Appendix 4
Deniliquin – Conargo Local Flood Plan – a Subplan of the Deniliquin – Conargo Local Disaster Plan (DISPLAN) June 2009

DENILIQUIN – CONARGO LOCAL FLOOD PLAN

A SUB-PLAN OF THE DENILIQUIN – CONARGO LOCAL DISASTER PLAN (DISPLAN)

Chair, Local Emergency Management Committee

Deniliquin SES Local Controller

JUNE 2009 EDITION

TO BE REVIEWED NO LATER THAN JUNE 2014

DENILIQUIN COUNCIL

CONARGO SHIRE COUNCIL
Progression Through Partnership

CONTENTS

DISTRIBUTION LIST

Deniliquin SES Local Controller 1
Deniliquin SES Unit 1
Murray SES Region Headquarters 1
NSW SES State Headquarters 2
Deniliquin – Conargo Local Emergency Operations Controller 1
NSW Police Service, Deniliquin Local Area Command 1
Deniliquin – Conargo Local Emergency Management Officer 1
Deniliquin – Conargo Local Emergency Operations Centre 1
Deniliquin Council General Manager 1
Conargo Shire Council General Manager 1
NSW Fire Brigades, Deniliquin 1
Rural Fire Service, Deniliquin and Conargo 1
Ambulance Service of NSW, Deniliquin 1
Volunteer Rescue Association, Deniliquin Rescue Squad 1
Country Energy **Deniliquin** 1
Telstra, **Deniliquin** 1
NSW Department of Primary Industries (Agriculture), Deniliquin 1
Department of Community Services, Deniliquin 1
Roads and Traffic Authority, Wagga Wagga 1
Evacuation Centres 1
Local Bus Company (Purtills) 1
Australian Red Cross Society (Albury) 1
Department of Commerce (Hay) 1
ARTC (Australian Rail Track Corporation) 1
Hospitals 1
Schools 1
Council Library 2
Spare 10

AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to:

The Local Controller
Deniliquin State Emergency Service
PO Box 556
DENILIQUIN NSW 2710

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

Amendment List Number	Date	Amendment Entered By	Date

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
DISPLAN	Disaster Plan
DECC	Department of Environment and Climate Change
DoCS	Department of Community Services
DSC	Dams Safety Committee
DSEP	Dam Safety Emergency Plan
DVR	Disaster Victim Registration
DWE	Department Water and Energy
EFE	Extreme Flood Event
GIS	Geographic Information System
GRN	Government Radio Network
HF	High Frequency
MR	Main Road
NRMA	National Roads and Motorists' Association
PMF	Probable Maximum Flood
PMR	Private Mobile Radio
PSTN	Public Switched Telephone Network
RTA	Roads and Traffic Authority
SES	State Emergency Service
SEWS	Standard Emergency Warning Signal
SH	State Highway
TR	Trunk Road
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 Floodwatch is a notification of the potential for a flood to occur as a result of a developing wether 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 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 Deniliquin and Conargo Shire Council areas. It covers operations for all levels of flooding within the Council areas.

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 Murray SES Region Controller and the Deniliquin - Conargo Local Emergency Management Committee.

1.3 Area Covered By the Plan

1.3.1 The area covered by the plan is the:

a. Deniliquin Local Government area which includes the town of Deniliquin and a number of rural properties and reaches of:

- The Edward River (an anabranch of the Murray River) which takes water from the Murray River at a point approximately 70 kilometres upstream of Deniliquin.
- The Tuppal Creek which originates North West of Tocumwal and joins the Edward River at the southern municipal boundary. During floods, it connects to the Murray and Edward rivers.
- The Bullatale Creek (an anabranch of the Murray River) which takes water two kilometres downstream from Tocumwal joining the Edward River two kilometres south of where the Tuppal Creek joins the Edward River (i.e.: two kilometres from the southern Council boundary).

b. Conargo Shire Local Government area which includes the villages of Conargo, Blighty, Pretty Pine, Booroorban and Wanganella, the locality of Windouran and a number of rural properties. The following waterways also fall within the Conargo Shire:

- The Billabong Creek which rises 30 kilometres north of Holbrook laterally dissecting the Shire and passing to the North of the village of Conargo and South of the locality of Windouran before joining the Edward River at Moulamein (in the Wakool Shire).
- The Yanco Creek offtake from the Murrumbidgee River at Narrandera which flows into the Billabong Creek nine kilometres north east of the village of Conargo.

1.3.2 The Council areas and principal rivers and creeks are shown in Map 1.

1.3.3 The Council areas are in the Murray SES Region and for emergency management purposes are part of the Murray Emergency Management District.

1.4 Description of Flooding and Its Effects

1.4.1 The nature of flooding in the Deniliquin and Conargo Shire Council areas 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 **Deniliquin SES Local Controller**. The Deniliquin 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 Charlotte Street, Deniliquin 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 Deniliquin and Conargo Shire Councils.

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 Deniliquin and Conargo Shire Councils to organise temporary repairs or improvements to levees and appoint wardens when flood waters are expected to cause damage to or overtop 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 (Agriculture).

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 Murray SES Region Headquarters and agencies assisting within the Council area. These will contain information on:

- Road conditions and closures.
- Current flood behaviour.
- Current operational activities.
- Likely future flood behaviour.
- Likely future operational activities.
- Probable resource needs.

w. Keep the Local Emergency Operations Controller (LEOCON) 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 **Deniliquin SES Unit Members**

a. Carry out flood response tasks. These may include:

- The management of the Deniliquin SES Unit Headquarters Operations Centres.
- 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 **Deniliquin – Conargo Local Emergency Operations Controller (LEOCON)**

a. Monitor flood operations.

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

c. As requested by the Deniliquin SES Local Controller, assist with the coordination of evacuation operations.

1.5.5 **NSW Police Force, Deniliquin**

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 RTA.

d. Ensure all evacuees are registered.

e. Secure evacuated areas.

1.5.6 **Deniliquin – Conargo Local Emergency Management Officer (LEMO)**

a. Provide executive support to the LEOCON in accordance with the Deniliquin – Conargo Local Disaster Plan (DISPLAN).

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

1.5.7 **Deniliquin and Conargo Shire Councils (prioritised as resources permit)**

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 Local SES Controller, deploy personnel and resources for flood related activities.

d. Close and reopen Council roads (and other roads nominated by agreement with the RTA) and maintain a Council Information Centre including information on Council roads and advise the Deniliquin SES Local Controller, the Police and people who telephone the Council for road information.

e. Assistance with the provision of sandbags, sand and transport to areas in which flooding is expected.

f. Provide back-up radio communications using Councils radio system.

g. In the event of evacuations, assist with the set up and operation of animal shelter compound facilities for the domestic pets and companion animals of evacuees.

h. Close drains through levees and ensure that any levee gates operate properly.

i. Provide stormwater relief within the levee system as required once levee gates and valves are closed.

j. Provide for the management of health hazards associated with flooding. This includes maintaining water supply and sewerage systems and removing debris and waste.

k. Deploy manpower and resources for levee maintenance, repair or improvement tasks.

l. Ensure premises are fit and safe for reoccupation and assess any need for demolition.

m. Assist with the removal and returns of caravans from any flood prone caravan parks.

1.5.8 **Commonwealth Bureau of Meteorology (BoM)**

a. Provide Flood Watches for the Murray River Basin.

b. Provide Flood Warnings, incorporating height-time predictions, for the Yarrawonga d/s, (409025), Tocumwal (409202), Echuca (409200) Deniliquin (409003), Moulamein, (409014) and Narrandera, (410005) river gauges.

1.5.9 **NSW Fire Brigades, Deniliquin**

a. Assist with the delivery of evacuation warnings.

b. Assist with the conduct of evacuations.

c. Provide facilities for pumping flood water out of buildings and from low-lying areas (may include internal stormwater relief).

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

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

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

1.5.10 **Rural Fire Service (RFS), Deniliquin and Conargo**

a. Provide personnel in rural areas and villages to:

- Inform the Deniliquin 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 facilities for pumping flood water out of buildings and from low-lying areas (may include internal stormwater relief).

f. Provide back-up radio communications.

g. Assist with sandbagging.

h. Assist with Operations Centre Staffing.

i. Assist with re-supply operations.

1.5.11 **Deniliquin Rescue Squad (VRA)**

a. Assist the Deniliquin SES Local Controller with flood response tasks. These may include:

- Evacuations.
- Sandbagging.
- Levee monitoring.
- Flood boat operations.
- Staffing the Emergency Operations Centre.

1.5.12 **Country Energy**

a. Provide advice to the Deniliquin 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, Deniliquin**

a. Maintain telephone services.

b. Repair and restore telephone facilities damaged by flooding.

c. Provide additional telecommunications support for the Deniliquin SES Local and/or Unit Headquarters as required.

1.5.14 **NSW Department of Primary Industries (Agriculture), Deniliquin**

a. Provide immediate animal relief services and continuing rehabilitation assistance to primary producers this should include but not be limited to the supply and delivery of emergency fodder and the provision of advice with regard to dealing with stranded, dead and injured livestock.

b. Provide financial, welfare and damage assessment assistance to flood affected rural landholders.

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

d. Establish and operate animal shelter facilities for domestic pets stranded animals and companion animals of evacuees.

1.5.15 **Department of Community Services (DoCS), Deniliquin**

a. Manage evacuation centre(s) that may be located at the following locations:

- **North Sector** – Scout Hall Victoria Street, Pretty Pine Hall, Deniliquin North Primary School and the Rural Lands Protection Board building.
- **South Sector** – Deniliquin High School Multi Purpose Centre, Rotary Park Sports Stadium or the Deniliquin Airport.

b. Provide clothing, accommodation, food and welfare services for flood affected people, including stranded travellers.

c. Provide Disaster Victim Registration service for evacuation.

1.5.16 **Ambulance Service of NSW, Deniliquin**

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

b. Assist with evacuation of patients from hospitals and nursing homes

c. Deploy ambulance resources to North Deniliquin if access is expected to be lost.

d. 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.**

a. Close and open the Cobb Highway and Riverina Highway and liaise with the Deniliquin and Conargo Shire Councils in relation to the requirement to close and re-open roads affected by flood waters within the Council areas and advise the Deniliquin SES Local Controller.

1.5.18 **Australian Rail Track Corporation (ARTC) and Vic Rail**

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

b. Arrange trains for evacuations, commuting and/or re-supply purposes.

1.5.19 **Deniliquin – Conargo Transport Services Coordinator.**

a. Arrange transport facilities for evacuations, commuting and/or re-supply purposes.

1.5.20 **All Schools and further education centres, including the Department of Education and Training; and Catholic Education Office and private education providers**

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 evacuation of schools.

d. Provide space in schools for evacuation centres where necessary

1.5.21 . **Childcare Centres**

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

- ABC Child Care (Hardinge Street)
- Deniliquin Pre-school (Whitelock Street)
- Little Tacka's (Hardinge Street)
- Gulpa Pre School (Wellington Street)
- Deniliquin Play Group (Memorial Park)
- Deniliquin Childcare Centre (Whitelock Street)
- Out of School Hours (OOSH) (Barham Road)

b. When notified the schools and childcare centres should:

- Liaise with the Deniliquin 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.
- Provide space in schools for evacuation centres where necessary.

1.5.22 **Aged Care Facilities**

a. The following aged care facilities are to be contacted by the SES in the event of imminent flooding:

- Navorina Nursing Home (Macauley Street)
- Orana Hostel (Napier Street)
- Mirradong Legacy Units (Poictiers Street)

1.5.23 **Moonacullah Land Council.**

Act as the point of contact between the SES and the Moonacullah community and:

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

b. Disseminate flood information, including flood and evacuation warnings, to the Moonacullah community.

1.5.24 **Deniliquin Returned Services League Club.**

a. The Club will provide space for an evacuation centre if required.

1.5.25 **Australian Red Cross Society (Deniliquin/Conargo Shires) (DoCS Community Partner activated by DoCS)**

a. Assist the NSW Police Force with the registration of evacuees at evacuation centres.

b. Provide personal support at evacuation/recovery centres.

c. Provide outreach services post event.

1.5.26 **SES Flood Wardens Deniliquin North and South and Conargo**

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

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

c. Disseminate flood information including flood and evacuation warnings.

1.5.27 **Caravan Park Proprietors McLeans Beach Caravan Park, Paringa Caravan Park, Pioneer Tourist Park, Deni Car-O-Tel, Four Posts Reserve (Murray Shire) and Riverside Caravan Parks**

a. Prepare Flood Management Plans for the Caravan Parks.

b. Where applicable ensure that owners and occupiers of caravans are aware that the caravan parks are 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 Deniliquin SES Local Controller of the progress of evacuation and/or van relocation operations and of any need for assistance in the conduct of these tasks.

1.5.28 **State Water, Hume Dam**

a. Maintain and operate the Dam Failure Warning System for Hume 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 effects of dam failure.

1.5.29 **Apex, Rotary, Lions, Kiwanis, Soroptomists and other Service and Sporting Clubs.**

Where available and where resourcing permits, assist with:

a. Delivery of evacuation warnings.

b. Conduct of evacuations.

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

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

e. Sandbagging.

f. Monitoring of levees.

g. Relocation of caravans.

1.5.30 **Private Companies (Purtills and others),**

Assist with the provision of:

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

b. Trucks and drivers to relocate furniture.

c. Warehousing facilities to store furniture.

d. Sand for sandbagging.

e. Space for evacuation centres.

1.5.31 **Deniliquin Health Service (Deniliquin Hospital & Community Health)**

Deniliquin Health service will be contacted by the SES in the event of imminent flooding:

a. Deniliquin Health Service will assist with the evacuation of staff and patients in accordance with their own Evacuation Plan.

b. Deniliquin Health Service will consider assisting by forward deploying a Doctor, and a Nurse, with a Health Service vehicle that is equipped with basic general clinic supplies to co-locate with the NSW Ambulance crew in North Deniliquin (if resources allow for this).

c. Deniliquin Heath Service will consider the deployment of further resources to isolated areas, based on requests from the SES (if resources allow for this).

1.6 Cross-Council Assistance Arrangements

1.6.1 The Deniliquin and Conargo Shire Council areas have combined for the purposes of emergency management.

1.6.2 Flood operations in either one or both of the local Council areas will be a combined operation and will be controlled by the Deniliquin SES Local Controller.

1.6.3 The Deniliquin – Conargo LEOCON will coordinate support to the Deniliquin SES Local Controller as requested during flood response operations.

PART 2 - PREPAREDNESS

2.1 Maintenance of This Plan

2.1.1 The Deniliquin 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 Deniliquin and Conargo Shire Councils 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 Deniliquin 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 Murray SES Region 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 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. **Flood watch networks**.

d. **Weekly river reports**. The Murray Darling Basin Commission (MDBC) produces reports on a weekly basis, including river height forecasts.

e. **State Water**. The Regional Office of State Water at Deniliquin provides an advisory service for river heights for the Edward/Wakool system and the Murray River downstream to the Murrumbidgee River junction. State Water also disseminates information provided by the Rural Water Commission in Victoria in relation to river heights on the Murray River below Yarrawonga via this advisory service.

f. **State Forests**. Forests NSW (DPI) can provide advice on the flood effects on forest roads within the Council areas.

