal**

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

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

29. **Traffic Control.** When large scale evacuations are likely, evacuation routes are to be secured by the NSW Police and kept clear by the following means:
   
a. Denying access to all traffic except for emergency vehicles (including buses and private vehicles being used for the purposes of evacuation).
b. Keeping one lane clear at all times for use by emergency vehicles.
c. Positioning a tow truck or similar vehicle at appropriate entry points, road blocks and exit points along the evacuation routes.

30. **Variable Message Signs.** Variable message signs will be positioned at key sites to communicate to evacuees information on evacuation routes, evacuation centres and road conditions.

31. **Large-scale evacuations.** When large scale evacuations are likely, the Wagga Wagga SES Local Controller will liaise with the Murrumbidgee SES Division Headquarters and request the deployment of helicopters and trains.

32. **Management of Evacuees’ Pets.** Evacuees with their own pets will be encouraged to take their companion animals with them as they evacuate. Companion animals will be collected from their owners at evacuation centres and taken to facilities to be arranged by NSW Department of Primary Industries. Due to safety restrictions, it may not be possible to allow companion animals to accompany their owners when transported via aircraft or flood boats.
In these cases provision will be made for animals to be picked up as people are evacuated. Arrangements will also be made to pick-up animals that are left behind. Assistance animals (guide dogs etc.) will remain in the care of their owners throughout the evacuation. This includes the transport and access into evacuation centres.

33. **Doorknocking.** Field teams conducting doorknocks will record and report back the following information back to the Operations Centre:

   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.

34. Key steps in planning for a doorknock are:

   a. Define the flood-affected areas that require doorknocking.

   b. Using a map of the affected area define street segments of 10-15 houses and assign a doorknocking team to each segment. Teams can be assigned one or more street segments.

   c. Assume that it will take a doorknocking team of two persons up to five minutes per property to doorknock. Rural properties will take a longer period of time.

   d. In each flood-affected area, generally plan to doorknock the lowest lying areas first and then work up to higher areas.

   e. Typed warning messages should be given to each doorknocking team for distribution to property occupants.

35. **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 Local Emergency Management Operations Controller who will arrange for Police to ensure their evacuation.

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

**Phase 3 – Shelter**

37. **Evacuation centres.** The usual purpose of evacuation centres is to meet the immediate needs of victims, not to provide them with accommodation. However, during an evacuation of central Wagga Wagga limited accommodation in motels and hotels will be available. 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 Wagga Wagga SES Local
Controller but managed as soon as possible by the Department of Community Services.

38. **Action on arrival.** On arrival, evacuees will be:
   
   a. registered;
   
   b. medically checked, if necessary; and
   
   c. provided with their immediate welfare needs.

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

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

**Phase 4 – Return**

41. Once it is considered safe to do so, the Wagga Wagga 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.

42. The return will be controlled by the Wagga Wagga SES Local Controller and may be conducted, at his/her request, by DoCS.
ANNEX G - NORTH WAGGA SECTOR
EVACUATION

General

1. This sector covers North Wagga and surrounding rural areas.

2. North Wagga consists of approximately 200 residential properties and a small number of commercial properties. The North Wagga levee protects North Wagga from flooding up to a height of 9.9 metres on the Wagga Wagga gauge. The levee has approximately 0.3 metres of freeboard. If predicted to overtop or failure is likely to occur the entire suburb of North Wagga will require evacuation, necessitating the movement of approximately 600 persons. The adjoining rural areas are populated by approximately 400 persons.

Sector Control

3. Control. The Wagga Wagga SES Local Controller will control evacuations in this sector.

4. Conduct. Evacuations in this sector with be conducted by the SES with assistance from NSW Police, Wagga Wagga VRA, NSW Fire Brigade, NSW Rural Fire Service, NSW Ambulance Service and Service Club volunteers.

Time

5. The table below details the amount of time required to evacuate the entire at-risk population of North Wagga depending upon doorknocking resources available.

<table>
<thead>
<tr>
<th>Door Knocking Teams</th>
<th>Traffic generated vehicles per hour</th>
<th>Warning and Movement Time</th>
<th>Traffic Safety Factor</th>
<th>Total Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>18</td>
<td>22.33</td>
<td>3.5</td>
<td>25.83</td>
</tr>
<tr>
<td>5</td>
<td>90</td>
<td>7.67</td>
<td>2.0</td>
<td>9.67</td>
</tr>
<tr>
<td>10</td>
<td>180</td>
<td>5.83</td>
<td>1.5</td>
<td>7.33</td>
</tr>
<tr>
<td>15</td>
<td>270</td>
<td>5.22</td>
<td>1.5</td>
<td>6.72</td>
</tr>
<tr>
<td>20</td>
<td>360</td>
<td>4.92</td>
<td>1.5</td>
<td>6.41</td>
</tr>
</tbody>
</table>

Table 2 Time required to complete evacuation of North Wagga. Assumes 220 properties to be evacuated, 1.5 vehicles per house, 120 minutes to decide and mobilise, warning acceptance factor equal to 1 hour, warning lag factor equal to 1 hour and a maximum movement of 600 vehicles per hour.

6. Typically a minimum of 20 hours advanced warning time should be given of flood heights expected to overtop the North Wagga levee.
Evacuation Triggers

7. North Wagga will require evacuation if the Wagga Wagga gauge is expected to exceed 9.9 metres. Such conditions will overtop the North Wagga levee, flooding North Wagga. Evacuations from North Wagga must be completed by 9.0 metres, at which point North Wagga becomes isolated.

8. Rural areas surrounding North Wagga should be monitored to ascertain the need for evacuations. Flooding begins in the Parkan Pregan Lagoon area at about 7.0 metres on the Wagga Wagga gauge. The majority of the floodplain North West of North Wagga floods at approximately 8.7 to 8.85 metres on the Wagga Wagga gauge. Flooding upstream of North Wagga occurs between 8.9 metres and 9.3 metres on the Wagga Wagga gauge when breakouts occur upstream of the Eunony Bridge.

Movement

9. Evacuees are to move to evacuation centres located in Estella. The spontaneous tendency, however, maybe for evacuees to move south into Central Wagga Wagga, hence, creating an additional burden if the evacuation of Central Wagga Wagga is required.

Evacuation Centres

10. Evacuees should be advised to attend the following evacuation centres.
    a. Charles Sturt University, Boorooma St, Estella
    b. The Riverina Anglican College, Farrar Rd, Estella

Evacuation Routes

11. Evacuees should be advised to take the following roads from North Wagga.
    a. Hampden Ave, Wiradjuri Bridge, Travers St, Collin Knot Dr and Boorooma St to evacuation centres located in Estella.
    b. Hampden Ave, Horseshoe Rd, Collin Knot Dr and Boorooma St to evacuation centres located in Estella.

Evacuation Route Closure

12. A number of closures can affect evacuation routes at the following locations:
    a. Hampden Ave between North Wagga and Cartwrights Hill closes to light vehicles at 8.9 metres on the Wagga Wagga gauge.
    b. Hampden Ave closes to light vehicles between Wagga Wagga and North Wagga at 9.0 metres on the Wagga Wagga gauge, unless temporary earthworks are created to keep the road open to a height near 9.3 metres.
13. More information on road closures in this sector is displayed in Map 4.

14. Evacuations once evacuation routes are closed can be conducted by train, helicopter or flood boat.

Assembly Point

15. Persons without transport are to assemble at the North Wagga Public School, where transport will be arranged.

Refugee Points

16. Two refugee points are maintained by the Wagga Wagga City Council for use in the event that North Wagga is flooded. The refugee points are located at the spectator bank at McPherson Oval and at the intersection of McGrath and Hurst Streets. Flooding of these refugee points is expected in events reaching heights greater than 11.3 metres on the Wagga Wagga gauge. Each of the points is capable of landing a small helicopter.

Household and Business Contents

17. Transport and Storage of household and business contents from flood threatened properties will be arranged as time and resources permit. If time is available the SES and service clubs may assist in the lifting or relocation of business or household contents. Storage facilities are available at Charles Sturt University.