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 (i.e. who would be affected in floods of differing severities).

b. Available information about the estimated impacts of flooding at different heights.

c. Identification of required actions and the amounts of time needed to carry them out.

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

2.5 Public Education

2.5.1 The Deniliquin SES Local Controller, with the assistance of the Councils of Deniliquin and Conargo, the Murray SES Region Headquarters and SES State Headquarters, is responsible for ensuring that the residents of the Council areas are aware of the flood threat in their vicinity and how to protect themselves from it. This includes people knowing:

a. At what stage their property might be inundated (if applicable).

b. The evacuation routes that would apply to them.

c. The location of evacuation centres.

d. The importance of registering their evacuation at an evacuation centre.

e. The general contents of this plan.

2.5.2 Specific strategies to be employed include:

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

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

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

2.6 Training

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

2.7.2 The Deniliquin SES Unit has similar responsibilities in relation to the Deniliquin Unit Headquarters and equipment.

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 Deniliquin SES maintains an Operations Centre at Charlotte Street, Deniliquin.

3.2.2 An additional Operations Centre may be established at Rural Lands Protection Board building (Hay Road) or the Conargo Shire Council Chambers (Pretty Pine Recreation Reserve) to co-ordinate support to the northern levee area if the central levee is overtopped.

3.2.3 The Deniliquin and Conargo Shire Councils Emergency Operations Centre is located at SES building Charlotte Street. Alternate centres are Deniliquin Hospital Training Rooms (Charlotte Street), NSW Rural Fire Service Building (Duncan Street) and the Conargo Shire Council Chambers (Pretty Pine Recreation Reserve)

3.2.4 The Deniliquin SES will operate an After Hours Duty Officer whenever flood operations are not being conducted

3.3 Operational Management

3.3.1 For the purposes of operations Deniliquin will be divided into three sectors North, Central and South

3.4 Liaison

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

3.4.2 Liaison officers are to:

a. Have the authority to deploy resources on behalf of their parent organisations at the request of the Deniliquin SES Local Controller

b. Advise the Deniliquin SES Local Controller on resource availability for their service, and

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

3.5 Communications

3.5.1 The primary means of office-to-office communications is by telephone, email, broadband internet and facsimile.

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

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

3.5.4 Back-up communications are provided as follows:

a. Each SES Local Headquarters within the Murray SES Region operates a station on the Murray SES Region UHF radio strategic control net.

b. The Deniliquin Council operates UHF radio networks which provide communications to most local properties.

c. The Rural Fire Service (RFS) operate UHF radio networks which provide coverage for the two Council areas.

d. The Local Emergency Operations Centre operates a base station on UHF CB, SES UHF and the Deniliquin Council UHF network.

3.6 Activation

3.6.1 This plan will be activated by the Deniliquin SES Local Controller:

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 Hume Dam or any other major storage.

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

d. When directed to do so by the Murray SES Region Controller.

3.6.2 On activation, contact with the Bureau of Meteorology to discuss the development of flood warnings will normally be through the Murray SES Region Headquarters.

3.6.3 The following persons and organisations will be advised of the activation of the plan regardless of the location and severity of the flooding anticipated:

a. Deniliquin – Conargo Local Emergency Operations Controller (LEOCON) for transmission to the NSW Police Deniliquin Local Area Command Headquarters.

b. Deniliquin SES Unit.

c. Deniliquin SES Unit Controller.

d. Murray SES Region Headquarters.

e. Deniliquin – Conargo Local Emergency Management Officer (LEMO) for transmission to appropriate Council officers and departments.

f. Deniliquin Health Service (Deniliquin Hospital & Community Health)

g. Deniliquin Council General Manager

h. Conargo Council General Manager

i. Deniliquin Council Mayor.

j. Conargo Shire Council Mayor

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

3.7 Flood Intelligence

3.7.1 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 Murray River Basin.
- 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 River gauge information is available from the Bureau of Meteorology website www.bom.gov.au.

b. **Murray SES Region Headquarters**. The Region Headquarters provides information on flooding and its consequences, including those in nearby Council areas.

c. **Deniliquin and Conargo Shire Councils**. Councils provide information to the Deniliquin SES Local Controller regarding road closures, water supply, waste management, and levee bank condition.

d. **Office of Public Works and Services (Manly Hydraulics Laboratory) Computerised River Watch (Flood-to-Fax) System**. This system provides river height and rainfall readings for a number of gauges as indicated in Annex C.

e. **Hume Dam-Failure Warning System**. This system is operated by the State Water, the dam owner to provide advice and warnings on dam failure or potential dam failure situations at Hume Dam.

f. **State Water, Deniliquin**. In addition to advice in relation to emergency situations at Hume Dam, the regional office of State Water at Deniliquin provide an advisory service for river heights for the Edward/Wakool system and the Murray River downstream to the Murrumbidgee River junction. State Water may provide additional information in relation to river heights on the Murray River below Yarrawonga in consultation with the Rural Water Commission in Victoria.

g. **Department of Water and Energy (Deniliquin Office)**. This office will advise flow rates and rates of rise for the Edward, Murray, Wakool and others systems. Daily river level reports are available on-line at http://waterinfo.nsw.gov.au/

h. **Weekly River Reports**. The Murray Darling Basin Commission (MDBC) produces reports on a weekly basis, including river height forecasts.

i. **State Forests**. State Forests can provide advice on the flood effects on forest roads within the Deniliquin and Conargo Shire Council areas.

j. **Active Reconnaissance.** The SES monitors the following problem areas:

- Davidson Street area
- Town Lagoon system from Golf Club to Edward River at Harfleur Street (Watsons Lagoon) (internal flooding)
- South School stormwater basin (internal flooding)
- Effluent discharge stream (Wakool Road)
- Memorial Park area (including private residence), Golf Club and Deniliquin State Forest prior to closing of the levee gate on Memorial Drive

k. **Rick Mailler, Kullaroo (Jerilderie Road)**

- May be used to provide flood information to the Deniliquin SES Local Controller.

3.8 Preliminary Deployments

3.8.1 When flooding is expected to be severe enough to cut road access to North Deniliquin and between towns, within towns and/or rural communities, the Deniliquin 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.

3.8.2 When access between Deniliquin and North Deniliquin is expected to be cut, the Deniliquin 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. However, access to North Deniliquin is normally still possible from Conargo and Finley.

3.8.3 Likely deployments to North Deniliquin include:

a. Evacuation centre staff and volunteers.

b. Council staff (water supply and sewerage crews) and plant and equipment from both the Deniliquin and Conargo Shire Councils.

c. Rural Fire Service (RFS) vehicles, crew, pumps and other equipment.

d. Energy provider (e.g. Country Energy)

e. Temporary ablution/sanitary facilities.

f. Ambulance Service of NSW and crew.

g. Levee wardens as required

h. Sandbags and filling material (and sandbagging machine)

i. Deniliquin Rescue Squad vehicle or trailer and crew.

j. Deniliquin Health Service will consider assisting by forward deploying a Doctor, and a Nurse, with a Health Service vehicle that is equipped with basic general clinic supplies to co-locate with the NSW Ambulance crew in North Deniliquin (if resources allow for this)

3.9 Protection of Resources.

3.9.1 When the Deniliquin Levee is predicted to overtop or fail, the Deniliquin SES Local Controller will advise emergency services and essential agencies located on the floodplain to relocate to flood free locations.

3.10 Warnings

3.10.1 Warning services operate according to the following arrangements:

a. The Deniliquin SES Local Headquarters:

- Provides advice to the Murray SES Region 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.
- Provides confirmation of evacuation actions

b. The Murray SES Region Headquarters may supplement the information contained in Bureau of Meteorology Flood Warnings and disseminate them as part of SES Region Flood Bulletins to Media organisations and agencies listed in Annex D of this plan.

c. As a flood progresses down the Murrumbidgee River, the Murrumbidgee SES Region Headquarters distributes SES Flood Bulletins to the Murray Region Headquarters for distribution to the organisations, agencies and individuals indicated at (b) above.

3.10.2 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 Deniliquin SES Local Controller will advise the Murray SES Region Headquarters which will issue SES Livestock and Equipment Warnings to radio stations as indicated in Annex D.

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

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

- Advise the Deniliquin and Conargo Shire Councils and the Deniliquin – Conargo LEOCON.
- Provide the Murray SES Region Headquarters with information for inclusion in SES Flood Bulletins on the estimated impacts of flooding at the predicted heights.

d. **SES Local Flood Advices.** The SES may issue Local Flood Advices for the gauges listed in Annex C. These are issued in SES Region Flood Bulletins and/or direct from the Deniliquin SES Local Controller normally by facsimile.

e. **Evacuation Warnings.**

- A template guide to the content of evacuation warning messages is at Annex E. These may be disseminated as follows:
  - Using public address systems from Police and other emergency service vehicles.
  - By door-knocks by Police and other emergency service personnel.
  - By telephone.
  - By television (SEWS)
  - By two-way radio.
  - By direct access to radio stations.
  - In Murray SES Flood Bulletins.
- The first evacuation warnings issued in the Deniliquin and Conargo Shire Councils are when the Deniliquin gauge is expected to reach the following heights:
  - Davidson Street (Central area), Northern Deniliquin and Riverside Caravan Park – 7.00 m Deniliquin gauge.
  - Motel and Golf Club Resort and two houses which are isolated when Memorial Park floodgate is installed – 7.50 metres (Memorial Park flood gate road level 7.84 metres) and road level is lower.
  - Four Post Reserve Area (Murray Shire) – 7.96 m Deniliquin gauge.
  - McLeans Beach Caravan Park – 8.30 m Deniliquin gauge.
  - Deniliquin proper - 9.20 m Deniliquin gauge.

f. **Dam-Failure Warnings.** Special arrangements apply in the case of severe flooding that may have the potential to cause the failure of Hume Dam. Details of these arrangements are described in Annex I.

g. **Standard Emergency Warning Signal (SEWS).** This signal may be played over radio and television stations to alert communities to Evacuation Warnings. Approval to use the signal will be obtained by the Deniliquin SES Local Controller from the Murray SES Region Headquarters.

3.11 Information

3.11.1 The Murray SES Region Headquarters issues SES Flood Bulletins to media outlets and agencies on behalf of all SES units in the Region. 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.

3.11.2 SES Flood Bulletins are issued as required during periods of flooding.

3.11.3 The Murray SES Region Headquarters maintains pre-written flood bulletins for key flood gauge heights.

3.11.4 During moderate and major floods, the Deniliquin SES Local Controller provides flood reports and media releases which are sent to the following newspapers:

a. The Deniliquin Pastoral Times (published Tuesdays and Fridays).

3.11.5 The Deniliquin 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.

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

a. The Deniliquin SES Local Controller provides road status reports for main roads in the Council area to the Murray SES Region Headquarters Road Information Cell and to the Deniliquin Police Local Area Command Headquarters. The Road Information Cell obtains information from the Police, Council, Roads and Traffic Authority (RTA) and National Roads and Motorists Association (NRMA).

b. The Murray SES Region 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.

3.11.7 The Deniliquin SES Local Controller is to ensure that the Murray SES Region Controller is regularly briefed on the progress of operations and on future resource needs.

3.12 Road Closures

3.12.1 A number of roads within the Deniliquin and Conargo Shire Councils are affected by flooding. Details are provided in Annex B.

3.12.2 Both Councils, acting as the road authority close and re-open flood affected local and regional roads within their respective Council areas.

3.12.3 The NSW Police Service has the authority to close and re-open roads but will normally only do so (if the Council or the RTA has not already acted) if public safety requires such action.

3.12.4 State Road closures are updated regularly by the RTA and are made available in the Daily Traffic Report on phone 132701 by the RTA Transport Management Centre in Sydney.

3.12.5 The RTA Regional Traffic Operations Manager is available for liaison with regard to road closures of RTA controlled roads.

3.13 Traffic Control.

3.13.1 In the event of major flooding, the Deniliquin 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).

3.13.2 Assistance will be provided by the Deniliquin and Conargo Shires in the erection of barricades and signs.

3.14 Flood Rescue

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

3.14.2 The Deniliquin VRA has two punts and crews to assist with flood boat operations including rescue.

3.14.3 Additional flood boats and crews can be requested through the Murray SES Region Headquarters.

3.15 Evacuations

3.15.1 During major flooding in Deniliquin, major evacuation operations may be required from the leveed sections of the town, including a number of caravan parks and from numerous rural properties outside the town within the Deniliquin and Conargo Council areas.

3.15.2 During a large-scale evacuation, the town of Deniliquin is divided into Sectors, the boundaries of which generally coincide with the Northern, Central and Southern levees.

3.15.3 Few evacuations are required from the Conargo Shire, even during major flooding. Occasional evacuations of village areas may be required.

3.15.4 Evacuations will be controlled by the Deniliquin SES Local Controller and conducted by Police and/or DoCS personnel.

3.15.5 Details of the evacuation arrangements for Deniliquin and Conargo Shire Council areas are contained in Annex F of this plan.

3.15.6 The caravan parks known to be flood liable are listed in Annex G, along with arrangements relating to the evacuation of residents and the removal of caravans.

3.15.7 Deniliquin Health Service will assist with the evacuation of staff and patients in accordance with their own internal Evacuation Plan.

3.16 Registration

3.16.1 NSW Police will ensure that all evacuees are registered on arrival at evacuation centres and details of registrations are sent to the Police District Headquarters by the quickest means available.

3.16.2 Assistance with registration will be provided by the Australian Red Cross Society.

3.17 Management of Evacuees' Pets

3.17.1 In the event of a large-scale evacuation of Deniliquin, animal shelter compound facilities will be set up for domestic animals and companion animals. These facilities will be operated by Department of Primary Industries (Agriculture) with assistance from the Deniliquin – Conargo Shire Councils.

3.17.2 Assistance animals are to accompany and/or remain in the care of their owners at all times. This includes transport and access into evacuation centres etc.

3.18 Essential Services

3.18.1 The Deniliquin 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 Deniliquin SES Local Controller abreast of their status and ongoing ability to provide those services.

3.18.2 Facilities needing protection from flood waters in the Deniliquin and Conargo Shire Council areas are:

a. Electrical substations, sewerage facilities, water supply, telephone exchanges, levees, dams and road and rail infrastructure. Detailed list of the infrastructure at risk of flood damage is listed in Annex B. Protection of the above facilities will be determined at the time of the event based on the predicted height of the flood event.

3.19 Logistics

3.19.1 The Deniliquin SES Local Headquarters, Deniliquin Council and Conargo Council maintain a small stock of sandbags, and back-up supplies are available through the Murray SES Region Headquarters. A motorised sandbag-filling machine is available from Deniliquin Council and Murray Region SES Headquarters. Alternatively, local concrete trucks may be used.

3.20 Aircraft Management

3.2.1 Aircraft may be used for a variety of purposes during flood operations including evacuation, rescue, re-supply, reconnaissance and emergency travel. However aircraft should only be used where alternate transport means are not available or not suitable.

3.2.2 During floods affecting more than one Council area, aircraft will normally be tasked centrally by the Murray SES Region Controller.

3.2.3 The Deniliquin SES Local Controller will establish a vetting committee to ensure that only essential items are moved whenever aircraft are used for supply operations.

3.21 Resupply of Isolated Towns and Villages

3.21.1 The SES is responsible for the coordination of the resupply of isolated communities. If flood predictions indicate that areas are likely to become isolated, the Deniliquin SES Local Controller should advise businesses (normally through the Deniliquin and Conargo Shire Councils) that they should stock up.

3.21.2 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.

3.21.3 Where practicable the Deniliquin SES Local Controller will arrange for the delivery from normal suppliers of essential foodstuffs, fuels or urgent medical supplies required by an isolated property or community. This may be done using high clearance vehicles, flood boats or, on occasions, aircraft.

3.21.4 The Deniliquin and Conargo Shire Councils will establish and chair a vetting committee to ensure that only essentials are ordered and that the business requesting the supplies is not using the flood as a means of restocking free of charge.

3.21.5 Where supplies are not available within the Council area, the Deniliquin SES Local Controller may request them through the Murray SES Region Headquarters. The Region Headquarters will usually arrange for them to be delivered to the Deniliquin SES Local Controller for further distribution within the Council area.

3.21.6 The SES is prepared to deliver mail to isolated communities but may not be able to do so according to normal Australia Post timetables, and will assist hospitals with resupply of linen and other consumables.

3.22 Resupply of Isolated Properties

3.22.1 The resupply of isolated properties is a common requirement during floods and coordination can be difficult because requests can emanate from a variety of sources. Property owners may call their suppliers direct or place their orders with the Deniliquin SES, through DoCS, or through their friends.

3.22.2 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.

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

3.23 Assistance for Animals

3.23.1 Matters relating to the welfare of livestock, companion animals and wildlife (including feeding and rescue) are to be referred to NSW DPI (Agriculture).

3.23.2 Requests for emergency supply and/or delivery of fodder to stranded livestock, or for livestock rescue, are to be passed to NSW DPI (Agriculture).

3.24 Stranded Travellers

3.24.1 Flood waters can strand travellers at popular camping areas such as Deniliquin State Forest (Memorial Park) and Twin Rivers Reserve. Travellers seeking assistance will be referred to DoCS for the arrangement of temporary accommodation.

3.25 All Clear

3.25.1 When the danger to life and property has passed, the Deniliquin SES Local Controller will issue an 'All Clear' message signifying that response operations have been completed. This message will also advise details of arrangements for evacuated residents to return to their homes or indicate what longer-term accommodation arrangements have been made for those unable to do so.

PART 4 - RECOVERY

4.1 Welfare

4.1.1 Evacuation centres will be initially established at the direction of the Deniliquin SES Local Controller however, they will be controlled and managed by the Department of Community Services (DoCS). DoCS will assume responsibility for the long-term welfare of evacuees as soon as possible.

4.2 Recovery Coordination

4.2.1 The Deniliquin 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 Deniliquin – Conargo Local Emergency Management Committee (LEMC) 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 Deniliquin SES Local Controller will advise participating organisations of details of response operation debriefing arrangements.

4.3.2 The Deniliquin 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 Deniliquin – Conargo LEMC.

ANNEX A - THE FLOOD THREAT

Landforms and River System(s)

1. Between Tocumwal and Wakool Junction on the Murray River, the alluvial delta is formed by the Murray River against the Cadell tilt. The progress of water overflowing west and south from the Edward River is halted by the Barmah Choke (referred to locally as 'the Narrows') which is located on the Murray River upstream of Barmah Township, which redirects the flow of water west and north.

2. Between Mathoura and Deniliquin State Forests, by unregulated flow, flood the Barmah, Gulpa and Millewa Forests (River Red Gum Forests). These forests, if dry are capable of holding significant volumes of water, which will lessen the flood affect. Similarly, if the forests are full, the flow times are reduced and the water levels are increased. Flow times have therefore varied from about five days normally, down to 32 hours, from peaking at Tocumwal on the Murray River, to peaking at Deniliquin on the Edward River.

Storage Dams

3. The Hume Dam and Yarrawonga Weir are part of a comprehensive control system on the Murray River and are operated by the Murray-Darling Basin Commission (MDBC). They were designed and built to regulate irrigation downstream and provide only limited flood mitigation.

4. **Hume Dam** is on the Murray River downstream of the junction of the Murray and Mitta Mitta Rivers approximately 16 kilometres east of Albury in the Albury City Council area. The dam's primary purpose is for irrigation in the Murray Valley but it is also used for industrial and town water supplies, stock and domestic supplies, hydro-power generation, riparian uses and to sustain the riverine environment.

5. Hume Dam consists of a concrete gravity section in the main river channel extended by a short embankment section on the northern side and a long embankment section (No. 1 Bank) on the southern side. The concrete gravity section includes 29 vertical lift spillway gates, four irrigation outlets and a hydro-electrical power station. There are two embankment saddle dams to the south of the main embankment, known as the No. 2 Bank and No. 3 Bank.

6. The capacity of the Hume Reservoir[1] is 3,038,000 megalitres at an FSL of 192mAHD and a surface area of almost 202 square kilometres. The total catchment area of the dam is 15,540 square kilometres.

7. **Yarrawonga Weir** is located near the towns of Yarrawonga in Victoria, and Mulwala in New South Wales. Yarrawonga Weir is located 538 km from the source of the River Murray, and 1992 km from the mouth. Travel times of flood peaks from the headwaters to Yarrawonga are 6 days, with a further 8 days to Echuca.

[1] MDBC (2006) River Murray Water: Hume Dam (http://www.mdbc.gov.au/rmw/river_murray_system/hume_reservoir) Updated 02/02/2006. Accessed 23/05/06.

8. The Weir, built in 1939 is comprised of two groups of gates: 8 on a southern structure and 2 on a northern structure. The 8 gates on the southern side are used for all flows. The 2 on the northern side are only used during floods larger than 60 000 ML/day to stop flows along the downstream side of the weir embankment that could cause scour. The lake formed by Yarrawonga Weir, Lake Mulwala, has an FSL of 124.90mAHD and a capacity of 118,000 megalitres.

Weather Systems and Flooding

9. The annual median rainfall over the Murray River Valley generally shows an east to west gradation closely related to the overall westward decrease in elevation. In the east, the median values decrease from more than 1600mm to 391 mm per year at Deniliquin. Rainfall, in general, is greater over the more elevated boundaries of the valley while areas of relatively low rainfall are found in the vicinity of the Murray River.

10. Over 60 percent of the annual rainfall over the valley occurs in the months from May to October inclusive. On average October is the wettest month with a mean rainfall of 46.8mm (as measured at Deniliquin Falkiner Memorial [2]).

11. Flooding in Deniliquin and Conargo Shires usually results from one of the following three weather mechanisms:

    - **Well developed low-pressure troughs.** The most usual set of meteorological conditions causing flooding is a series of well-developed inland troughs associated with southern depressions crossing the Council areas from west to east. These can be associated with thunderstorms and very heavy rain. Sequences of such troughs can produce high rainfall totals over a period of weeks, usually in the winter months.

    - **East coast low-pressure systems.** These systems develop off the coast of NSW and Victoria, usually during the cooler months of the year. They direct moist winds onto the coast and across the Great Dividing Range, often producing very heavy rain. Usually, but not exclusively, they move in a generally southerly direction and can generate floods in the upper reaches of westward flowing streams. East coast lows off the Victorian coast can produce substantial flooding in a number of the tributaries of the Murray River, exacerbating flood conditions on the NSW side of the border.

    - **Sequences of cold fronts.** Fronts crossing the State from west to east can produce flooding in the Murray River catchment during the winter months. The individual fronts are not usually associated with very heavy falls, but the cumulative effect of a series of them over a period of a few weeks may result in flooding. The major floods on the Murray River in 1870, 1917, 1956 and 1975 resulted from such systems. On occasion, these fronts may also be associated with low pressure systems at the tail end of the frontal system.

[2] Australian Government Bureau of Meteorology (2008) Climate Averages (www.bom.gov.au) Updated 27/11/2008. Accessed 1/12/2008.

12. Major floods usually arise from large rain depressions originating over the Southern Ocean and moving into the Murray Valley from the south-west. Heavy rainfall over a period of a few days may occur over a major portion of the Murray River Valley from time to time. These falls are frequently associated with deep active depressions which, after developing over the eastern end of the Great Australian Bight, move eastward over the valley. These troughs rarely produce high daily rainfalls but can bring substantial falls over longer periods. It is usually the sequence of fronts rather than individual ones that cause the flooding.

13. The Murray River within this reach can be categorised as having a warm temperate climate. Rainfall in this region has a predominant winter/spring pattern and as a result, under natural conditions, the Murray River demonstrates distinct seasonal pulses in the amount of water it carries.

Characteristics of Flooding

14. Up to 70 per cent of water flowing in the Murray River diverges into the Edward River. Divergence into the Bullatale Creek and overflow into the Tuppal Creek (5.9 metres on the Tocumwal Gauge) can account for part of that divergence from the Murray River. For example, the 1992 moderate flood of 8.11 metres at the Deniliquin gauge corresponded to about 65 per cent of the Murray system flow, under conditions prevailing at the time. Flows from Victoria in the Goulburn River (entering the Murray River upstream from Echuca) and the Campaspe River (entering the Murray River at Echuca) can cause a ponding effect upstream from Echuca. The water is directed into the forests and the Edward River.

Effects of other Water Courses

15. **The Murrumbidgee River** – The Yanco offtake from the Murrumbidgee River can cause increased flows into the Billabong Creek.

16. **The Billabong Creek** – The Billabong Creek rises in the foothills of the Great Dividing Range, east of Holbrook and travels 400 kilometres to join the Edward River at Moulamein. The Billabong Creek is normally very small, but heavy catchment – wide rainfall (eg: 1955/56) can create severe flooding – particularly if the land is already saturated. Flood occurrence data is limited. However, major floods were recorded in the 1939, 1955/56, 1960, 1970/71, 1973, 1974 and 1975, averaging one in every five to six years.

17. Unofficial gauges on the Billabong Creek are located mainly on private properties. However there is very little recorded data or correlation between the gauges. The Deniliquin SES Local Controller can access the following gauges:

    a. 'Puckawidgee' – a telemeter gauge on Billabong Creek approximately five kilometres upstream of Conargo.

    b. 'Hartwood' gauge on Yanco Creek on 'Coree'.

Flood History

18. Between October 1867 and October 1996, 43 moderate floods (in excess of 7.2 metres but less than 9.4 metres) and three major floods, in excess of 9.4 metres (1870, 1917 and 1956) have been recorded at the Deniliquin gauge. These are illustrated in Figure 1 below:

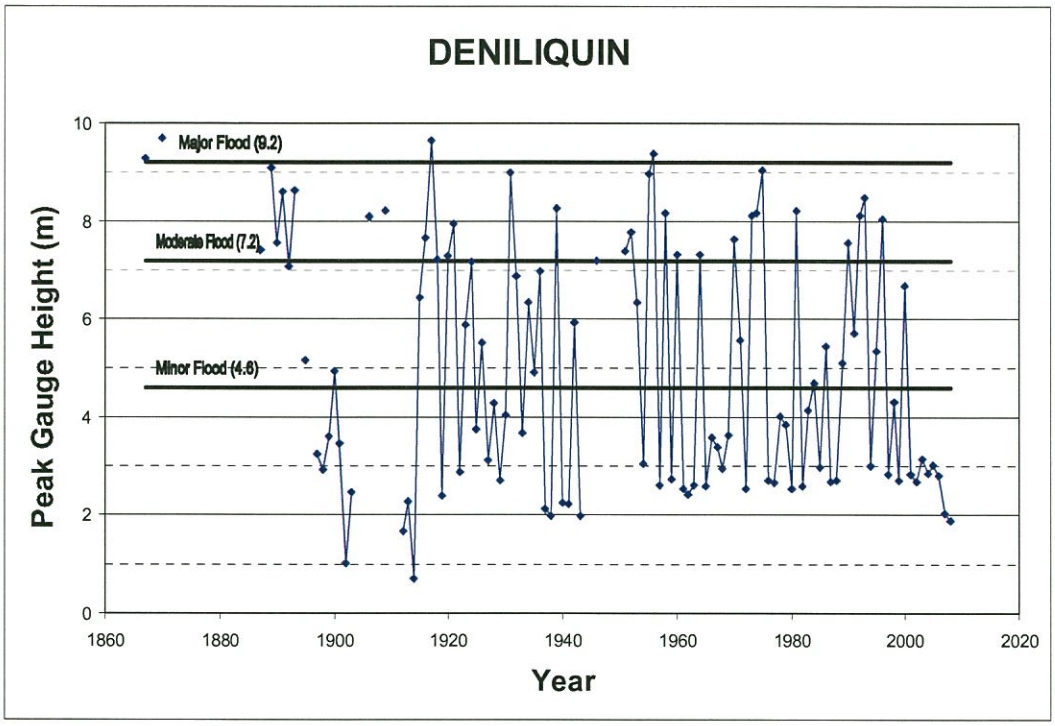


Figure 1: Floods above the Minor, Moderate and Major Flood Levels at the Deniliquin Gauge Station (409003)

19. The highest known flood at Deniliquin was the 1870 flood which peaked at 9.68 metres. The next highest recorded floods were in October 1917, peaking at 9.63 metres and, after levee construction, in July 1956, peaking at 9.37 metres. At 9.37 metres, the 1956 flood was just held out by the north and south levees. However, this was achieved by sandbagging low spots on the south levee, repairing a breakthrough behind the Ambulance Station in End Street and by breaching the central levee requiring the evacuation of 70 houses and allowing water to pass over Davidson Street.

20. Specific past major floods are briefly described below:

Table A-1: Significant Historical Flooding at Deniliquin

DATE	PEAK HEIGHT (M)	COMMENTS
1870 Flood	9.68	This is the highest recorded flood throughout the area of this plan. The datum point for this flood is not known.

1917 Flood	9.63	This is the second highest flood, again with an unknown datum.
1956 Flood	9.42	This is the third highest peak recorded and the first flood for which comprehensive records were kept. It is also one of three floods to seriously threaten the Deniliquin town levees since their hasty construction with the approach of the 1955 flood. The 1955 flood and 1975 floods were close to overtopping, but the 1956 flood overtopped the central levee, with other levees sandbagged at weak or low points. The north levee at Hyde Street barely held and requires careful attention still. The south levee at Wick Street barely held but has been reinforced since. The south levee breached behind the Ambulance Station in End Street, but has been reinforced.