Vulnerable Institutions Affected

18. The following institutions may require evacuation:
   b. Rainbow Lorikeet Pre School, George St, North Wagga.
ANNEX H - OURA SECTOR EVACUATION

General

1. The Oura sector includes the township of Oura and surrounding rural areas within the Wagga Wagga City Council area.

2. Oura consists of approximately 40 properties susceptible to flooding.

Sector Control

3. **Control.** The Wagga Wagga SES Local Controller will control evacuations in this sector.

4. **Conduct.** The Junee SES Unit will conduct evacuations in this sector with assistance from the NSW Rural Fire Service.

Liaison

5. The Junee SES Unit will maintain liaison throughout the flood with the Wagga Wagga SES Local Controller.

Evacuation Triggers

6. Initial evacuations from the township of Oura may be required if the height at the Wagga Wagga gauge is predicted to reach or exceed 10.0 metres.

Movement

7. Evacuees will be sheltered either at Oura or Junee.

Evacuation Route

8. Oura Rd to Wantabadgery, Wantabadgery Rd to Junee.

Evacuation Route Closure

9. The evacuation route to Junee can be flooded in numerous locations due to localised flooding.

Evacuation Centres

10. The following facilities are suitable for use as evacuation centres.
   a. Oura Presbyterian Church
   b. Junee Showgrounds, Park Lane, Junee
ANNEX I - TARCUTTA SECTOR EVACUATION

General

1. The Tarcutta sector includes the village of Tarcutta and surrounding rural areas.

2. A small number of residences may require evacuation from the south eastern portion of the village of Tarcutta.

3. The Tarcutta sector is affected by Tarcutta and Keajura Creeks.

Sector Control

4. **Control.** The Wagga Wagga SES Local Controller will control evacuations in this sector.

5. **Conduct.** The NSW Rural Fire Service will conduct evacuations in this sector with assistance from the NSW Police.

Liaison

6. The NSW Rural Fire Service will maintain liaison throughout the flood event with the Wagga Wagga SES Local Controller.

Evacuation Trigger

7. Evacuations will be required if the Tarcutta gauge is anticipated to reach 3.7 metres, at which stage the Tarcutta levee overtops.

Evacuation Centre

8. Tarcutta RSL and Citizens Club, Sydney St is suitable for use as an evacuation centre.
ANNEX J - URANQUINTY SECTOR EVACUATION

General

1. This sector comprises of the township of Uranquinty and surrounding rural areas.

2. Uranquinty located upon Sandy Creek, may require the evacuation of at least 60 residences if the town’s levee were over-topped.

Sector Control

3. Control. The Wagga Wagga SES Local Controller will control evacuations in this sector.

4. Conduct. The NSW Rural Fire Service will conduct evacuations in this sector.

Liaison

5. The NSW Rural Fire Service will maintain liaison throughout the flood event with the Wagga Wagga SES Local Controller.

Evacuation Trigger

6. Reconnaissance will be required to assess when evacuations will be necessary.

Evacuation Centre

7. Uranquinty Public School, Pearson St, Uranquinty.
ANNEX K - EAST WAGGA / GUMLY GUMLY / FOREST HILL / ALFREDTOWN AND LADYSMITH SECTOR EVACUATION

General

1. This sector comprises the area of East Wagga outside the levee, Gumly Gumly, Forest Hill, Alfredtown and Ladysmith.

Sector Control

2. Control. The Wagga Wagga SES Local Controller will control evacuations in this sector.


Evacuation Triggers

4. Gumly Gumly will require evacuation if the Wagga Wagga gauge is expected to exceed 9.25 metres (Note: that this evacuation trigger height accounts for additional freeboard, design height of levee 9.6 metres and crest height 9.75 to 9.9 metres). Above this height the Gumly Gumly levee will overtop flooding Gumly Gumly.

5. East Wagga between Marshalls Creek and Tasman Road will require evacuation if the Wagga Wagga gauge is expected to exceed 9.5 metres.

6. Reconnaissance will be required to assess when evacuations will be necessary in Alfredtown and Ladysmith.

Evacuation Centres

7. The following centres are suitable for use as evacuation centres.

a. Forest Hill Public School, Sturt Hwy, Forest Hill.

b. Lake Albert Public School, Main Street, Lake Albert.

c. Lake Albert Hall, Lake St, Lake Albert.

d. Lady Smith Public Hall, Kyemba St, Ladysmith.

Evacuation Routes

8. Evacuees should be encouraged to take the following routes:

a. To Lake Albert Public School:
- (From East Wagga) Sturt Hwy, Kooringal Rd, Lake Albert Rd and Main St.
- (From East Wagga or Gumly Gumly) Sturt Hwy, Tasman Rd, Edison Rd, Bakers Ln, Inglewood Rd, Mitchell Rd, Brunskill Rd and Main St.
- (From East Wagga or Gumly Gumly) Sturt Hwy, Bakers Ln, Inglewood Rd, Mitchell Rd, Brunskill Rd and Main St.

b. To Forest Hill Public School
- (From Gumly Gumly and Alfredtown) Sturt Hwy.
- (From Gumly Gumly) Sturt Hwy, Bakers Ln, Inglewood Rd, Elizabeth Ave and Sturt Hwy.

Evacuation Route Closure

9. A number of closures can affect evacuation routes at the following locations:
   a. Sturt Hwy closes near the Blackland Rd intersection at 9.5 metres on the Wagga Wagga gauge unless a temporary levee is built.
   b. Sturt Hwy closes near the Gillard Rd intersection at 9.7 metres on the Wagga Wagga gauge.
   c. Sturt Hwy closes east of Gumly Gumly at 9.8 metres on the Wagga Wagga gauge.
   d. Kooringal Road may close at Marshalls Creek at 9.7 metres on the Wagga Wagga gauge.
   e. Bakers Ln and Tasman Rd may close at heights greater than 9.8 metres on the Wagga Wagga gauge.

10. All evacuation routes from Gumly Gumly / East Wagga are flooded by 9.8 metres on the Wagga Wagga gauge.

Vulnerable Institutions Affected

11. The following institutions may require evacuation
   a. Gumly Gumly Public School, Sturt Hwy
   b. East Vans Park, Caravan Park, Hammond Ave
ANNEX L - FLOWERDALE / EDWARD ST WEST SECTOR EVACUATION

General
1. This sector includes Flowerdale and Edward St West located outside the Central Wagga Wagga levee.
2. Approximately 40 persons reside in this sector.

Sector Control
3. Control. The Wagga Wagga SES Local Controller will control evacuations in this sector.

Evacuation Trigger
5. Flowerdale and Edward Street West will require evacuation if the Wagga Wagga gauge is expected to exceed 9.0 metres.

Evacuation Centre
6. Holy Trinity Primary School, Bardia St, is suitable for use as an evacuation centre.

Evacuation Route
7. Flowerdale Ave, Moorong St, Person St, Dobney Ave and Ashmont Ave to Holy Trinity Primary School.
8. Edward St West, Sturt Hwy, Ashmont Ave to Holy Trinity Primary School.

Evacuation Route Closure
9. Flowerdale Ave closes at a low point 0.5 kilometres west of Moorong St at 7.6 metres on the Wagga Wagga gauge.
10. Edward St West closes at 8.4 metres on the Wagga Wagga gauge unless a temporary levee is constructed.
ANNEX M - CENTRAL WAGGA WAGGA SECTOR EVACUATION

General

1. This sector includes Central Wagga Wagga protected by the Wagga Wagga levee.

2. Approximately 3000 properties may require evacuation from this area. The population of the area is approximately 8500. This can rise during peak tourist seasons.

Sector Control

3. Control. The Wagga Wagga SES Local Controller will control evacuations in this sector.


Evacuation Triggers

5. The Wagga Wagga Tourist Caravan Park and Wagga Wagga Beach will require evacuation if the Wagga Wagga gauge is expected to exceed 7.5 metres.

6. Central Wagga Wagga will require evacuation if the Wagga Wagga gauge is expected to exceed 10.7 metres.
Time

7. The table below details the amount of time required to evacuate the entire at-risk population of Central Wagga Wagga depending upon doorknocking resources available.