Indicative Flood Travel Times

21. Table 2 below provides an indication of flood travel times based on past flood events in the area.

WATER COURSE	FROM	TO	TIME TAKEN	COMMENTS
Murray River	Hume Dam	Tocumwal	4.5 days	
	Tocumwal	Edward River Offtake	5.5 days	
Edward River	Tocumwal	Deniliquin	3.5 – 4.5 days	Via Tuppal and Bullatale Creeks (NOTE: This travel time was reduced to 31.5 hours in the August 1990 event with forests fully flooded beforehand).
	Tocumwal	Deniliquin	5 days	Via Murray and Edward Rivers
	Deniliquin	Moulamein	8 days	
Yanco Creek	Narranderra	Jerilderie	Unknown	
Billabong	Jerilderie	Conargo	Unknown	

WATER COURSE	FROM	TO	TIME TAKEN	COMMENTS
Creek	Conargo	Wanganella	Unknown	

Table A-2: Indicative Flood Travel Times for Deniliquin and Conargo

Flood Mitigation Systems

22. The construction of Stevens Weir in 1935, Hume Dam in 1936, Yarrawonga Weir in 1939 and mitigation work on the Tuppal floodway in 1975 have had an effect on flood levels at Deniliquin. Since construction of the weirs and Hume Dam, there have been 15 peak heights at or above the moderate level (7.2 metres on the Deniliquin gauge) and the 1956 flood peak of 9.37 metres was only 0.29 metres less than the 1870 flood.

Extreme Flooding

23. The worst floods recorded at Deniliquin since European settlement should not be considered to be the most serious that will ever occur. The 1% AEP (or once in 100 years event) at Deniliquin is estimated by the State Emergency Service to be 9.82 metres on the gauge. The flood of record in 1870 was 0.14 metres lower than this height and the 1956 flood was 0.45 metres lower than the estimated 1% AEP flood height.

24. When genuinely severe floods occur, they often reach much greater heights than was true of previous recorded floods. Moreover, they are generally both faster to rise and more dangerous in terms of depth and velocity of flood waters than previously known events.

ANNEX B - EFFECTS OF FLOODING ON THE COMMUNITY

Community Profile.

1.

Census Description	Deniliquin Shire	Conargo Shire
Total persons	7430	1673
Total dwellings	2955	584
Total persons aged 65 years and over	1438	181
Total persons aged below 15 years	1523	417
Total persons with need for assistance	383	25
Total persons of indigenous origin	210	24
Total persons using Internet	1390	363
Single parent families	318	36
Persons living alone	929	127
Total persons who do not speak English well	15	0
Total persons who lived at a different address 5 years ago	2443	404
Households without vehicles	292	4
Total persons residing in caravans, cabins or houseboats	28	4
Mean household size	2	3

2. It is significant that 19.3 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. Flood awareness and preparedness of the community is considered low, primarily because of the nature of the flood threat and flood history. Rural property owners along the river and caravan park owners would be considered the more flood-aware of all sectors.

General

4. The flood threat to the town of Deniliquin is generally a function of high water flows in the Murray River system and not as a result of local rainfall. Much of the flow in the Murray River diverts into the Edwards River on which Deniliquin is situated. The flooding threat can also be exacerbated by high flows in the rivers feeding into the Murray downstream of Deniliquin, and existing flooding of the adjacent floodplain areas. As the Edwards River rises the central area is the first to be inundated in effect isolating the northern parts of Deniliquin from the southern parts of Deniliquin. There are several other small communities that are at risk from flooding of the Billabong Creek.

Deniliquin

5. The town of Deniliquin has four separate areas at risk which are best described by the levee systems in the area. These levees are shown in map one and described in order of potential threat below:

   a. **McLeans Beach Caravan Park** – McLeans Beach Caravan Park has a relatively new levee constructed in 1993 to approximately 8.3 metres on the Deniliquin gauge. This level of flooding has been exceeded approximately 9 times in 126 years. However, floods exceeding 8.0 metres (ie: up to 0.3 metres freeboard) number 17. Depending on prevailing circumstances, removal of about 220 permanent vans would have to be considered at or below a predicted 8.0 metre gauge height.

   b. **The Central Sector (known as the Davidson Street Levee)** – This levee is built around the 84 houses (approx. 168 people average 2 persons per household) who are situated on an island formed by the Edward River and Brick Kiln Creek. It was constructed to a height at Davidson Street of 9.2 metres related to the National Bridge Gauge. However, most of the Central Sector levees are at approximately 9.4 metres.

      Parts of this levee system have been removed and the structural integrity can not be guaranteed therefore the levee can not be relied upon to provide any level of flood protection.

      The Central Levee height has been exceeded four times (1867, 1870, 1917 and 1956). A higher level is not permitted for this levee as it lies within the floodway and would cause higher flood levels upstream of Davidson Street and create a greater probability of overtopping or breaching the other levees. A minor/moderate flood level could inundate the premises inside this levee and necessitate the evacuation of the residents. The flooding of the Davidson Street levee would deny access to or egress from the northern levee, requiring consideration of services required to be provided for the duration of the flood, in the northern sector.

c. **The Northern Sector** – The levee is bounded on the south by the Edward River and Brick Kiln Creek and was designed to protect the 491 houses and 109 additional rural residential properties (approx. 1200 people average 2 persons per household) inside the levee. It was constructed in 1955 and later raised to a height of 9.24 metres at Hyde Street (related to the National Bridge gauge). The height of the levee has been exceeded four times (1867, 1870, 1917 and 1956). Temporary filling of low spots prevented inundation in 1956 and subsidence was topped up to 9.5 metres in 1993. This included a temporary secondary levee at Hyde Street, due to the weakness of the bank at the pump station. This levee has since been rebuilt to provide flood protection to the 1:100 flood level plus 100mm freeboard.

d. **The Southern Sector** – This levee is bordered on the north by the Edward River and is designed to protect the 2,423 houses and additional 293 rural residential properties (approx. 5432 people average 2 persons per household) and the commercial centre in South Deniliquin. It was constructed in 1955 and later raised to a height at George Street and at the Ambulance Station off End Street of 9.3 metres (related to the National Bridge Gauge). The South levee is lower than the highest recorded floods (1870, 1917 and 1956) but is 0.5 metres lower than the estimated 1% AEP (or once in one hundred years) flood event. Temporary filling (sandbagging of low spots to a level of about 9.5 metres) prevented overtopping in 1956. Most low spots, down to 9.0 metres, were topped up to 9.5 metres in 1993. Some awkward to get at sections would have to be sandbagged to achieve 9.5 metres. This levee has since been rebuilt to provide flood protection to the 1:100 flood level plus 200mm to 500 mm freeboard.

Conargo Shire

6. The township of Conargo is located on the Billabong Creek in the Lower Murrumbidgee Basin about 40 km upstream of Deniliquin. The town has a population of about 30 and is located on the southern bank (left bank looking downstream) of Billabong Creek, part of the effluent creek system of the Murrumbidgee River. Billabong Creek is fed by Yanco Creek and Colombo Creek which leave the south bank of the Murrumbidgee River about 20 km downstream of Narrandera. Conargo is located about 50 km downstream of Jerilderie.

7. Due to the large catchment and the low gradient of the streams peak flows, floods would take several days to peak at Conargo and high flows could be prolonged for several weeks. Most of the urban development in Conargo is located in flood prone land on the southern bank of the watercourse. Due to the flat gradient in the area and low hydraulic capacity in the stream channels floodwaters extend over a wide expanse of land during major flood events. Just upstream of Conargo most of the land between Billabong Creek and Yanco Creek is flood prone and the combined floodplain is about 8 km in width. Conargo is located at the intersection of MR 552, which runs between Deniliquin and Jerilderie and the road to Carrathool. These roads are inundated for weeks during major flood events.

8. The most recent instances of major flooding occurred in 1956 and 1974. Based on frequency analysis of stream flow data recorded at the stream gauge located several kilometres upstream of Conargo (at Puckawidgee GS 410017), a peak flow equal to that of the 1956 flood (22,000 ML/d) would be of a greater magnitude than the 1% AEP. A flood peak equal to the 1974 flood (16,800 ML/d) would have an Average Exceedance Probability between 2 and 5% AEP. From a flood frequency analysis of data recorded at GS 410017 the 1% AEP flood peak was estimated at 17,500 ML/d. [2]

9. The 1956 flood is the largest flood to have occurred in Conargo since records commenced. This flood had a peak discharge of 22,043 ML/d (255 m^3/s) and reached a height of 5.22 m on the Puckawidgee gauge. A peak discharge equal to that of the 1956 flood would be of a greater magnitude than the 1% AEP. That is, the 1956 flood was somewhat greater than a 1% AEP flood in terms of peak discharge. [2]

10. At Conargo, the 1956 flood is reported to have flooded several residences and the hotel would have been flooded but for sandbagging around its perimeter. The stage hydrograph at Conargo is characterised by a slow time of rise up to several weeks, followed by maintenance of flows near the peak for several days and a recession time lasting up to several months. [2]

11. Floodwaters break out of Billabong Creek upstream of the Conargo Bridge, flow past "Quiamong", cross MR552 (Jerilderie Road section) and enter Piccaninny Creek which continues in a south westerly direction to its confluence with Forest Creek. In the 1956 flood, flows also left the northern bank of Billabong Creek within the village area via a breakout to the south of the Oval and crossed MR552 (Deniliquin Road section) before joining Piccaninny Creek. The DWR (Department of Water Resources) noted that the road through Conargo was raised after 1956 and presently obstructs the outflows from Billabong Creek into the depressions of Piccaninny Creek. The raising of MR552 that took place after the 1956 flood would result in more of the floodwaters being conveyed within the immediate vicinity of Billabong Creek. This would result in a raising of flood levels upstream of the road bridge, possibly with an increase in flows leaving the creek and flowing over MR552 (Jerilderie Road section). [2]

12. In the 2008 Draft Floodplain Risk Management Study compiled by Lyall and Associates a comparison of surveyed floor levels with 1956 flood levels showed that only one or two properties would be flooded above floor level in the event of a flood peak equal to that of the 1956 flood. The main impacts of flooding were a relatively long duration of inundation of allotments bordering Billabong Creek and flooding of access roads. If water levels are expected to be of some effect, the Conargo Council will top up the levee around the village.

13. The village of Wangella consists of approximately 15 houses (12 people). This village is directly affected by water from Billabong Creek. Water levels would be monitored and an assessment made as to whether evacuation was required initially in the area south of Lang Street and then possibly the remainder of the village. [2]

14. The Village of Blighty, Flood information not available.

15. The Village of Pretty Pine. Flood information not available.

16. The Village of Booroorban. Flood information not available.

Effects of flooding in rural areas

17. Land ownership within the area is such that most properties occupy significant areas of flood-free land operated in conjunction with flood liable land. However, the land adjacent to the river is often the richest and most productive. For this reason, the effects of flooding on rural properties in the Deniliquin/Conargo Shires can be significant.

18. In general, flooding can have the following detrimental effects on farms along the Edward River, Tuppal, Bullatale and Billabong Creek systems:

    a. Damage to crops

    b. Death or retardation of pasture growth - particularly for floods with a duration of more than eight days

    c. Livestock deaths of small or young animals such as sheep and calves

    d. Loss of access to grazing and cropping areas due to in-stream flows through anabranches and lagoons

    e. Intrusion of noxious weeds

    f. Deposition of debris

    g. Damage to infrastructure such as fences, sheds, bridging, etc

    h. Disruption to livestock grazing and productivity - particularly to intensive operations

    i. Erosion hazard - particularly for cultivated land

    j. Extreme difficulty in improving pastures by conventional cultivation and seeding techniques.

    k. Damage to hay either pre- or post-cutting

    l. The impact of inundation for farmers along these systems is dependent on a number of factors which include:

        i. The duration of inundation

        ii. The type of pastures inundated (improved versus natural)

        iii. The time of year (impacts increase progressively as the season matures)

        iv. Frequency and timing of previous inundation events

19. The effect on grazing/feed loss depends on the time of year in which the flood occurs. The estimated number of weeks of grazing/feed loss by month of flood occurrence for an inundation period of 20 days (as occurred in the 1975 flood) is tabulated in Table B-2:

[2] Conargo Floodplain Risk Management Study and Plan. Flood Data Assessment Study Draft Report August 2008 Lyall and Associates.

Table B-1: Estimated grazing and feed loss by month.

Month of Flood Occurrence	Estimated Weeks Grazing/Feed Loss
July	8
August	10
September	15
October	22
November	18

Effects of flooding on transport and infrastructure

20. Edward River flooding may be of sufficient duration and extent to affect a wide range of transport and communications systems including road, rail, air and water traffic as well as telecommunications services. Of those, road transport is the most vulnerable to interruption by flooding.

Road Transport

21. The following rural roads **may** be affected by flash flooding as a direct result of heavy local rainfall or riverine flooding.

- Aratula Road South (Lower River Road) approximately 25 km from Deniliquin
- Hay Road (Cobb Hwy) approximately 60 km from Deniliquin at the Headless Horseman Sandhill.
- Carrathool Road at Delta Creek crossing approximately 50kms from Deniliquin
- Tocumwal Road at Tuppal Creek on Conargo/Berrigan Shire boundary.

Bridges

22. The following bridges are designed to be trafficable up to a 1% AEP flood.

- National Bridge at Deniliquin
- Wanganella Bridge over Billabong Creek
- Murgha Bridge over the Billabong Creek near Windouran Station

Rail Transport

23. The effects of flooding on rail infrastructure in Deniliquin and Conargo Shires is uncertain. VicTrack is the agency responsible for this line, and they advise that rail services to Deniliquin consist of broad gauge rail line that runs south into Victoria. There are currently no passenger services. VicTrack records indicate that inundation of the line in and around Deniliquin is unlikely, but can not be ruled out. However, records do indicate that the line is more likely to be cut at Moama to the south, which does suggest that the line may be unsuitable to use for evacuation.

Air Transport

24. Access to the Deniliquin airport is designed to be flood free to the 1% AEP, and access is protected by the Town Levee System.

Telecommunications

25. Telstra correspondence has revealed that in the vicinity of Brick Kiln Creek there are a number of pillars and manholes and a Cathode Bond mounted on a pole. In the case of flood Telstra have indicated that "there would be a minimal disruption" (Grant Carroll Area Manager pers. comm. 2008)

Electricity

26. The Deniliquin Zone is supplied from the Deniliquin Transgrid 132,000 volt via a dedicated 66,000 Volt sub-transmission line. An alternate 66,000 volt supply is also available. The line is relatively short in length and presently is a reliable line.