<table>
<thead>
<tr>
<th>Doorknocking teams</th>
<th>Vehicles Generated</th>
<th>Warning and Movement Time (hours)</th>
<th>Traffic Safety Factor</th>
<th>Decision and Mobilise Time (hours)</th>
<th>Total Evacuation Time (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18</td>
<td>280</td>
<td>3.5</td>
<td>2</td>
<td>286</td>
</tr>
<tr>
<td>10</td>
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<td>30</td>
<td>3.5</td>
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<td>4</td>
<td>1.5</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 3 Time required to complete evacuation of Central Wagga Wagga. Assumes 3000 properties to be evacuated, 1.5 vehicles per house, 500 extra vehicles and maximum movement of 2400 vehicles per hour.

8. Typically a minimum of 20 hours advanced warning time should be given of flood heights expected to overtop the Wagga Wagga levee. Once the levee is overtopped the entire Central Wagga Wagga area could be flooded within 12 hours.
SUB SECTORS

9. Due to the complexity of the evacuation of Central Wagga Wagga, the area is to be subdivided as indicated below and in Map 3. These sectors are Moorong St, Docker St, Best St and Tarcutta St. Movement from these sub sectors will be in a southerly direction into refugee areas adjoining each sector, to minimise cross traffic flow. Movement between refugee areas should be via Red Hill Rd or Stanley St.

Moorong Street Sector

10. This sector contains a mix of residential and commercial properties. Approximately 1600 persons reside in this area. The southern part of this sector would be one of the first places to be inundated once the Wagga Wagga levee is overtopped.

11. This sector includes the western section of Central Wagga Wagga and the low lying part of Ashmont.

12. **Evacuation Centres.** The following can be used as evacuation centres:

   a. Ashmont Public School, Bardia St
b. Holy Trinity Primary School, Bardia St

c. Rules Club, Fernleigh Rd

d. Glenfield Park Community Centre, Tanda Pl

13. **Evacuation Routes.** Evacuees should be encouraged to take the following routes:

a. Local Streets to Moorong St, Pearson St, Dobney Ave and Ashmont Ave, Bardia St to Ashmont Primary School and Holy Trinity Primary School.

b. Local Streets to Moorong St, Pearson St, Glenfield Rd and Fernleigh Rd to the Rules Club.

14. **Evacuation Route Closure.** Evacuation routes will close when the Wagga Wagga levee overtops.

15. **Vulnerable Institutions.** The following vulnerable institutions are located in this sector:

a. Wagga Wagga Day Surgery, Edward St

b. Lither Lodge Cancer Clinic, Edward St

c. Central Wagga Childcare

d. Riverina Juvenile Justice Centre, Glenfield Rd (Only during extreme floods)

e. Gumleigh Chauncey Retirement Village, Albury St

**Docker Street Sector**

16. This sector comprises primarily of residential properties, with a small number of commercial properties also included in this sector. Approximately 2000 persons reside in this sector.

17. This sector is bounded by Docker St, Shaw St, Slocum St, Travers St, Beckwith St, Thorne St and Brookong Ave.

18. **Evacuation Centres.** The following can be used as evacuation centres:

a. Henschke Primary School, Bourke St

b. Charles Sturt University, South Campus, Fernleigh Rd

c. Mt Austin High School, Bourke St

d. Tolland Public School, Hawkes Place

e. Mount Austin Public School, Bourke St
19. **Evacuation Routes.** Evacuees should be encouraged to travel along local streets to Docker St and Bourke St to evacuation centres.

20. **Evacuation Route Closure.** Docker St will close when the Wagga Wagga levee overtops.

21. **Vulnerable Institutions.** The following vulnerable institutions are located in this sector:
   a. Wagga Wagga Base Hospital, Edward St (Patients requiring ongoing care to be relocated to Calvary Hospital).
   b. VRA Headquarters, Bolton St
   c. Wiradjuri Aboriginal Corporation Community Childcare Centre, Docker St
   d. Rosebank Retirement Village, Thomas St (30 units)

**Best Street Sector**

22. This sector includes the Wagga Wagga Central Business District and adjoining residential blocks. Approximately 2000 persons reside in this sector.

23. This sector is bounded by Thorne St, Beckwith St, Travers St, Trail St, Wollundry Lagoon, Oreilly St, Bardo Ln, Morgan St and Fitzhardinge St.

24. **Evacuation Centres.** The following can be used as evacuation centres:
   a. Wagga Wagga TAFE, Macleay St
   b. Kildare Catholic College, Coleman St
   c. Turvey Park Primary School, Halloran St
   d. Wagga Wagga High School, Coleman St

25. **Evacuation Routes.** Evacuees should be encouraged to travel along local streets to Best St and Edmondson St to evacuation centres.

26. **Evacuation Route Closure.** Best St will close when the Wagga Wagga levee overtops.

27. **Vulnerable Institutions and Facilities.** The following vulnerable institutions are located in this sector:
   a. South Wagga Primary School, Edward St
   b. Wagga Public School, Gurwood St
   c. NSW Fire Brigade Station, The Esplanade
d. Village Life Retirement Village, Travers St (49 units).

**Tarcutta Street Sector**

28. This sector comprises commercial development in Fitzmaurice St and East Wagga within the levee. It also includes a large section of residential development. Approximately 1600 persons reside in this sector.

29. This sector is bounded by Fitzhardinge St, Morgan St, Bardo Ln, Oreilly St, Wollundary Lagoon, Trail St, Travers St, Wiradjuir Cres, Billagha St, Narrung St, Murrumbidgee River to Marshalls Ck and Kooringal Rd.

30. **Evacuation Centres.** The following can be used as evacuation centres.
   
   a. Sturt Public School, Lake Albert Rd
   
   b. Sacred Heart Primary School, Lake Albert Rd
   
   c. Mater Dei College, Gregadoo Rd
   
   d. Kooringal High School, Ziegler Ave
   
   e. Kooringal Public School, Lake Albert Rd
   
   f. Lutheran Primary School, Red Hill Rd

31. **Evacuation Routes.** Evacuees should be encouraged to take the following routes:

   a. Local streets to Tarcutta St, Lake Road to evacuation centres.

   b. Sturt Hwy (Hammond Ave) to Kooringal Rd to evacuation centres

32. **Evacuation Route Closure.** The following closures can affect evacuation routes.

   a. Tarcutta St can be affected by stormwater flooding at the railway viaduct. Wagga Wagga City Council maintains pumps to alleviate flooding.

   b. Sturt Hwy (Hammond Ave) will be required to close at Marshalls Creek to close the gap in the levee.

   c. Kooringal Road closes at Marshalls Creek at 9.7 metres on the Wagga Wagga gauge.

   d. All evacuation routes will close when the Wagga Wagga levee overtops.

33. **Vulnerable Institutions and Facilities.** The following vulnerable institutions are located in this sector:

   a. Wagga Wagga Police Station, Sturt St
b. ABC Radio, Fitzmaurice St

c. St Josephs Primary School, Cnr of Johnston and Tarcutta St

d. Wagga Wagga Beach Caravan Park

e. Edeal Quinn Shelter, Barrand St

f. Wagga Wagga Ambulance Station, Johnston St

g. East Vans Caravan Park, Hammond Ave
ANNEX N - COLLINGULLIE AND GALORE SECTOR EVACUATION

General

1. This sector covers the area of west of Wagga Wagga south of the Murrumbidgee River. The sector includes the villages of Collingullie and Galore.

2. The majority of evacuations in this sector will be from rural properties, though a small number may be necessary from Galore and Collingullie.

Sector Control

3. **Control.** The Wagga Wagga SES Local Controller will control evacuations in this sector.

4. **Conduct.** The NSW Rural Fire Service will conduct evacuations in this sector.

Liaison

5. The NSW Rural Fire Service will maintain liaison throughout the flood event with the Wagga Wagga City Local Controller.

Evacuation Triggers

6. Reconnaissance will be required in this sector to assess when evacuations will be necessary. Some evacuations took place during the 1974 flood which measured 10.74 metres on the Wagga Wagga gauge.