    The line is unlikely to be affected even with a major flood of the Edwards River (Pers. Comm. Country Energy Manager Planning & Customer Connections-South Western 2009)

Water Supply

27. Deniliquin water supply is not expected to be interrupted in flooding up to a 1%AEP however it is estimated to last only 4 -5 days in severe floods provided that water restrictions are implemented. If the water treatment plant is not inundated supply will not be effected provided that power supply can be maintained.

    Conargo draws not potable water from a bore into 2 x 22500 litre tanks and has 20 connections. Drinking water is via rainwater tanks.

    Wanganella draws water from Billabong Creek and pumps into a single 22500 litre tank and also has 20 connections. Drinking water is via rainwater tanks.

    Sewerage

28. Sewage services throughout town are sequentially lost as pump stations become inundated, beginning at 5.88m at the Deniliquin gauge for the McLean's Beach Sewage pump station. During severe floods, waste would escape from the pump stations into the floodwaters.

    The whole of Conargo Shire is dependent upon septic tank systems for sewerage.

29. **Health**

    Deniliquin Hospital is protected by the town Levee system. However essential services to the whole area will likely be severely damaged in a major flood that overtops the levee system. Restoration of essential services may take several weeks or months.

ANNEX C - GAUGES MONITORED BY THE DENILIQUIN SES LOCAL HEADQUARTERS

Stream	Gauge Name	AWRC No	Type	Flood Classification			Reading Arrangements
				Min	Mod	Maj	
MURRAY RIVER	*Yarrawonga d/s	409025	Manual	6.4	6.7	7.8	02 9296 1587 or 02 9296 1548 (BoM Flood Desk)
	*Tocumwal	409202	Telemeter	6.4	6.7	7.3	02 9296 1587 or 02 9296 1548 (BoM Flood Desk)
	*Echuca	409200	Telemeter	93.1	93.6	94.4	Warnings issued in conjunction with BoM Victoria Office.
EDWARD RIVER	*Deniliquin	409003	Manual	4.6	7.2	9.4	02 9296 1587 or 02 9296 1548 (BoM Flood Desk)
	*Moulamein	409014	Manual	4.6	5.2	6.1	02 9296 1587 or 02 9296 1548 (BoM Flood Desk)
MURRUMBIDGEE RIVER	*Narrandera	410005	Telemeter	6.7	7.3	8.2	02 9296 1587 or 02 9296 1548 (BoM Flood Desk)

Notes:

1. The Bureau of Meteorology provides flood warnings for the gauges marked with an asterisk (*).
2. 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 Murray SES Region Headquarters distributes SES Flood Bulletins and other flood related information (including Flood Warnings) to the following regional media outlets:

Television Stations:

Station	Location	Phone Number
Prime	Shepparton	(03) 5831 3677
WIN TV	Shepparton Office	(03) 5823 3699
Southern Cross Broadcasting	Melbourne	(03) 9243 2100
ABCTV	Melbourne	13 9994

Radio Stations:

Station	Location	Phone Number	Frequency	Modulation
2AY	Albury		1494	AM
2CO	ABC (Goulburn Murray)	(02) 6049 2011	675	AM
3NE	Wangaratta	(03) 5722 1566	1566	AM
3SR	Shepparton	(03) 5821 1260	95.3	FM
3SH	Swan Hill	(03) 5032 9400	1332	AM
	Deniliquin		106.1	FM
2QN	Deniliquin	(03) 5881 1811	1521	AM
SUN FM	Shepparton	(03) 5831 3969	96.9	FM

Newspapers:

Name	Phone Number	Location
Border Mail	(02) 6024 0555	Albury
Pastoral Times	(03) 5881 2322	Deniliquin
Southern Weekly	(02) 6921 6977	Wagga Wagga
Riverine Grazier	(02) 6993 1002	Hay
MIL "Talking Water"	(03) 5898 3300	Deniliquin
Southern Riverina News	(03) 5883 1033	Finley

Other Agencies:

- State Water Regional Offices, Hume Weir, Deniliquin and Dareton.
- Goulburn Murray Water, Yarrawonga Weir.
- NSW Police, Deniliquin Local Area Command.
- NSW Ambulance Service, Albury Control Centre.

- VICSES: North East Regional Office, Benalla
  North West Regional Office, Swan Hill
  Shepparton Field Office

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 companion 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 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 DENILIQUIN AND CONARGO SHIRE COUNCIL AREAS

Situation

1. A large number of evacuations may be required from within the town of Deniliquin in major flooding and for the purposes of evacuation the Council area has been divided into Sectors. The boundaries of these sectors generally coincide with the Northern, Central and Southern Levees in town. The evacuation options for each sector are described in the following paragraphs in order of likelihood of occurrence.

   a. **Caravan Park at threat of inundation** – In all cases, the McLeans Beach Caravan Park is evacuated into the South Sector with vans and mobile homes being towed to and parked on high ground. The Deniliquin SES Local Controller will arrange for security for vans (homes) belonging to absentee owners.

   b. **Central Levee at threat, failed or overtopped** – Evacuate residents into South Sector, including the Riverside Caravan Park, Golf Club Resort and 1 house behind the Ambulance Station.

   c. **Northern Levee at threat, failed or overtopped.**

      - Sewer failure and resultant potential health issues due to the inundation of the Central Section will also result in the need to evacuate the Northern section of Deniliquin at the same time as the Central Section. These evacuees are to be directed to the Southern Sector if there is no prediction for flood flows to overtop the Southern levees. If the predictions are for flows that will overtop the levees then they are to be evacuated to Pretty Pine Hall, Deniliquin North Primary School or the Rural Lands Protection Board building.

      - If forecasts indicate the levee could be under threat – preliminary evacuations of non-essential persons will be into the South Sector. This evacuation phase must be completed before the Central Levee is overtopped.

      - On failure or overtopping, evacuations will be to the higher parts of North Deniliquin. This sector contains approximately 1200 people. Assembly/Evacuation points for this Sector are Pretty Pine Hall, Deniliquin North Primary School and the Rural Lands Protection Board building. A secondary evacuation operation will be considered if river levels are expected to continue to rise or to stay above the remaining effective levee height for 24 hours or more.

   d. **Southern Levee at threat, failed or overtopped.**

      - If forecasts indicate the levee could be under threat, a preliminary evacuation of non-essential persons may be

conducted. The Deniliquin SES Local Controller may request the Local Emergency Operations Controller (LEOCON) to arrange transport for such an evacuation by rail, road or air to another major population centre. The Deniliquin SES Local Controller will ensure that evacuees are moved to an Assembly Area at the Deniliquin High School, Rotary Park Sports Stadium or the Deniliquin Airport and then to departure points at the Railway Station or Airport as appropriate. This sector contains approximately 5432 people.

- On failure or overtopping, the Deniliquin SES Local Controller will be responsible to move all persons not required for emergency service or area security duties direct to the Railway Station or Airport as appropriate, from where they will be evacuated under District arrangements. During a complete evacuation, the Deniliquin SES Local Controller may establish a forward control centre at the Airport and operate from there. The Deniliquin SES Local Controller may request that the Deniliquin – Conargo LEOCON provide tentage and other stores required to establish this centre plus accommodation for up to 250 persons conducting these operations.

2. Within Deniliquin, the primary means of evacuation will be by private transport, but buses will be arranged as required to move those without access to private transport.

3. Evacuations may also be required from rural properties in the Deniliquin Council area or from the townships of Conargo or Wanganella. The primary means of evacuation will be by private transport with evacuations being conducted with the assistance of the Police Deniliquin Volunteer Rescue Squad (VRA), Deniliquin RFS and Service Clubs in the area. Evacuees will be directed to designated evacuation centres in Deniliquin.

Mission

4. The SES is to arrange and control the evacuation of areas at risk of flooding in order to ensure the safety of residents.

Execution

5. **Control.** During floods evacuations will be controlled by the NSW SES.

6. **Conduct.** Evacuations will be controlled by the Deniliquin SES Local Controller and conducted by SES personnel with the assistance of available resources in four phases:

   a. Phase 1 - Warning.

   b. Phase 2 – Withdrawal.

   c. Phase 3 – Shelter.

   d. Phase 4 – Return.

7. **Tasks.**

Deniliquin SES Local Controller.

- Direct the evacuation of people and/or communities.
- Provide immediate welfare support for evacuated people.

Deniliquin SES Unit Members

- Deliver evacuation warnings and information.
- Assist in providing immediate welfare for evacuated people.

Deniliquin – Conargo Local Emergency Operations Controller (LEOCON)

- As requested by the Deniliquin SES Local Controller, assist with the coordination of evacuation operations.

NSW Police Force, Deniliquin

- Assist with the delivery of evacuation warnings.
- Assist with the conduct of evacuation operations.
- Ensure all evacuees are registered.
- Secure evacuated areas.

Deniliquin and Conargo Shire Councils (prioritised as resources permit)

- Assist with the removal and returns of caravans from any flood prone caravan parks.
- In the event of evacuations, assist with the set up and operation of animal shelter compound facilities for the domestic pets and companion animals of evacuees.
- Ensure premises are fit and safe for reoccupation and assess any need for demolition.

NSW Fire Brigades, Deniliquin

- Assist with the delivery of evacuation warnings.
- Assist with the conduct of evacuations.

Rural Fire Service (RFS), Deniliquin and Conargo

- Assist with the delivery of evacuation warnings.
- Assist with the conduct of evacuations.

Deniliquin Rescue Squad (VRA)

- Assist with the delivery of evacuation warnings.
- Assist with the conduct of evacuations.

NSW Department of Primary Industries (Agriculture), Deniliquin

- Assist with the support of participating and supporting organisations, provide animal care services for wildlife, domestic animals and companion animals of evacuees.
- Establish and operate animal shelter facilities for domestic pets stranded animals and companion animals of evacuees.

Department of Community Services (DoCS), Deniliquin

- Manage evacuation centre(s).
- Provide Disaster Victim Registration service for evacuation.

Ambulance Service of NSW, Deniliquin

- Assist with the evacuation of elderly and/or infirm people.
- Assist with evacuation of patients from hospitals and nursing homes

Deniliquin Health Service (Deniliquin Hospital & Community Health Service)

- Will assist with the evacuation of their staff and patients in accordance with their own Internal Evacuation Plans.

Australian Rail Track Corporation (ARTC) and Vic Rail

- Arrange trains for evacuations, commuting and/or re-supply purposes.

Deniliquin – Conargo Transport Services Coordinator.

- Arrange transport facilities for evacuations, commuting and/or re-supply purposes.

All Schools and further education centres, including the Department of Education and Training; and Catholic Education Office and private education providers

- Assist with the coordination of evacuation of schools.
- Provide space in schools for evacuation centres where necessary

Childcare Centres

- Assist with the evacuation of pupils.
- Provide space in schools for evacuation centres where necessary.

Moonacullah Land Council.

- Disseminate flood information, including flood and evacuation warnings, to the Moonacullah community.

Deniliquin Returned Services League Club.

- The Club will provide space for an evacuation centre if required.

Australian Red Cross Society (Deniliquin/Conargo Shires) (DoCS Community Partner activated by DoCS)

- Assist the NSW Police Force with the registration of evacuees at evacuation centres.
- Provide personal support at evacuation/recovery centres.

SES Flood Wardens Deniliquin North and South and Conargo

- Disseminate flood information including flood and evacuation warnings.

Caravan Park Proprietors McLeans Beach Caravan Park, Paringa Caravan Park, Pioneer Tourist Park, Deni Car-O-Tel, Four Posts Reserve (Murray Shire) and Riverside Caravan Parks

- Coordinate the evacuation of people and the relocation of moveable vans when floods are rising and their return when flood waters have subsided.
- Inform the Deniliquin SES Local Controller of the progress of evacuation and/or van relocation operations and of any need for assistance in the conduct of these tasks.

Apex, Rotary, Lions, Kiwanis, Soroptomists and other Service and Sporting Clubs.

Where available and where resourcing permits, assist with:

- Delivery of evacuation warnings.
- Conduct of evacuations.

Private Companies (Purtills and others),

Assist with the provision of:

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

8. **Coordinating Instructions.**

a. **The decision to evacuate.** The responsibility for issuing any general evacuation order during flooding rests with the Deniliquin 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 (LEOCON) and the Murray SES Region Controller.

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

c. **Decision Making Parameters**

Evacuations will be required if any of the following are likely:

- **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.
- **Flooding affecting properties**. Evacuations will be conducted when it is likely properties will be flooded.
- **Isolation of properties**. People who are not prepared for isolation, or unsuited due to medical conditions etc, should be encouraged to evacuate.
- **Dam Failure**. A Dam Failure Warning will require the evacuation of all people at risk.

For each sector where flood evacuations are required, there are critical parameters that have to be considered in the decision making process.

- The time required to mobilise for a response operation

- The availability of resources including management, human resources and plant resources.
- The time required to ensure all residents are warned of the need to evacuate
- The time required to move all vehicles out of the area
- The minimum time likely to be available before flood water closes road evacuation routes

d. **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.

e. **Evacuation triggers.**

The first evacuation warnings issued in the Deniliquin and Conargo Shire Councils are when the Deniliquin gauge is expected to reach the following heights:

- Davidson Street/Central Area, North Deniliquin and Riverside Caravan Park – 7.00 m Deniliquin gauge.
- Golf Club Resort – 7.50 metres (Memorial Park flood gate road level 7.84 metres) and road level is lower.
- Four Post Reserve Area – 7.96 m Deniliquin gauge.
- McLeans Beach Caravan Park – 8.30 m Deniliquin gauge.
- Deniliquin proper - 9.20 m Deniliquin gauge.

Phase 1 – Warning

f. **Evacuation warnings.** On the receipt of flood warnings predicting peak heights of **7.00 metres** and above at the Deniliquin Gauge; the Deniliquin SES Local Controller will consult as necessary to determine the level of the threat and the need to consider evacuations. As soon as possible after the decision to evacuate is made, the Deniliquin SES Local Controller will issue evacuation warnings to the 'at risk' residents, indicating what people should do before evacuating and when actually doing so.

g. **Content of Evacuation Warnings.** A template guide to the content of evacuation warning messages is at Annex E. These are disseminated via:

- The radio and TV stations listed in Annex D.
- Door-knocks by emergency service personnel.
- Public address systems from emergency service vehicles.
- Telephone.
- Two-way radio
- SES Flood Bulletins.

- Flood wardens who may be appointed by the Deniliquin SES Local Controller if flood waters are expected to cause damage to or overtop levees.

h. **Time to Deliver Warnings.**

Central Sector

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

Number of Doorknocking Teams	Total Evacuation Time (hours)
1	6.6
5	1.32
10	0.66

Table F-1 Time required to deliver Evacuation Warnings to Central Sector of Deniliquin. Assumes 80 properties to be evacuated and 5 minutes per household.

Northern Sector

The table below details the amount of time required to evacuate the at-risk population of the Northern Sector depending upon doorknocking resources available.