Evacuation Centres

7. The following facilities may be used as evacuation centres.
   a. Collingullie Public School, Urana St, Collingullie
   b. Collingullie Soldiers Memorial Hall, Sturt Hwy, Collingullie
   c. Lockhart Central School, Halliday St, Lockhart
ANNEX O - CURRAWARNA AND EUBERTA
SECTOR EVACUATION

General
1. This sector includes the area west of Wagga Wagga north of the Murrumbidgee River and includes the communities of Euberta and Currawarna.

Sector Control
2. Control. The Wagga Wagga SES Local Controller will control evacuations in this sector.
3. Conduct. The NSW Rural Fire Service will conduct evacuations in this sector.

Liaison
4. The NSW Rural Fire Service will maintain liaison throughout the flood event with the Wagga Wagga City Local Controller.

Evacuation Triggers
5. Reconnaissance will be required in this sector to assess when evacuations will be necessary. Some evacuations took place during the 1974 flood which measured 10.74 metres on the Wagga Wagga gauge.

Evacuation Centres
6. Currawarna Public School, Old Narrandera Rd and Currawarna Community Centre, Old Narrandera Rd are suitable for use as an evacuation centre.
ANNEX P - ARRANGEMENTS FOR THE EVACUATION OF CARAVAN PARKS AND THE RELOCATION OF CARAVANS

General

1. The East Vans Park, Caravan Park, Hammond Ave, Horseshoe Motor Village, Farrar Rd and the Wagga Wagga Beach Caravan Park, Johnston St, are prone to flooding.

Advising Procedures

2. Caravan Park proprietors will be encouraged to ensure that the owners and occupiers of caravans are:

a. Made aware that the caravan park is flood liable by:
   - Handing a printed notice to occupiers taking up residence. The notice should indicate that the caravan park is liable to flooding and outline the evacuation and van relocation arrangements as detailed in this Annex.
   - Displaying this notice prominently in each van.

b. Made aware that if they are expecting to be absent from their vans for extended periods, they should:
   - Provide the manager with a key; in a sealed envelope; to the van.
   - Provide a contact address and telephone number.
   - Inform the manager if a vehicle will be required to relocate the van during flood time.
   - Leave any mobile van in a condition allowing it to be towed in an emergency (ie: tyres inflated, jacks wound up, personal effects secured and annexes and lines for water, sewer, electricity and gas readily detachable).

c. Informed when a flood is rising. At this time, occupiers will be advised to:
   - Ensure that they have spare batteries for their radios.
   - Listen to a local radio station for updated flood information.
   - Prepare for evacuation and van relocation.
3. The Wagga Wagga SES Local Controller will ensure that the managers of caravan parks are advised of flood warnings and the details of any evacuation order.

**Evacuation of Occupants and Relocation of Vans**

4. Caravan park proprietors will be encouraged to install flood depth indicators and road alignment markers within their caravan parks.

5. When an evacuation order is given:
   a. Occupiers of non-movable vans should:
      - Secure their vans by tying them down to prevent flotation.
      - Isolate power to their vans.
      - Collect personal papers, medicines, a change of clothing, toiletries and bedclothes.
      - Lift the other contents of their vans as high as possible within the van.
      - Move to a designated evacuation centre in if they have their own transport, or move to the caravan office to await transport.

   b. 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, SES and RFS personnel will assist if required and may be able to provide additional vehicles. Vans are to be moved to the following locations:
      - Wagga Wagga Beach Caravan Park – vans to be relocated to Johnston St adjacent to St Michaels Cathedral. If the river is predicted to rise above 9.0 metres on the Wagga Wagga gauge vans will need to be relocated to Harris Park. Toilet and kitchen facilities are available at this site.
      - East Vans Park, Caravan Park – vans to be relocated to Apex, Park, Main St, Lake Albert. Toilet facilities are available in this park and kitchen facilities exist in the adjacent Lake Albert Hall.

6. Occupants of vans that are being relocated should go to a designated evacuation centre if they have their own transport. Those without their own transport are to report to the caravan park office.

7. Caravan park managers will be encouraged to:
   a. Advise the Wagga Wagga 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.

b. Check that no people remain in non-removable vans that are likely to be inundated.

c. Inform the Wagga Wagga SES Local Controller when the evacuation of the caravan park has been completed.

d. Provide the Wagga Wagga SES Local Controller with a register of people that have been evacuated.

Return of Occupants and Vans

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

9. Vans will be towed back to the caravan parks by van owners or by vehicles and drivers arranged by the park managers. Again, Council, SES and RFS personnel will assist if available.
ANNEX Q - RESUPPLY REQUIREMENTS AND OPERATIONS FOR THE WAGGA WAGGA CITY COUNCIL AREA

BACKGROUND

1. During periods of flooding many rural properties and some villages can become isolated, requiring resupply. In extreme floods Wagga Wagga may become isolated requiring resupply. The duration of isolation can last between several days to several weeks depending upon the severity of flooding and its location.

ARRANGEMENTS

Control

2. During floods resupply of isolated communities and properties will be controlled by the NSW State Emergency Service (SES). Small-scale resupply operations will be controlled by the Wagga Wagga SES Local Controller. Should resupply operations escalate beyond the capabilities of local resources control may be handed over to the Murrumbidgee SES Division Controller.

Conduct

3. The SES will conduct resupply operations with assistance from the Rural Fire Service and Department of Community Services.

Tasks

4. Wagga Wagga SES Local Controller
   Coordinate the resupply of isolated communities and properties.

5. Department of Community Services
   Provide welfare services for flood affected people.

6. NSW Rural Fire Service
   Assist the SES with resupply operations.

Concept of Operations

7. The normal mode of resupply will be maintained for as long as practicable. The main supply routes will be kept open to essential and emergency vehicles for as long as it is safe to do so. Once these routes are closed (either by the road owner, the Police or SES) the delivery of essential foodstuffs, fuel, urgent medical supplies and stores to the Council area will be coordinated by Murrumbidgee SES Division using aircraft, trains, high clearance vehicles and flood rescue boats operating out of Wagga Wagga.
**Resupply Procedures**

8. **Pre Warning of Isolation.** When flood predictions indicate that areas are likely to become isolated, the Wagga Wagga SES Local Controller will advise businesses and, rural residents that they should stock up. Rural residents need to ensure they have an adequate supply of high usage non-perishable items, pet food, fuel, water and essential medications. Rural residents can be advised by telephone, doorknock or radio.

9. Rural residents that are not prepared for isolation should be encouraged to evacuate.

10. **Resupply of Isolated Towns and Villages.** When isolation occurs, storekeepers will be expected to place orders on 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. Similarly, essential services will make arrangements to acquire their resupply needs from normal sources and have the supplies delivered to designated loading points.

11. The SES may establish a vetting committee to ensure that only essential goods are ordered. The committee will consist of representatives from the SES, Wagga Wagga City Council, Police, DoCs and the Chamber of Commerce. The committee will ensure that businesses requesting supplies are not using the flood as a means of restocking free of charge and also that load space in resupply vehicles and aircraft is optimally used.

12. Where supplies are not available within the council area, the Wagga Wagga SES Local Controller may request them through the Murrumbidgee SES Division Headquarters.

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

14. **Resupply of Isolated Properties** is a common requirement during floods. Property owners may call their suppliers direct or place their orders with the Wagga Wagga SES, through DoCS, or through their friends. 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. DoCS will liaise with the SES concerning property holders who place orders with them. They will include people in dire circumstances who receive resupply at no cost. DoCS has a well developed system for this situation, including a standard list of approved resupply items.

   c. If a property holder seeks resupply from the SES and claims to be, or is considered to be, in dire circumstances, he/she is to be referred to DoCS.

   d. Local suppliers will liaise with the SES regarding delivery of resupply items to the designated loading point.
15. The outline of the resupply system for isolated properties is represented in Figure 1.

Figure 2 Outline of resupply system for isolated properties.
16. **Pharmaceutical Supplies and Prescription Medicine.** The SES can deliver completed prescriptions to isolated properties or communities. It is the responsibility of the individual to ensure that the prescription is completed.