Number of Doorknocking Teams	Total Evacuation Time (hours)
1	50.00
5	10.00
10	5.00
15	3.33
20	2.5
25	2.0
30	1.6
35	1.4
40	1.25
50	1.00

Table F-2: Time required to deliver Evacuation Warnings to Northern Sector of Deniliquin. Assumes 600 properties to be evacuated and 5 minutes per household.

Southern Sector

The table below details the amount of time required to evacuate the at-risk population of the Southern Sector depending upon doorknocking resources available.

Number of Doorknocking Teams	Total Evacuation Time (hours)
1	233
5	46.66
10	23.3
15	15.53
20	11.65
25	9.32
30	7.76
35	6.67
40	5.82
50	4.66

Table F-3: Time required to deliver Evacuation Warnings to Southern Sector of Deniliquin. Assumes 2800 properties to be evacuated and 5 minutes per household.

Phase 2 – Withdrawal

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

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

k. **Priority.** When evacuation is necessary, priority will be given to assist in the movement and management of people as set out below:

Triggers	Priority 1	Priority 2	Priority 3	Priority 4
Flood Warning	Riverside Caravan Park, Schools and Child Care Centres, Special needs/home care patients	Elderly and infirm		
Failure of Essential Services	Hospitals Special needs/home care	Aged Care Facilities	Identified at risk home residents	Other residents and pets as possible.

Triggers	Priority 1	Priority 2	Priority 3	Priority 4
	patients			
Flooding affecting properties	Special needs/home care patients	Ground Level residents/Caravan Parks	Other residents and pets when possible	
Isolation of properties	Elderly and infirm	Single Parent families	Resupply	
Imminent Dam Failure	Identified at risk residents immediately downstream	Schools and Child Care Centres, Special needs/home care patients	Elderly and infirm	All Ground Level residents Caravan Parks

Table F-4: Evacuation triggers and Priority.

l. **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:

- Denying access to all traffic except for emergency vehicles (including buses and private vehicles being used for the purposes of evacuation).
- Keeping one lane clear at all times for use by emergency vehicles.
- Positioning a tow truck or similar vehicle at appropriate entry points, road blocks and exit points along the evacuation routes.

m. **Phasing.**

Evacuation of Deniliquin will occur broadly in the following order;

- McLeans Beach Caravan Park
- Motel and Golf Club Resort and 2 houses are cut-off when floodgate is installed at Memorial Park.
- Central Sector and Northern Sector
- Southern Sector

n. **Evacuation routes.**

Evacuation routes will be dependent upon road closure information at hand during the particular flood event.

o. **Large-scale evacuations.**

When large scale evacuations are likely, the Deniliquin SES Local Controller will liaise with the Murray SES Region Headquarters and request the deployment of helicopters and trains.

p. **Special Needs Groups.**

Childcare Centres

- ABC Child Care (Hardinge Street)
- Deniliquin Pre-school (Whitelock Street)
- Little Tacka's (Hardinge Street)
- Gulpa Pre School (Wellington Street)
- Deniliquin Play Group (Memorial Park)
- Deniliquin Child care Centre (Whitelock Street)
- Out of School Hours (OOSH) (Barham Road)

Aged Care Facilities

- Navorina Nursing Home (Macauley Street)
- Orana Hostel (Napier Street)
- Mirradong Legacy Units (Poictiers Street)

q. **Animals.** Evacuees with their own pets will be encouraged to take their companion animals with them as they evacuate. Animals must be appropriately contained in a pet carry cage or on a leash. Companion animals will be collected from their owners at evacuation centres and taken to facilities to be arranged by NSW Department of Primary Industries (Agriculture). 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.

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

- Addresses and locations of houses doorknocked and/or evacuated.
- The number of occupants.
- Details of support required (such as transport, medical evacuation, assistance to secure house and/or property and raise or move belongings).
- Details of residents who refuse to comply with the evacuation order.

The field teams will then carry out evacuations as required.

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 people 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.

s. **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 (LEOCON) who will arrange for Police to ensure their evacuation.

t. **Security.** The NSW Police will provide security for evacuated premises.

u. **Collection centres (Safe Havens).**

For the **Northern Sector** suitable collection centres have been identified as Pretty Pine Hall, Deniliquin North Primary School and the Rural Lands Protection Board building.

For the **Central Sector** suitable collection centres have been identified as Deniliquin High School, Rotary Park Sports Stadium or the Deniliquin Airport.

For the **Southern Sector** suitable collection centres have been identified as Deniliquin High School, Rotary Park Sports Stadium or the Deniliquin Airport.

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

- Airport
- Deniliquin High School Oval
- Pretty Pine Recreation Reserve
- Conargo Recreation Reserve
- North Deniliquin Public School oval
- Wanganella Reserve

w. **Airport.** Access to the Deniliquin airport remains whilst ever the southern levee remains intact. The airport remains operable (clear of water) well above the 1:100 year flood level whether the southern levee is intact or not. The sealed strip is available 24 hours with emergency power to lights available if required.

The airport is capable of general handling of MTOW (Maximum Take Off Weight) 5700 Kg and aircraft with tyre pressure (PSI) of 84. It is the responsibility of the pilot of each particular aircraft to make that assessment. Aircraft over that standard can apply for a concession by

contacting Council. In an emergency situation this application for concession would come through the LEMO. The length of available runway is a consideration depending on type of aircraft.

Hercules and Caribou aircraft have in the past used Deniliquin Airport for defence force exercises. The grass strip is unrated.

Phase 3 – Shelter

x. **Evacuation centres.** When evacuations are possible, the Deniliquin SES Local Controller will advise the relevant Department of Community Services (DoCS) personnel so that evacuation centres and welfare support can be set up in a timely fashion. The usual purpose of evacuation centres is to meet the immediate needs of victims, not to provide them with accommodation. Evacuees will be advised to go to or be taken to the nearest accessible evacuation centre, which may initially be established at the direction of the Deniliquin SES Local Controller but managed as soon as possible by DoCS. Any or all of the following sites may be used as evacuation centres:

North Sector – Scout Hall Victoria Street, Pretty Pine Hall, Deniliquin North Primary School and the Rural Lands Protection Board building.

South Sector – Deniliquin High School Multi Purpose Centre, Rotary Park Sports Stadium or the Deniliquin Airport.

y. **Facilities available.** Details of the capacities, contacts and facilities available at each of the above centres are listed below:

- Each evacuation centre will contain registration, medical/first aid and welfare staffs.

z. **Action on arrival.** On arrival, evacuees will be:

- registered;
- medically checked, if necessary; and
- provided with their immediate welfare needs.

aa. **Registration.**

- The NSW Police will ensure that all evacuees are registered on arrival at the designated evacuation centres and details of the registrations are to be sent to the NSW Police Deniliquin Local Area Command Headquarters by the quickest means available.
- The Australian Red Cross Society (Deniliquin/Conargo Shires) (DoCS Community Partner activated by DoCS) will assist the NSW Police by providing Disaster Victim Registration (DVR) Teams at evacuation centres.

Phase 4 – Return

bb. Once it is considered safe to do so, the Deniliquin 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.

cc. The return will be controlled by the Deniliquin SES Local Controller and may be conducted, at his/her request, by DoCS.

Administration and Logistics

9. **Transport and storage.** People will be encouraged to store belongings in elevated areas within buildings and take any essential/important belongings with them when evacuating. In the event of an imminent dam failure, people should not waste time raising belongings if they have not already done so.

10. **Support provided at evacuation centres.** The expected duration of the evacuation will dictate the need for and level of facilities and support at the evacuation centres. If evacuations are expected to be of a short duration, evacuees may be provided with short-term accommodation at the centres. However, if they are expected to last for longer than 24 hours, evacuees will be encouraged to go to alternative accommodation or stay with friends where possible. Alternatively, accommodation will be arranged for them in hotels, motels or by billeting.

11. **Animal shelter compounds.** Animal shelter compounds will be set up for the domestic pets and companion animals of evacuees. These facilities will be operated by NSW Department of Primary Industries (Agriculture) at Saleyards Road, Deniliquin. Conargo share this facility with Deniliquin Shire.

Control Arrangements

12. **Control.** Small-scale evacuations will be controlled by the Deniliquin SES Local Controller. Should the evacuations operations escalate beyond the capabilities of local resources control may be handed over to the Murray SES Region Controller.

ANNEX G - ARRANGEMENTS FOR THE EVACUATION OF CARAVAN PARKS AND THE RELOCATION OF CARAVANS

General

1. The following caravan parks are flood liable:

Name and Address	Total Sites	Inundation begins at (metres on the Deniliquin Gauge)	Time required to prepare to evacuate	Description of consequences
The McLeans Beach Caravan Park. Total occupancy approximately 1500 people (389sites x 4 people per site)	379 total sites 218 annual sites (caravan and rigid annex) 10 unpowered sites 11 cabins 14 perm anent sites (caravan and rigid annex) 126 casual camp sites	4.70 metres	72 hours (five teams of two people) to prepare cabins and vans for removal. Allow further 5-7 days for removal of assets	4.70 m water enters low lying areas of Park. Low-lying areas become inundated and access to and from individual sites within the park may be lost. Power must be disconnected 5.60m Water at foot of Park Levee. 5.88 m Park sewerage pump station is inundated. 7.00m Park is closed in accordance with lease arrangements. 8.30m estimated crest height of Park levee, may provide protection to level higher (8.5m)
Big Four Paringa Caravan Park Total occupancy approximately 400 people (95 sites x 4 people per site)	30 powered/ unpowered camping sites 18 cabins 50 caravans and fixed/rigid annexes	Unknown	26 hours (five teams of two people) to prepare cabins and vans for removal. Allow further 3-5 days for removal of assets	Unknown
The Riverside Caravan Park.	37 powered camp sites 15 unpowered	7.30 m (Deniliquin gauge)	14 hours (five teams of	7.30m Vans occupying annual sites outside the Park levee begin to be affected. Most are elevated

Total occupancy approximately 360 people (87 sites x 4 people per site)	camp sites 11 cabins 24 caravans and fixed/rigid annexes		two people) to prepare cabins and vans for removal. Allow further 3-5 days for removal of assets.	but access is soon lost. 7.40 m Access to vans occupying annual sites across the floodway is lost. 9.42m Water enters the top section of the Park.

Table G-1: Flood liable caravan parks (outside the town levee system) in Deniliquin/Conargo Shire. Evacuation timings are based on 3 hours preparation time for each cabin to be secured/prepared to be removed and 1.5 hours preparation time for each caravan/annex combination to be secured or prepared for relocation with two people to carry out work. Figures above assume five teams of two people are available. Does not include time to load and remove assets.

Advising Procedures

2. Caravan Park proprietors will 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 will 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 must:

      - 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 Deniliquin 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 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 North or South Deniliquin as directed 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 and SES personnel will assist if required and may be able to provide additional vehicles. Vans are to be moved to the following locations:

      - Deniliquin Racecourse

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:

   a. Ensure that their caravan park is capable of being evacuated within 24 hours.

   b. Advise the Deniliquin SES Local Controller of:

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

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

   d. Inform the Deniliquin SES Local Controller when the evacuation of the caravan park has been completed.

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

Return of Occupants and Vans

8. The Deniliquin 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 park(s) by van owners or by vehicles and drivers arranged by the park Managers. Again, Council and SES personnel will assist if available.

ANNEX H - RESUPPLY REQUIREMENTS AND OPERATIONS

1. During periods of flooding the following towns and villages in the Deniliquin/Conargo Council areas can become isolated:

   a. As the level of the Edwards River rises the Central Sector is the first to be inundated in effect isolating the northern parts of Deniliquin from the southern parts of Deniliquin.

   b. Conargo – high flows in the Billabong Ck could easily isolate the village requiring resupply. Flood waters could mean it may not be possible to reach Jerilderie, Deniliquin or Hay.

   c. Wanganella – high flows in the Billabong Ck could easily isolate the village requiring resupply. Flood waters could mean it may not be possible to reach Jerilderie, Deniliquin or Hay.

   d. Booroorban – The Colleambally outfall could cause flooding and cut Cobb Hwy isolating the Booroorban Pub and community.

   e. Pretty Pine could be affected if North Deniliquin was cut off and Moulamein had high Levels.

   f. The Tuppal Creek historically is badly affected by flood and while there are no actual community facilities there (Hall, Recreation Grounds etc), there are quite a few families affected. Extensive earthworks have occurred (private levees constructed) since the last major flood in 1993 and it may be difficult to predict what the outcome would be.

ARRANGEMENTS

Control

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

Conduct

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

Responsibilities

4. **Deniliquin SES Controller**. Control and 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 the resupply of isolated properties and communities

7. Assistance from other emergency services and functional areas may be required as per DISPLAN arrangements.

Concept of Operations

8. Normal supply arrangements 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. Given the variable nature of flood events, detailed resupply arrangements for isolated towns and villages will be prepared relative to priority, time and resources available.

Resupply Procedures

9. **Pre-Stocking.** As part of flood warning procedures residents and storekeepers likely to become isolated will be warned to pre-stock. Residents in particular should ensure they have an adequate supply of high usage non-perishable items, pet food, fuel, water and essential medications.

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 or make temporary payment arrangements and to instruct those suppliers to package their goods and deliver them to loading points designated by the SES. Similarly, essential services (e.g. hospitals) will make arrangements to acquire their resupply needs from normal sources and have the supplies delivered to loading points designated by the SES.

11. The SES may establish a vetting committee to ensure that only essential goods are ordered. The committee may consist of representatives from the SES, Deniliquin and Conargo Councils, 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 SES Local Controller may request them through the Murray SES Region Headquarters.

13. **Resupply of Isolated Properties.** Isolated properties often need resupply during floods. Property owners may call their suppliers direct or place their orders through DoCS, or through their friends.

14. 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 have a well developed system for this situation, including a standard list of approved resupply items. People not in dire circumstances are responsible for payment of their resupply items

15. Persons not in dire circumstances are responsible for the payment of their resupply items.

16. 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.