17. **Personnel Movement.** Where possible, the SES will assist isolated communities and properties with the movement of people to and from isolated areas.

18. **Method of Resupply.** Depending upon the extent of flooding and its impact on the road system, resupply will be conducted using high clearance vehicle, SES flood rescue boat, fixed wing or rotary wing aircraft.

19. **Air Resupply.** If air resupply is necessary the Wagga Wagga SES Local Controller will liaise with the Murrumbidgee SES Division Controller who will make arrangements with the SES State Headquarters for air resupply. A loading point for air resupply can be established at Wagga Wagga airport.

20. **Refrigeration** for perishable goods can be provided by refrigerated trailers.
### Table 4 Resupply Arrangements for Towns and Villages

<table>
<thead>
<tr>
<th>Community</th>
<th>Main Supply Routes</th>
<th>Likely Point of Closure of Supply Routes</th>
<th>Essential Services Requiring Resupply</th>
<th>Likely Duration of Isolation</th>
<th>Normal Supply Arrangements</th>
<th>Distribution Point</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wagga Wagga (Pop. 44,451)</td>
<td>Sturt Hwy (From Sydney to Adelaide). Hume Hwy (From Sydney to Melbourne) Olympic Way (From Cowra to Albury)</td>
<td>Hume Hwy at Albury is likely to close during 1% AEP flooding on the Murray River Sturt Hwy is likely to close at Gumly Gumly and East Wagga at 9.5 metres (Wagga Wagga gauge) (Alternate route via Inglewood Rd.). During extreme flooding the Sturt Hwy east of Wagga Wagga may close at Tarcutta Ck and Kyemba Creek Sturt Hwy 12.5 km west of Wagga Wagga is likely to close at Sandy Ck at 9.0 metres (Wagga Wagga gauge).</td>
<td>Wagga Wagga Base Hospital Calvary Hospital Caloola Nursing Home Forest Centre Wendy Hucker Nursing Home (The Haven)</td>
<td>1 week</td>
<td>Storekeepers in Wagga Wagga normally source their supplies by road from Melbourne, Canberra or Sydney.</td>
<td>Wagga Wagga Showgrounds or Wagga Wagga Airport.</td>
<td>During the 1974 flood Wagga Wagga was isolated from the North, East and West. Refrigeration trucks may be sourced locally.</td>
</tr>
<tr>
<td>Community</td>
<td>Main Supply Routes</td>
<td>Likely Point of Closure of Supply Routes</td>
<td>Essential Services Requiring Resupply</td>
<td>Likely Duration of Isolation</td>
<td>Normal Supply Arrangements</td>
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<td></td>
<td></td>
<td>Olympic Way will close in Central Wagga Wagga when the Wagga Wagga levee is overtopped (10.7 metres Wagga Wagga gauge). This will close road access via Colin Nott Dr to the North of the city. Olympic Way may close at Uranquinty due to flooding of Sandy Creek and South of Uranquinty due to flooding of Burkes Ck. Mangoplah Rd may close at Mangoplah by flooding on Burkes Ck.</td>
<td>Essential Services Requiring Resupply</td>
<td>2 to 3 days</td>
<td>Normal Supply Arrangements</td>
<td>Distribution Point</td>
<td>Notes</td>
</tr>
<tr>
<td>Ladysmith</td>
<td>Tumbarumba Rd</td>
<td>Tumbarumba Rd is susceptible to flooding either side of Ladysmith.</td>
<td>Essential Services Requiring Resupply</td>
<td>2 to 3 days</td>
<td>Normal Supply Arrangements</td>
<td>Distribution Point</td>
<td>Notes</td>
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<tr>
<td>(Pop. 100)</td>
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<tr>
<td>Community</td>
<td>Main Supply Routes</td>
<td>Likely Point of Closure of Supply Routes</td>
<td>Essential Services Requiring Resupply</td>
<td>Likely Duration of Isolation</td>
<td>Normal Supply Arrangements</td>
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<tr>
<td>Collingullie (Pop. 200)</td>
<td>Sturt Hwy</td>
<td>Sturt Hwy 12.5 km west of Wagga Wagga is likely to close at Sandy Ck at 9.0 metres (Wagga Wagga gauge). Sturt Hwy 1 kilometre south east of Gillenbah at Gillenbah Creek is likely to flood at 7.90 metres on the Narrandera gauge. This closure is within the Narrandera Shire council area.</td>
<td>1 week</td>
<td>Storekeepers in Collingullie normally source their supplies by road from Wagga Wagga.</td>
<td></td>
<td>Collingullie can be resupplied from The Rock.</td>
<td></td>
</tr>
<tr>
<td>Galore (Pop. 20)</td>
<td>Sturt Hwy</td>
<td>Sturt Hwy 12.5 km west of Wagga Wagga is likely to close at Sandy Ck at 9.0 metres (Wagga Wagga gauge). Sturt Hwy 1 kilometre</td>
<td>1 to 2 weeks</td>
<td>There are no stores in Galore.</td>
<td></td>
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<tr>
<td>Community</td>
<td>Main Supply Routes</td>
<td>Likely Point of Closure of Supply Routes</td>
<td>Essential Services Requiring Resupply</td>
<td>Likely Duration of Isolation</td>
<td>Normal Supply Arrangements</td>
<td>Distribution Point</td>
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<tr>
<td>North Wagga (Pop. 600)</td>
<td>Hampden Ave</td>
<td>south east of Gillenbah at Gillenbah Creek is likely to flood at 7.90 metres on the Narrandera gauge. This closure is within the Narrandera Shire council area.</td>
<td></td>
<td>3 days</td>
<td></td>
<td></td>
<td>Storekeepers in North Wagga normally source their supplies by road from Wagga.</td>
</tr>
<tr>
<td>Oura</td>
<td>Oura Rd</td>
<td>Oura Rd closes between North Wagga and Oura at approximately 9.3 metres on the Wagga Wagga gauge. Oura Rd and Wantabadjery Rd</td>
<td></td>
<td>1 week</td>
<td></td>
<td></td>
<td>Storekeepers in Oura normally source their supplies by road from Wagga Wagga.</td>
</tr>
</tbody>
</table>
Wagga Wagga Local Flood Plan January 2006, Sub-Plan of Wagga Wagga Local Disaster Plan

<table>
<thead>
<tr>
<th>Community</th>
<th>Main Supply Routes</th>
<th>Likely Point of Closure of Supply Routes</th>
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<th>Likely Duration of Isolation</th>
<th>Normal Supply Arrangements</th>
<th>Distribution Point</th>
<th>Notes</th>
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<tbody>
<tr>
<td></td>
<td>between Oura and Junee are susceptible to localised flooding.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Currawarna</td>
<td>Old Narrandera Rd</td>
<td>Unknown</td>
<td>None</td>
<td>1 to 2 days</td>
<td>Storekeepers in Currawarna normally source their supplies by road from Wagga or Coolamon</td>
<td></td>
<td>Road access should be possible from between Currawarna and Coolamon.</td>
</tr>
</tbody>
</table>
ANNEX R - DETAILS OF THE DAM-FAILURE WARNING AND EVACUATION SYSTEM FOR TALBINGO AND BLOWERING DAM

Background

1. Talbingo and Blowering Dams form part of a chain of dams located upstream of Tumut. Talbingo is located upstream of Blowering, with the two dams being separated by a small pondage, named Jounama. Talbingo Dam is owned by Snowy Hydro Ltd., whilst Blowering Dam is owned by State Water. Both dams have been identified as deficient and each owner has prepared a Dam Safety Emergency Plan (DSEP). For information on the specifications of the dams refer to Annex A of this plan.

2. Three failure scenarios exist that would require a large scale emergency operation;
   a. Failure of Talbingo Dam.
   b. Failure of Blowering Dam.
   c. Cascade failure; failure of Talbingo Dam resulting in the failure of Jounama and Blowering Dams.

3. Failure may be the result of overtopping and erosion of embankments as a consequence of floods that exceed the capacity of spillways, earthquakes or foundation failure.