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

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

19. The outline of the resupply system for isolated properties is represented in Figure 2.

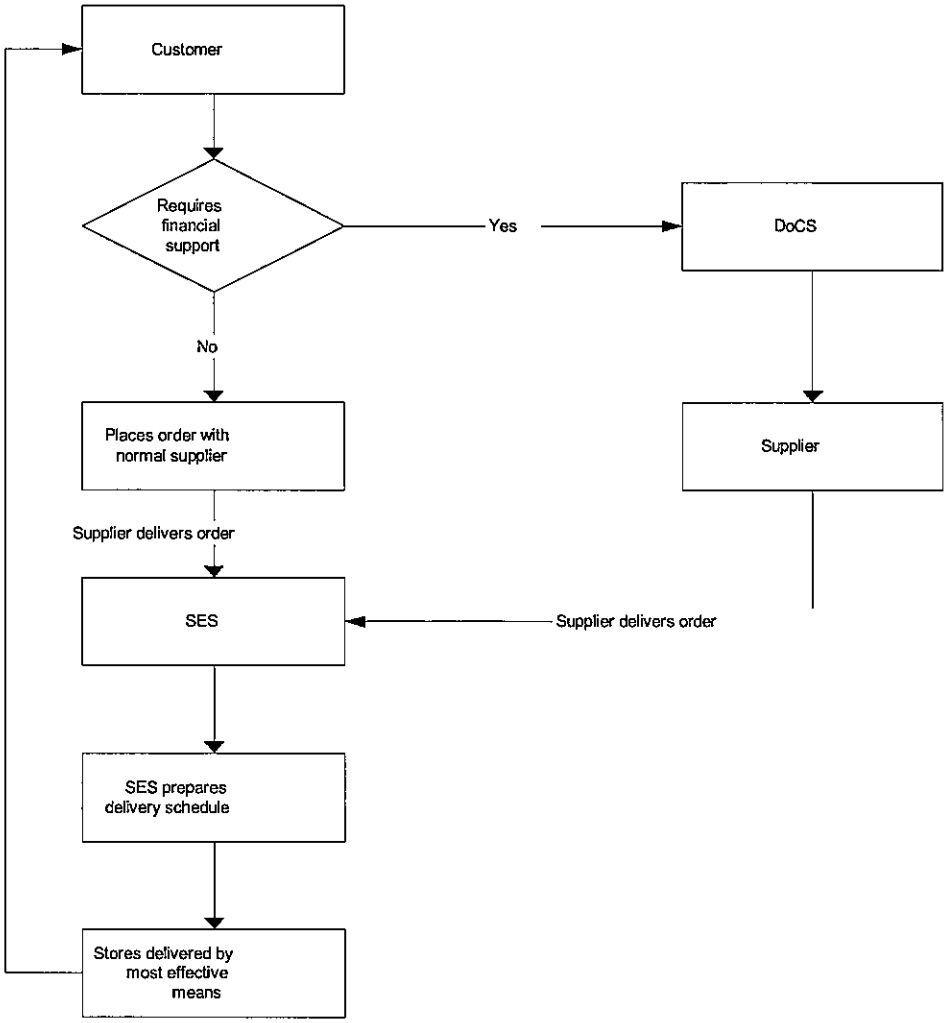


Figure 2 – Outline of resupply system for isolated properties

20. **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.

21. **Mail Delivery.** The SES is prepared to deliver mail to isolated communities and properties but may not be able to do so according to Australia Post timetables.

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

23. **Transport Methods.** Resupply will be conducted using high clearance vehicle, SES flood rescue boat, fixed wing or rotary wing aircraft. If air resupply is

necessary the SES Local Controller will liaise with the Murray SES Region Controller who will make arrangements for air resupply.

ANNEX I - DETAILS OF THE DAM-FAILURE WARNING AND EVACUATION SYSTEM FOR HUME DAM

Background

1. Hume Dam is located on the Murray River, downstream of its junction with the Mitta Mitta River, approximately 16 kilometres east of Albury. It is operated by State Water (NSW) and River Murray Water (Victoria) on behalf of the Murray Darling Basin Commission (MDBC). For information on specifications of the dam refer to ANNEX A of this plan and the Hume Dam Safety Emergency Plan (DSEP).

2. Dartmouth Dam is located upstream of Hume Dam and impounds the waters of the Mitta Mitta River about 24 km from the township of Mitta Mitta in north eastern Victoria. It is operated by River Murray Water on behalf of the MDBC. It is the largest capacity dam in Victoria and the highest structure of its kind in Australia. When full, the dam stores 4,000,000 megalitres of high quality water from the surrounding alpine areas of Victoria.

3. There are three major possible causes of Hume Dam failure;

4. Failure due to extreme flood levels overtopping the embankments.

5. Flood failure consequent to the failure of Dartmouth Dam.

6. Failure due to a rapidly deteriorating structural deficiency such as may be induced by internal erosion or by an extreme earthquake. (This is the so-called "Sunny Day" failure, i.e. not induced by an inflow flood).

7. Although the dam is currently in good condition, it is recognised that an unsafe or emergency condition could occur at any time due to extreme natural events.

Aim

8. This Annex describes the arrangements for the failure of Hume Dam and should be read in conjunction with Annexes F to H.

Consequences of Failure

9. A cascade failure would result in catastrophic flooding downstream of Hume Dam – in such an event the entire Murray River Floodplain will require evacuation.

10. Approximately 8500 people are at risk in the Deniliquin and Conargo Shires in a Hume Dam failure scenario (not associated with a cascade failure). Approximately 3400 dwellings in the town of Deniliquin and 30 dwellings in the town of Conargo could be inundated by a failure of Hume Dam as well as dozens of businesses and commercial premises. Rural properties located along the Edward River will also be inundated.

11. It should be noted that a failure of Hume Dam resulting from extreme rainfall would be preceded by flooding many times more destructive than the 1870 flood of record. Consequently vast areas downstream of Hume Dam would already have been inundated and residents evacuated.

12. Severe flooding would also likely damage power supply facilities in the area resulting in loss of power, put telephone facilities out of action, and cut off evacuation routes.

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

14. Estimated flow times between failure and the impact upon urban areas in the Deniliquin and Conargo Shires are moderate. It is estimated that travel times from the start of the breach at the dam to the arrival of the peak of the dam-break flood would be approximately 15 hours and 30 minutes to the Corowa Road Bridge. It would take significantly more time for the start of the dam-break flood wave to reach Deniliquin/Conargo.

15. Note that these travel times are only one component of the lead-up time (and therefore the warning time) before flooding commences. Other components include:

    - Rainfall duration, flood travel times upstream of the dam and time to fill the storage (for flooding cases).
    - Dartmouth Dam failure time and travel time from Dartmouth Dam to Hume Dam (approximately 3.5 hours) for the case of 'cascade failure' of both dams.
    - Lag time between the occurrence of an earthquake and the start of a consequential dam failure.

16. For all modes of failure, actual breach development times longer than one hour may give a greater time between 'start of dam-break flood wave' and 'peak of dam-break flood wave' and a correspondingly lesser rate of rise of flood waters.

Dam Break Flood Levels

17. The downstream effects of a Hume Dam failure event may vary considerably. Levels and extent of inundation, rates of rise and flood wave travel times will depend on a number of factors including:

    a. Pre-existing flood conditions.

    b. Dam storage levels.

    c. The cause of failure (e.g. flood or earthquake).

    d. The actual mode of failure.

    e. Actions taken at the dam to control releases and to contain damage.

18. The worst case scenario being considered is the failure of Dartmouth Dam on the Mitta Mitta River followed by failure of Hume Dam located downstream of the junction of the Mitta Mitta and Murray rivers. The flood wave could take about three and a half hours to travel from Dartmouth Dam to the upstream reaches of Lake Hume.

19. It may become necessary during an emergency or an extreme flood for Hume Dam operators to lower the storage level to decrease seepage and/or loading on the structure or to minimise the impact of any failure. The maximum discharge from the dam at Full Supply Level (FSL) through the spillway is 590,000

megalitres per day. (Note: releases of 220,000 megalitres per day would result in peak heights of approximately 5.8 metres at the Albury gauge and may overtop the Albury levee). For further detailed information refer to the Hume Dam Safety Emergency Plan 2003 (DSEP).

Operation and Procedures

20. Flood Operation – The operation of the storage is controlled from the River Murray Water office in Canberra. During flooding events, the dam will be continuously manned. The RMW Duty Officer in Canberra and the Duty Officer at Hume Dam are in regular contact with each other.

21. Monitoring procedures – Dam levels are monitored by River Murray Water in Canberra and State Water at the dam by:

    - Rainfall gauges upstream of the Hume Dam are monitored on a daily basis and more frequently as required during flood events. River Murray Water will use this data in hydrological models to predict expected dam level rises.
    - The principal storage level indicator is a recorder and data logger located on a pier of Bethanga Bridge. The data logger is interrogated by telephone. The storage water level is also recorded continuously on an automatic recorder in the dam office. If the storage behaviour on the recorder looks suspect, the storage level reading should be visually checked on the dam wall gauge.
    - Manual readings of the gauge boards at the dam will be taken for dam levels above FSL.

22. **Notification Procedures** - The primary contact for dam failure warning notification is the NSW SES State Headquarters Communications Centre. This centre will subsequently notify the Murray Region Headquarters duty officer who will contact the Deniliquin SES Local Controller. An alternate NSW Police contact is available if this notification procedure was to fail.

23. The Duty officer, Hume Dam will keep the SES Region Controller informed of the anticipated river heights whenever a significant change in release from Hume Dam is made. In particular, the alerts outlined in Table I-3 will be sent to the SES in NSW (and Victoria):

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

Table I-1: Alerts will be sent by Hume Dam to NSW and VIC SES

Alert Trigger	Alert
Storage Water Level Storage up to FSL 192.0m AHD	Flood releases through the spillway are about to begin
Hume Dam discharge plus Kiewa River flow will equal or exceed 43 000 Ml/day	Murray River at Albury is expected to reach MINOR FLOOD LEVEL (4.3m)
Hume Dam discharge plus Kiewa River flow will equal or exceed 81 000 Ml/day	Murray River at Albury is expected to reach MODERATE FLOOD LEVEL (4.9m)

Hume Dam discharge plus Kiewa River flow will equal or exceed 173 000 Ml/day	Murray River at Albury is expected to reach MAJOR FLOOD LEVEL (5.5m)
Hume Dam discharge plus Kiewa River flow will equal or exceed 220 000 Ml/day All spillway gates fully open spillway discharge will be 589,850Ml/day	The Albury Levee may be overtopped in the near future. Hume dam is no longer able to regulate releases
RL 193.9	Storage at crest of main embankment, some outflanking of Embankment No.3
RL 194.3 (Spillway discharge 1,075,000Ml/day)	Storage at critical safety level at top of core wall
RL 195.3 (Spillway Discharge 1,189,000Ml/day)	Storage at top of parapet wall and at crest of Embankments No.2 and No.3

25. The SES is to be informed by State Water / RMW of any decreases in flow at all times. In particular the SES should be informed of instances where the anticipated combined flow (Kiewa and Murray Rivers) at Albury falls below the above mentioned levels.

26. In the event of a complete loss of communications between the dam and River Murray Water in Canberra, Hume Dam staff would operate the storage in accordance with standard flood operational procedures as detailed in the DSEP.

Monitoring

27. Dam owners/operators (State Water and River Murray Water) will undertake monitoring and inspections of their respective dams to ensure any situations, which may lead to potential dam failure, are identified.

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

29. State Water must ensure that appropriate agencies are made aware of any threat to the dam to maximise the time available for mobilising necessary resources.

Warning

30. Once an amber alert level is reached dam failure warnings will be disseminated.

31. The SES will disseminate dam failure warnings with assistance from NSW Police, NSW Fire Brigades, NSW Rural Fire Service, VRA, Service Clubs, State Water and Snowy Hydro Ltd.

32. 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.

33. 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

34. If necessary, evacuations will be undertaken. Refer to Annexes F to H of this plan for detailed evacuation arrangements.

Table 1-2: Notification, Warning and Evacuation Arrangements for Potential Failure of Hume Dam

ALERT LEVEL	DEFINING CONDITIONS	APPROX. ELAPSED TIMES IN WORST CASE	FLOOD EFFECTS	NOTIFICATION ARRANGEMENTS AND ACTIONS				
				STATE WATER	SES STATE HQ	MURRAY SES REGION HQ	DENILIQUIN SES LOCAL HQ	PEOPLE AT THREAT
WHITE: (emergency services notification level and evacuation of areas inundated by levee overtopping flood in Albury).	• Storage level = RL 188.5 to 189.0mAHD • 3.74m to 4.24m above spillway crest • Hume Dam discharge plus Kiewa River flows may exceed 220,000 ML/day	TBC	• Major flooding will already be occurring downstream. • Flood heights may reach up to 5.8 metres on the Albury gauge. • The Albury levee is likely to be overtopped.	• Staff at dam informed of any defining conditions being reached. • Monitor dam. • Advise SES State HQ of White Alert Level being reached and provide regular updates on the situation at the dam.	• Receive advice from State Water and inform Murray SES Region HQ. • SHQ advises SEOC	• Informed by staff at the dam of any defining conditions being reached. • Advise Deniliquin SES Local Headquarters and other SES units downstream of the dam. • Advise the Murray District Emergency Management Officer (DEMO). • Provides SES Flood Bulletins and evacuation warnings to the media organisations listed in Annex D. • Organise out of area assistance for warning and evacuation operations.	• Activate Local Flood Plan. • Advise NSW Police (Deniliquin Local Area Command Headquarters), Deniliquin/Conargo Local Emergency Operations Controller (LEOCON), Deniliquin Fire Control Officer, the Department of Community Services (DoCS), VICSES and other agencies that the White Alert Level has been reached. • Ensure that evacuation centres are ready to receive evacuees.	• Residents and business owners in Deniliquin/Conargo to prepare homes for inundation pack mementos and pets and move to evacuation centres. • Notify SES doorknockers if transport to evacuation centres is required.

AMBER: (all at-risk households warned)	• Storage up to Full Supply Level (RL 192.0mAHD). • Flood passing over spillway. • All spillway gates fully opened. • Staff at Hume Dam are no longer able to regulate releases.	TBC	• Extreme flooding downstream, Albury levee overtopped. • Many downstream residents will already have been evacuated before this action level is reached.	• Staff at dam informed of Amber Alert Level being reached. • Continue monitoring the dam. • Advise SES State HQ of Amber Alert Level being reached and provide regular updates on the situation at the dam. • Contact residents immediately downstream of dam and advise them to prepare to evacuate.	• Receive advice from State Water and inform Murray SES Region HQ. • SHQ advises SEOC.	• Informed by staff at the dam that the Amber Alert Level has been reached. • Advise Deniliquin SES Local Headquarters and other SES units downstream of the dam. • Advise the Murray DEMO. • Provides SES Flood Bulletins and evacuation warnings to the media organisations listed in Annex D. • Coordinate provision of out of area assistance for warning and evacuation operations.	• Advise NSW Police (Deniliquin Local Area Command Headquarters), Deniliquin/Conargo LEOCON, Deniliquin Fire Control Officer, DoCS, VICSES and other agencies that Amber Alert Level has been reached. • Ensure that evacuation centres are made ready. • Conduct warning of downstream residents by doorknock and public address systems from emergency service vehicles.	• Prepare homes for inundation, pack valuables, mementos and pets and prepare to evacuate. • Notify SES doorknockers if transport to evacuation centres will be required.