4. It is extremely unlikely that dam failure will occur. All dams are capable of passing large floods and sustaining earthquakes. For more detailed information refer to the relevant Dam Safety Emergency Plan (DSEP).

5. The risk of cascade failure is dependent upon water levels in Blowering Dam. The lower the water levels the lower the risk, because Blowering Dam has the capacity to contain flood flows from the failure of Talbingo and Jounama Dams. The probability of cascade failure occurring is extremely low.

Aim

6. This Annex describes the arrangements for the failure of Blowering and Talbingo Dams and should be read in conjunction with Annexes regarding evacuation.

Consequences of Failure

7. If cascade failure results the entire Murrumbidgee floodplain within the Wagga Wagga City council area will require evacuation. This will include the evacuation of North Wagga, Central Wagga Wagga, Gumly Gumly, East Wagga, Oura, Galore, Collingullie, Ladysmith and Currawarina. Approximately 10000 persons in Wagga
Wagga and North Wagga are at risk in a cascade failure scenario. Failure of Blowering Dam alone will require the evacuation of the entire Murrumbidgee River Floodplain within the Wagga Wagga City council area.

8. Flow times between failure and the impact upon urban areas is short. The following tables list flow times to critical areas as a consequence of a failure of Blowering Dam.

<table>
<thead>
<tr>
<th>Location</th>
<th>Flow time from Blowering Dam under Probable Maximum Precipitation Dam Failure conditions to listed locations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tumut</td>
<td>1 hour</td>
</tr>
<tr>
<td>Gundagai</td>
<td>7 hours</td>
</tr>
<tr>
<td>Wagga Wagga</td>
<td>21 hours (19.5 hours for cascade failure under the same conditions)</td>
</tr>
</tbody>
</table>

Table 5 FLOW TIMES FROM BLOWERING DAM TO CRITICAL AREAS

9. In all failure scenarios, extreme velocities and depths are likely to be experienced resulting in the destruction of private property and public infrastructure.

10. It is likely that the supply of essential services (eg. water, electricity etc.) throughout the council area will be disrupted.

11. Any dam failure under flood conditions is likely to be preceded by major flooding throughout the valley. Hence it could be assumed that the majority of evacuations would be completed before dam failure warnings were issued.

12. The failure of Jounama pondage has little downstream consequences.

13. The failure of storages upstream of Talbingo, namely Tumut 2 and Tumut Ponds will have no affect on the integrity of Talbingo Dam.

**Operation and Procedures**

14. The warning arrangements for failure or potential failure of Blowering and Talbingo Dams are summarised in Table 5 at the end of this annex and consist of:

   a. Monitoring and emergency procedures undertaken by State Water and Snowy Hydro Ltd staff.

   b. Notification procedures to ensure that appropriate agencies are made aware of any threat and can mobilise necessary resources.
c. Procedures for warning at-risk residents and advising them as to appropriate actions.

15. The primary contact for dam failure warning notification is the NSW SES State Headquarters Duty Officer. This officer will subsequently notify the Murrumbidgee Division Headquarters duty officer who will contact the Wagga Wagga SES Local Headquarters. An alternate police contact is available if this notification procedure was to fail.

16. Alert levels have been used in Table 5 to organise response actions. The levels of green, white, amber and red have been selected. Consequences and responses escalate as the alert level migrates from green to red. The conditions that define each of the alert levels are listed in Table 5. The meaning of each alert level is as follows:

   a. Green: Situation normal.
   b. White: Preliminary alert to assist the SES in its preparation. This is not a public alert.
   c. Amber: Alert level necessitating the warning of the community at risk and advising the community to prepare for evacuation.
   d. Red: Alert level requiring the immediate evacuation of the community at risk.

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

18. The ‘Approximate Elapsed Times’ are estimates of the worst possible case based upon PMF hydrographs. In real events which threaten to cause Blowering or Talbingo Dams, or all three dams to fail, it is likely that much more time would elapse between defined levels than is indicated in Table 5.

**Monitoring**

19. Dam owners (State Water and Snowy Hyrdo Ltd.) will undertake monitoring and inspections of their respective dams to ensure any situations, which may lead to potential dam failure, are identified.

20. If a situation which may lead to potential dam failure is identified the dam owner will notify the SES.

**Warning**

21. Once an amber alert level is reached dam failure warnings will be disseminated to the public.

22. The SES will disseminate dam failure warnings with assistance from NSW Police, NSW Fire Brigades, NSW Rural Fire Service, VRA and Service Clubs.

23. Dam Failure Warnings will be disseminated by the following means:
a. Doorknocking of at-risk dwellings.
b. Telephone call being made to at-risk dwellings.
c. Mobile public address systems fitted to emergency service vehicles.
d. Sirens fitted to emergency service vehicles.
e. Broadcasts over radio and television stations.
f. By two-way radio.

24. Broadcast dam failure warning messages will describe the situation; say what is happening currently; what is expected to happen; when it will occur and indicate how people should act. If evacuation is required the message will be preceded by the playing of the Standard Emergency Warning Signal (SEWS) and will detail:
   a. Instructions to evacuate.
   b. The location of assembly areas for transport to evacuation centres.
   c. The location of evacuation centres for those using private transport
   d. Authorised or recommended evacuation routes.
   e. Arrangements for children in schools and pre-schools.
   f. Arrangements for elderly or infirm residents unable to self-evacuate.

**Evacuation**

25. If necessary, evacuations will be undertaken. Refer to evacuation annexes for details
<table>
<thead>
<tr>
<th>Alert Level</th>
<th>Defining Conditions</th>
<th>Flood Effects</th>
<th>Time Elapsed (Worse Case)</th>
<th>Notification Arrangements and Actions for Blowering Dam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amber, possibly progressing to Red</td>
<td>Significant earthquake felt at Blowering Dam.</td>
<td>None until failure; then catastrophic flooding of the Murrumbidgee floodplain downstream of the dam.</td>
<td>TBA</td>
<td>State Water (Blowering Dam)</td>
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<td></td>
<td>Murrumbidgee SES Division HQ</td>
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<td>Wagga Wagga SES LHQ</td>
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<td>LEOCON / Other Agencies</td>
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<td></td>
<td>People at Risk in Wagga Wagga City council area</td>
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<td></td>
<td></td>
<td>Activate earth tremor evaluation and procedure of Blowering Dam DSEP.</td>
<td></td>
<td>Notify Wagga Wagga SES LHQ.</td>
</tr>
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<td></td>
<td></td>
<td>Notify SES of earthquake and inspection results.</td>
<td></td>
<td>If dam failure imminent:</td>
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<td></td>
<td>♦ Notify downstream SES units.</td>
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<td>♦ Activate Division Flood Plan.</td>
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<td>♦ Issue warning preceded by SEWS over radio and television stations.</td>
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<td>If dam failure imminent:</td>
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<td></td>
<td>♦ Activate the Wagga Wagga Local Flood Plan.</td>
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<td>♦ Coordinate warnings to at-risk residents.</td>
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<td></td>
<td>♦ Coordinate evacuations.</td>
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<td></td>
<td>LEOCON – coordinate support to SES.</td>
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<td></td>
<td>If dam failure imminent prepare to evacuate and await advice to move to evacuation centres.</td>
</tr>
<tr>
<td>Alert Level</td>
<td>Defining Conditions</td>
<td>Flood Effects</td>
<td>Time Elapsed (Worse Case)</td>
<td>Notification Arrangements and Actions for Blowering Dam</td>
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</tr>
<tr>
<td>Amber, possibly moving to Red.</td>
<td>Unsafe or unusual condition such as increased seepage or cracking.</td>
<td>None until failure; then catastrophic flooding of the Tumut River floodplain.</td>
<td>TBA</td>
<td>Continue monitoring and commence ACTION 2 of Blowering DSEP</td>
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<td></td>
<td>Notify SES</td>
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<td><strong>If</strong> dam failure imminent, initiate ACTION 1 of the Blowering Dam DSEP.</td>
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<td>Notify Wagga Wagga SES LHQ.</td>
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<td><strong>If</strong> dam failure imminent:</td>
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<td></td>
<td>♦ Activate Division Flood Plan</td>
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<td>♦ Notify downstream SES units.</td>
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<td></td>
<td>♦ Issue warnings preceded by SEWS over radio and television stations.</td>
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<td><strong>If</strong> dam failure imminent:</td>
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<td>♦ Activate the Wagga Wagga Local Flood Plan.</td>
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<td>♦ Coordinate warnings to at-risk residents.</td>
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<td>♦ Coordinate evacuations.</td>
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<td></td>
<td><strong>If</strong> dam failure imminent prepare to evacuate and await advice to move to evacuation centres.</td>
</tr>
</tbody>
</table>

Wagga Wagga Local Flood Plan January 2006, Sub-Plan of Wagga Wagga Local Disaster Plan
<table>
<thead>
<tr>
<th>Alert Level</th>
<th>Defining Conditions</th>
<th>Flood Effects</th>
<th>Time Elapsed (Worse Case)</th>
<th>Notification Arrangements and Actions for Blowering Dam</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>State Water (Blowering Dam)</td>
<td>Murrumbidgee SES Division HQ</td>
</tr>
<tr>
<td>ALL CLEAR</td>
<td>Threat to life and property has cleared.</td>
<td>N/A</td>
<td>Confirm situation with SES and confirm the ALL CLEAR.</td>
<td>Notify Wagga Wagga SES LHQ.</td>
</tr>
</tbody>
</table>
### TABLE (5) CONT. NOTIFICATION, WARNING AND EVACUATION ARRANGEMENTS FOR A POTENTIAL FAILURE OF BLOWERING DAM DURING FLOOD

<table>
<thead>
<tr>
<th>Alert Level</th>
<th>Defining Conditions</th>
<th>Flood Effects</th>
<th>Time Elapsed (Worse Case)</th>
<th>Notification Arrangements and Actions for Blowering Dam</th>
<th>People at Risk in Wagga Wagga city council area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Situation normal, storage at or below full supply level</td>
<td>None</td>
<td>TBA</td>
<td>No action required apart from standard surveillance.</td>
<td>No action required</td>
</tr>
<tr>
<td>White</td>
<td>Storage level exceeds RL 382.89 metres</td>
<td>This may indicate the onset of major flooding. Flooding of 9.5 metres or greater likely to be recorded at Wagga Wagga.</td>
<td>TBA</td>
<td>Notify SES. Continue monitoring dam level.</td>
<td>Notify Wagga Wagga SES LHQ. Coordinate Division Flood Plan. Notify downstream SES units.</td>
</tr>
<tr>
<td>Alert Level</td>
<td>Defining Conditions</td>
<td>Flood Effects</td>
<td>Time Elapsed (Worse Case)</td>
<td>Notification Arrangements and Actions for Blowering Dam</td>
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</tr>
</tbody>
</table>
| Amber       | Dam anticipated to reach RL 386.28 metres or anticipated to overtop spillway sidewalls. | Major flooding, greater than the flood of record likely. | TBA | Notify SES
Initiate ACTION 1 of Blowering DSEP. |
<p>|             |                     |               |                           | State Water (Blowering Dam) |
|             |                     |               |                           | Murrumbidgee SES Division HQ |
|             |                     |               |                           | Wagga Wagga SES LHQ |
|             |                     |               |                           | LEOCON / Other Agencies |
|             |                     |               |                           | People at Risk in Wagga Wagga city council area |
|             |                     |               |                           | Prepare for evacuation. |</p>
<table>
<thead>
<tr>
<th>Alert Level</th>
<th>Defining Conditions</th>
<th>Flood Effects</th>
<th>Time Elapsed (Worse Case)</th>
<th>Notification Arrangements and Actions for Blowering Dam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Storage at design Embankment Crest Level (IFF), RL 387.41</td>
<td>Major flooding, many times greater than the flood of record likely.</td>
<td>TBA</td>
<td>Notify SES</td>
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<td>Notify Wagga SES LHQ.</td>
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<td></td>
<td>Issue warnings preceded by SEWS over radio and television stations.</td>
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<td></td>
<td>Notify downstream SES units.</td>
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<td></td>
<td>Confirm Murrumbidgee SES DHQ has been notified.</td>
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<td></td>
<td>Evacuate at-risk residents.</td>
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<td></td>
<td>Notify LEOCON.</td>
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<td></td>
<td>Coordinate the notification of other agencies.</td>
</tr>
<tr>
<td>Red</td>
<td>Dam failure has occurred.</td>
<td>Catastrophic flooding of the Murrumbidgee floodplain.</td>
<td>TBA</td>
<td>Notify SES</td>
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<td></td>
<td>Notify Wagga SES LHQ.</td>
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<td>Notify downstream SES units.</td>
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<td></td>
<td>Notify LEOCON.</td>
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<td></td>
<td>Coordinate the notification of other agencies.</td>
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<td></td>
<td>Continue evacuation.</td>
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<td></td>
<td>LEOCON – coordinate support to SES.</td>
</tr>
</tbody>
</table>

People at Risk in Wagga Wagga city council area

Evacuate
<table>
<thead>
<tr>
<th>Alert Level</th>
<th>Defining Conditions</th>
<th>Flood Effects</th>
<th>Time Elapsed (Worse Case)</th>
<th>Notification Arrangements and Actions for Blowering Dam</th>
</tr>
</thead>
</table>
| ALL CLEAR   | Threat to life and property has cleared. | N/A           | Confirm stream flows with SES and confirm the ALL CLEAR. | Notify Wagga Wagga SES LHQ.  
Notify SES Division HQ.  
Issue ALL CLEAR message over radio and television stations.  
Coordinate the delivery of the ALL CLEAR message to the community.  
Coordinate the notification of other agencies. |
|             |                     |               |                           | Notify LEOCON.  
Return home or await further advice. |
### TABLE (5) CONT. NOTIFICATION, WARNING AND EVACUATION ARRANGEMENTS FOR A POTENTIAL SUNNY DAY FAILURE OF TALBINGO DAM

<table>
<thead>
<tr>
<th>Alert Level</th>
<th>Defining Conditions</th>
<th>Flood Effects</th>
<th>Time Elapsed (Worse Case)</th>
<th>Notification Arrangements and Actions for Talbingo Dam</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Snowy Hydro (Talbingo Dam)</td>
<td>Snowy Hydro (Talbingo Dam)</td>
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<td>Murrumbidgee SES Division HQ</td>
<td>Murrumbidgee SES Division HQ</td>
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<td>Wagga Wagga SES LHQ</td>
<td>Wagga Wagga SES LHQ</td>
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<td></td>
<td>LEOCON / Other Agencies</td>
<td>LEOCON / Other Agencies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>People at Risk</td>
<td>People at Risk</td>
</tr>
<tr>
<td>Amber, possibly moving to Red.</td>
<td>Significant earthquake felt at Talbingo Dam.</td>
<td>None until failure; catastrophic flooding of Talbingo and potential failure of Blowering Dam.</td>
<td>TBA</td>
<td>Activate earthquake response procedures of Talbingo Dam DSEP. Notify SES of earthquake and inspection results (DSEP).</td>
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<td></td>
<td>Notify Wagga Wagga SES LHQ.</td>
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<td></td>
<td>Notify downstream SES units.</td>
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<td></td>
<td>Activate Division Flood Plan.</td>
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<td></td>
<td>If dam failure imminent issue warnings preceded by SEWS over radio and television stations.</td>
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<td></td>
<td>LEOCON – coordinate support to SES.</td>
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<td></td>
<td>If dam failure imminent: Depending upon the integrity of Blowering Dam coordinate evacuations to at risk residents and their evacuation.</td>
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<td></td>
<td>If dam failure imminent: depending upon the integrity of Blowering Dam evacuations may be necessary.</td>
</tr>
<tr>
<td>Alert Level</td>
<td>Defining Conditions</td>
<td>Flood Effects</td>
<td>Time Elapsed (Worse Case)</td>
<td>Notification Arrangements and Actions for Talbingo Dam</td>
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</tr>
<tr>
<td>Amber, possibly moving to Red.</td>
<td>Unsafe or unusual condition such as increased seepage or cracking.</td>
<td>None until failure; catastrophic flooding of Talbingo and potential failure of Blowering Dam.</td>
<td>TBA</td>
<td>Notify SES&lt;br&gt;Conduct Fault Discovery Emergency Responses of Talbingo Dam DSEP.</td>
</tr>
<tr>
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<td></td>
<td>Snowy Hydro (Talbingo Dam)</td>
<td>Murrumbidgee SES Division HQ</td>
</tr>
<tr>
<td>Alert Level</td>
<td>Defining Conditions</td>
<td>Flood Effects</td>
<td>Time Elapsed (Worse Case)</td>
<td>Notification Arrangements and Actions for Talbingo Dam</td>
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</tr>
<tr>
<td>ALL CLEAR</td>
<td>Threat to life and property has cleared.</td>
<td>N/A</td>
<td>N/A</td>
<td>Confirms situation with SES and confirm the ALL CLEAR. Notify Wagga SES LHQ. Coordinate the delivery of the ALL CLEAR message. Notify LEOCON. Coordinate the notification of other agencies. Return home or await further advice.</td>
</tr>
<tr>
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<td></td>
<td>Snowy Hydro (Talbingo Dam)</td>
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</tbody>
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TABLE (5) CONT. NOTIFICATION, WARNING AND EVACUATION ARRANGEMENTS FOR A POTENTIAL FAILURE OF TALBINGO DAM DURING FLOOD

<table>
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<tr>
<th>Alert Level</th>
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<th>Notification Arrangements and Actions for Talbingo Dam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Situation normal, storage at or below full supply level</td>
<td>None</td>
<td>TBA</td>
<td>Snowy Hydro (Talbingo Dam) No action required apart from standard surveillance. Murrumbidgee SES Division HQ No action required. Wagga Wagga SES LHQ No action required. LEOCON / Other Agencies No action required. People at Risk in the Wagga Wagga City Council area No action required.</td>
</tr>
<tr>
<td>White</td>
<td>Dam level is approaching the spillway crest level (545.90) and is expected to continue rising.</td>
<td>Depending on levels in Blowering Dam, emergency releases may result in flooding of the Tumut River flood plain</td>
<td>TBA</td>
<td>Notify SES Notify State Water Commence Alert Level 1 actions of Talbingo Dam DSEP. Liaise with State Water regarding Blowering Dam levels. Notify Wagga Wagga SES Activate Division Flood Plan. Notify downstream SES units. Notify LEOCON. Activate Wagga Wagga Local Flood Plan. Coordinate the notification of other agencies. LEOCON – coordinate support to SES. No action required.</td>
</tr>
<tr>
<td>Alert Level</td>
<td>Defining Conditions</td>
<td>Flood Effects</td>
<td>Time Elapsed (Worse Case)</td>
<td>Notification Arrangements and Actions for Talbingo Dam</td>
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</tr>
<tr>
<td>Amber</td>
<td>Spill commences.</td>
<td>Depending on levels in Blowering Dam, emergency releases may result in major flooding of the Murrumbidgee floodplain.</td>
<td>TBA</td>
<td><strong>Snowy Hydro (Talbingo Dam)</strong></td>
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<td></td>
<td>Notify SES</td>
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<td>Notify State Water</td>
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<td>Commence Alert Level 2 actions of Talbingo Dam DSEP.</td>
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<td>Notify Wagga Wagga LHQ.</td>
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<td>Issue warnings preceded by SEWS over radio and television stations.</td>
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<td>Notify downstream SES units.</td>
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<td><strong>Murrumbidgee SES Division HQ</strong></td>
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<td><strong>Wagga Wagga SES LHQ</strong></td>
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<td>Notify LEOCON.</td>
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<td></td>
<td>Dependent upon the integrity of Blowering Dam coordinate the delivery of warnings to at-risk residents by telephone, local radio (SEWS) and door knock.</td>
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<td>Conduct reconnaissance.</td>
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<td>Coordinate the notification of other agencies.</td>
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<td><strong>LEOCON / Other Agencies</strong></td>
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<td></td>
<td>LEOCON- coordinate support to SES.</td>
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<td><strong>People at Risk in the Wagga Wagga City Council area</strong></td>
</tr>
<tr>
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<td></td>
<td>Depending upon the integrity of Blowering Dam, people may need to prepare to evacuate.</td>
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<tr>
<td></td>
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<td></td>
<td>It is likely in such an event that major flooding would occur in the Wagga Wagga City council area, independent of any dam failure.</td>
</tr>
<tr>
<td>Alert Level</td>
<td>Defining Conditions</td>
<td>Flood Effects</td>
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<td>Notification Arrangements and Actions for Talbingo Dam</td>
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</tr>
<tr>
<td>Red</td>
<td>Dam level approaches crest level of T3 Intake Structure (551.08).</td>
<td>Depending on levels in Blowering Dam, emergency releases may result in major flooding of the Murrumbidgee floodplain.</td>
<td>TBA</td>
<td>Notify SES Notify State Water Commence Alert Level 3 actions of Talbingo Dam DSEP. Notify Wagga Wagga LHQ. Issue warnings preceded by SEWS over radio and television stations. Notify downstream SES units.</td>
</tr>
<tr>
<td>Alert Level</td>
<td>Defining Conditions</td>
<td>Flood Effects</td>
<td>Time Elapsed (Worse Case)</td>
<td>Notification Arrangements and Actions for Talbingo Dam</td>
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<tr>
<td>Red</td>
<td>Dam failure has occurred.</td>
<td>Catastrophic flooding of Talbingo and potential failure of Blowering Dam.</td>
<td>TBA</td>
<td>Notify SES &lt;br&gt;Notify State Water &lt;br&gt;Notify Wagga Wagga SES LHQ. &lt;br&gt;Notify downstream SES units. &lt;br&gt;Issue warnings preceded by SEWS over radio and television stations. &lt;br&gt;Notify LEOCON &lt;br&gt;Dependent upon the integrity of Blowering Dam if necessary evacuate at-risk residents. &lt;br&gt;Coordinate the notification of other agencies. &lt;br&gt;Conduct reconnaissance. &lt;br&gt;LEOCON-coordinate support to SES. &lt;br&gt;Depending upon the integrity of Blowering Dam, people may need to be evacuated. &lt;br&gt;It is likely in such an event that major flooding would occur in the Wagga Wagga City council area, independent of any dam failure.</td>
</tr>
</tbody>
</table>

Wagga Wagga Local Flood Plan January 2006, Sub-Plan of Wagga Wagga Local Disaster Plan
### Table: Notification Arrangements and Actions for Talbingo Dam

<table>
<thead>
<tr>
<th>Alert Level</th>
<th>Defining Conditions</th>
<th>Flood Effects</th>
<th>Time Elapsed (Worse Case)</th>
<th>Snowy Hydro (Talbingo Dam)</th>
<th>Murrumbidgee SES Division HQ</th>
<th>Wagga Wagga SES LHQ</th>
<th>LEOCON / Other Agencies</th>
<th>People at Risk in the Wagga Wagga City Council area</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL CLEAR</td>
<td>Threat to life and property has cleared.</td>
<td>N/A</td>
<td>Confirm stream flows with SES and confirm the ALL CLEAR.</td>
<td>Notify Wagga Wagga SES LHQ. Issue ALL CLEAR. message over radio and television stations.</td>
<td>Notify Snowy Hydro and LEOCON.</td>
<td>Coordinate the delivery of the ALL CLEAR message.</td>
<td>Coordinate the notification of other agencies.</td>
<td>Return home or await further advice.</td>
</tr>
</tbody>
</table>
MAP 1 - COUNCIL AREA
MAP 3 - CENTRAL WAGGA WAGGA EVACUATION SUB-SECTORS
MAP 4 - NORTH WAGGA ROAD CLOSURES
MAP 5 - WAGGA WAGGA LEVEE ALIGNMENTS
MAP 6 - EAST WAGGA / GUMLY GUMLY ROAD CLOSURES
MAP 7 - WAGGA WAGGA 1974 FLOOD EXTENT