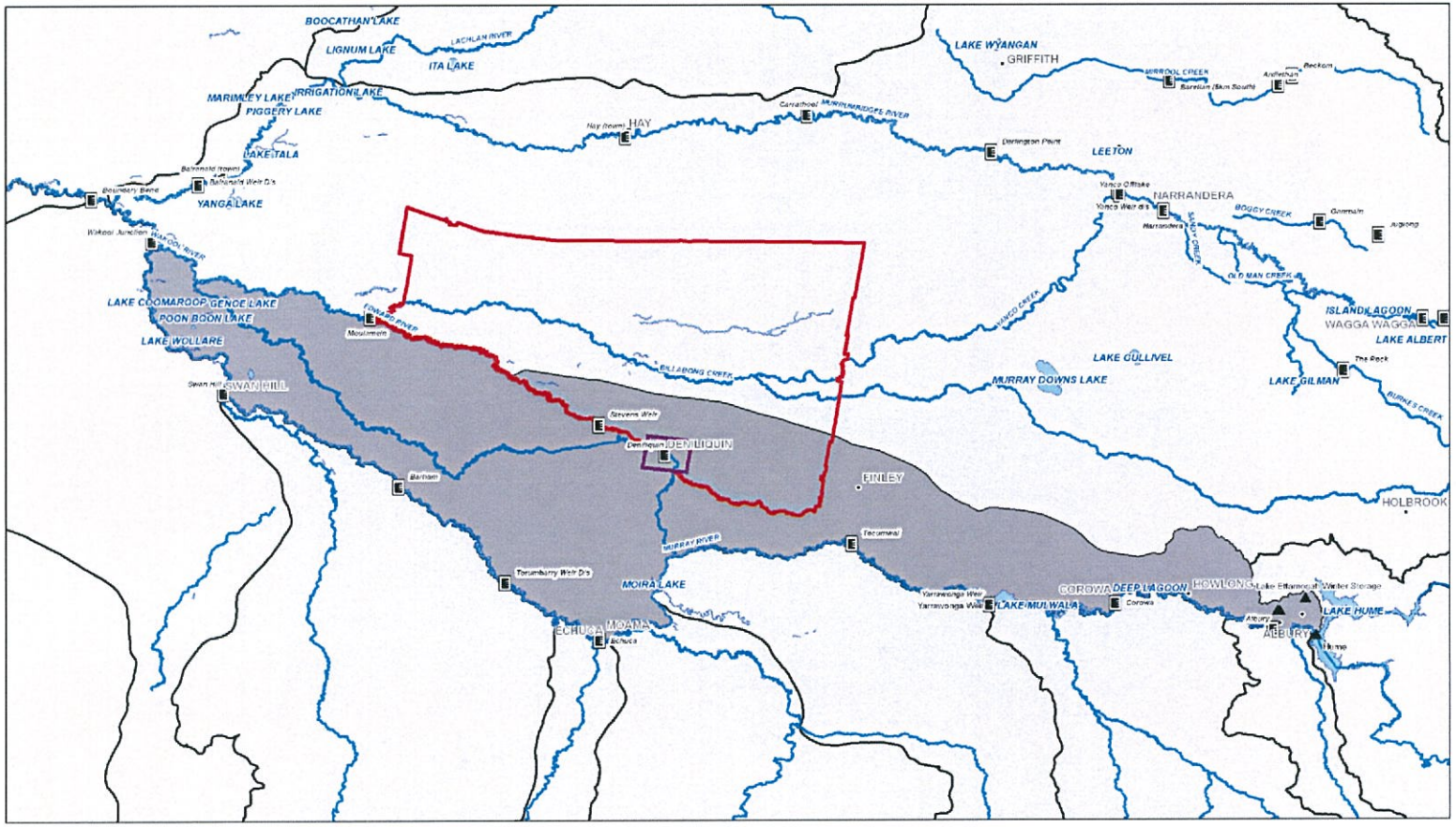
RED: (EVACUATION LEVEL FOR ALL REMAINING SECTORS).	• Storage at critical safety level at top of core wall (RL 194.3mAHD).	TBC	• Extreme flooding already occurring downstream and large parts of Albury evacuated.	• Staff at dam informed of Red Alert Level being reached. • Continue monitoring the dam. • Advise SES State HQ of Red Alert Level being reached and provide regular updates on the situation at the dam. • Contact residents immediately downstream of dam and advise them to evacuate.	• Receive advice from State Water and inform Murray SES Region HQ. • SHQ advises SEOC.	• Informed by staff at the dam that the Red Alert Level has been reached. • Advise Deniliquin SES Local Headquarters and other SES units downstream of the dam. • Advise the Murray DEMO. • Confirm that residents immediately downstream of the dam have been notified of Red Alert Level being reached. • Activate the Standard Emergency Warning Signal (SEWS) and ensure that evacuation warnings are broadcast over the radio stations listed in Annex D. • Coordinate provision of out of area assistance for evacuation operations.	• Advise NSW Police (Deniliquin Local Area Command Headquarters), Deniliquin/Conargo LEOCON, Deniliquin Fire Control Officer, the Department of Community Services (DoCS), VICSES and other agencies that Red Alert Level has been reached. • Ensure that evacuation centres are ready to receive evacuees. • Conduct warning and evacuation of downstream residents by doorknock and public address systems from emergency service vehicles. • Coordinate transport of evacuees without their own vehicles.	• Evacuate.

THEORETICAL FAILURE LEVEL/ IMMINENT FAILURE LEVEL	• Storage at top of parapet wall and at crest of Embankments No. 2 and No. 3 (RL 195.3 m AHD).			• Continue to monitor the dam and advise SES State Headquarters.	• Receive advice from State Water and inform Murray SES Region HQ. • SHQ advises SEOC.	As above.	As above.	As above.
ALL CLEAR (Danger at the dam is assessed as being over. NOTE: This could occur at any time after the White Alert Level is reached).	• Danger assessed as being over.	N/A	N/A	• Advise SES State Headquarters that danger assessed as being over.	• Receive advice from State Water and inform Murray SES Region HQ. • SHQ advises SEOC.	• Informed by staff at the dam that danger is assessed as being over. • Issue 'All Clear' message to Deniliquin SES Local HQ and SES State HQ • Issue 'All Clear' message over radio stations listed in Annex D. • Coordinate issue of 'All Clear' message at evacuation centres or by phone/ doorknock/ public broadcast. Advise the Murray DEMO that 'All Clear' has been issued.	• Deliver 'All Clear' message to other agencies as necessary. • Coordinate issue of 'All Clear' message at evacuation centres or by phone/ doorknock / public broadcast.	• Stay home, return home or await further advice.

Notes to Table I-2:

- Actions indicated as occurring at particular Alert Levels may be brought forward if the development of a flood event warrants.
- The 'Approximate Elapsed Times' are estimates of the worst possible case based upon PMF hydrographs. In real events which threaten to cause the Hume Dam to fail, it is likely that much more time would elapse between defined levels than is indicated in the table. Assessments of the speed of onset of developing events would be made at the time and advice given to residents would reflect these assessments.

MAP 1 - MURRAY RIVERINA BASIN



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Map publication prepared by the NSW State Emergency Service
SES State Headquarters

Murray Riverina Basin

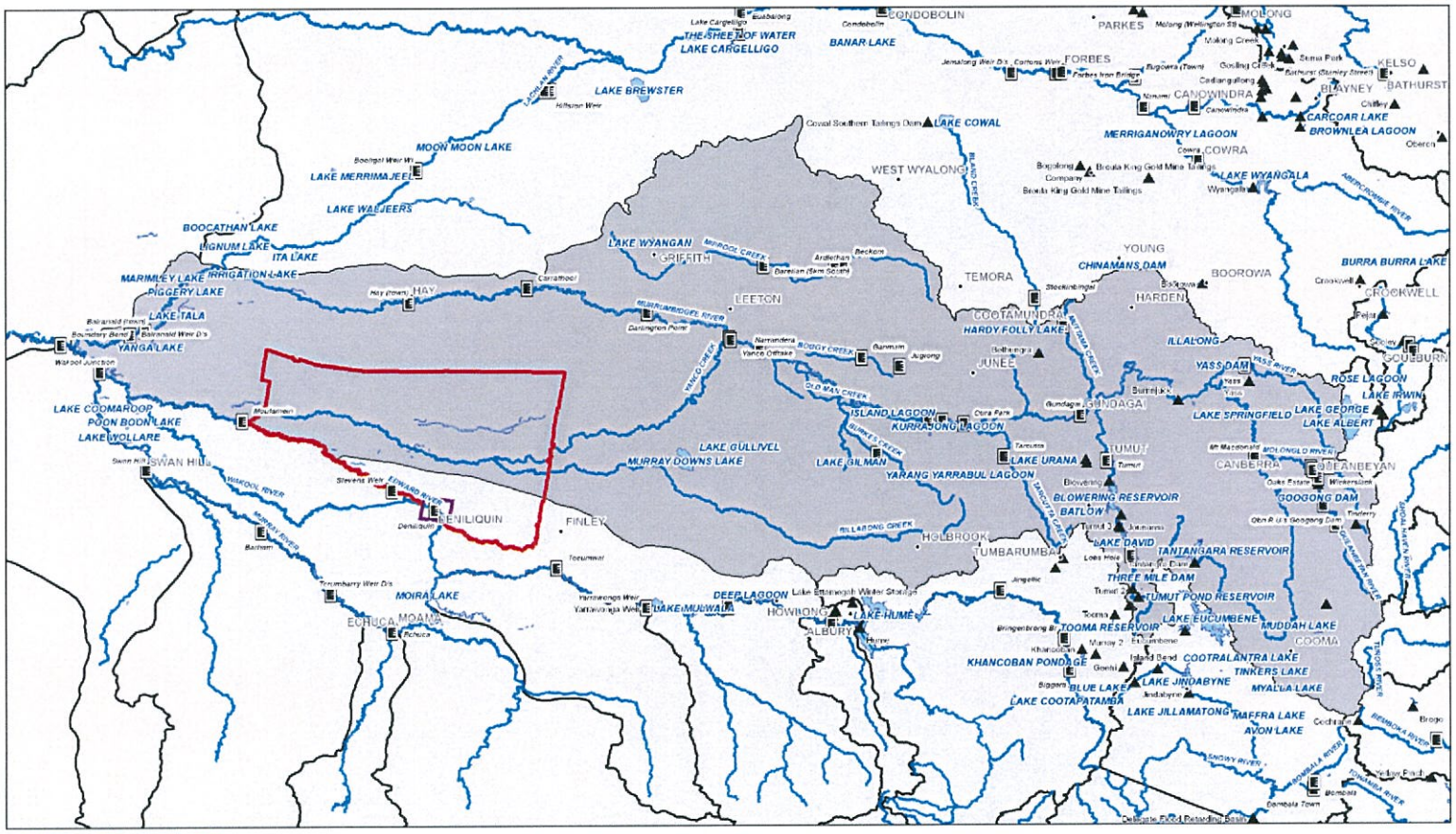
NOT TO SCALE
0 50 100 200
Kilometres

Print Date:16 March 2009

Legend

- Warning Gauges
- Major Towns
- Dams
- Rivers
- Denliquin LGA
- Conargo LGA
- Estuary, Lake, Dam, Ocean
- Murray Riverina
- River Basins

MAP 2 - MURRUMBIDGEE RIVER BASIN



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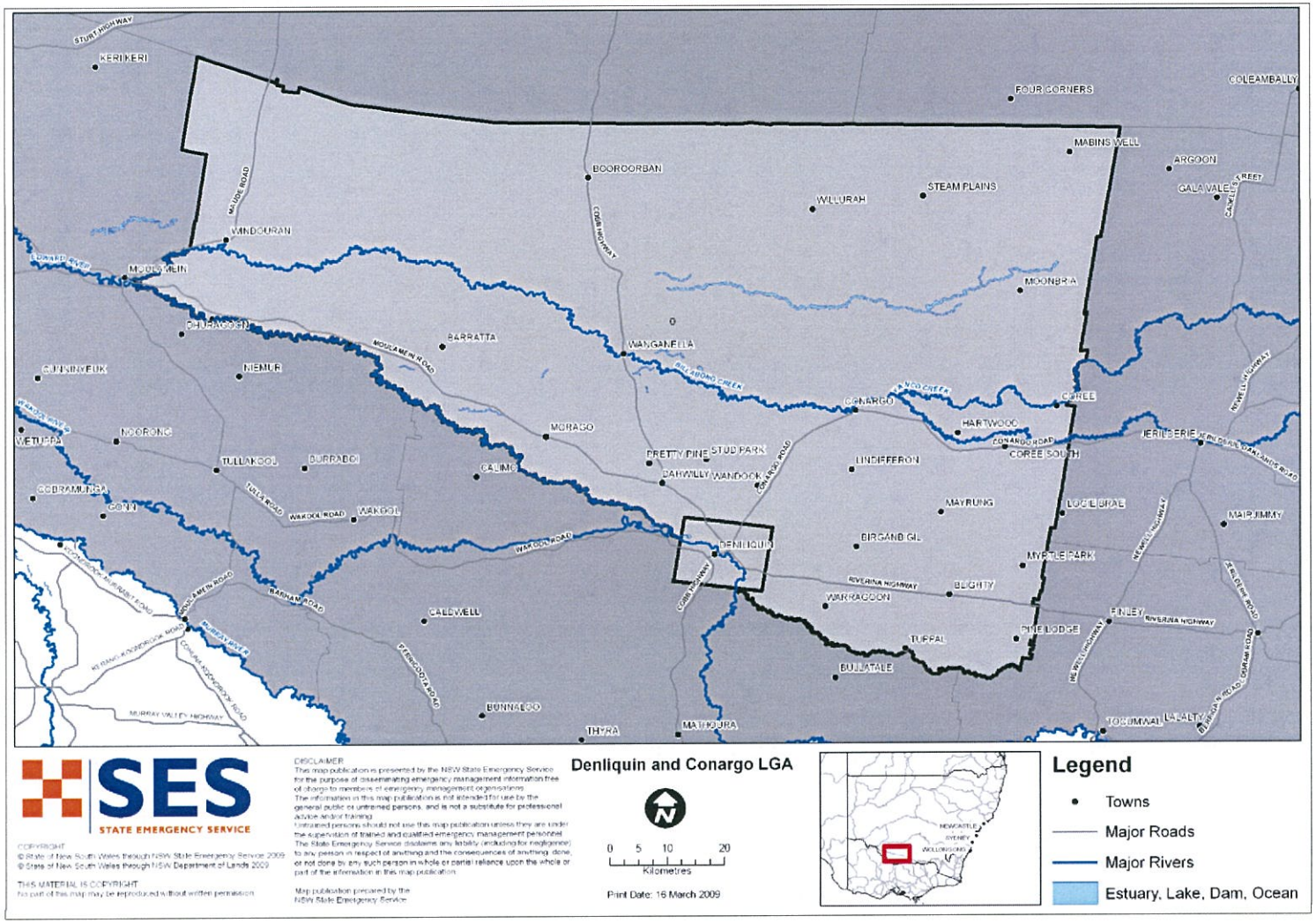
MAP 3 - DENILIQUIN AND CONARGO COUNCIL AREA



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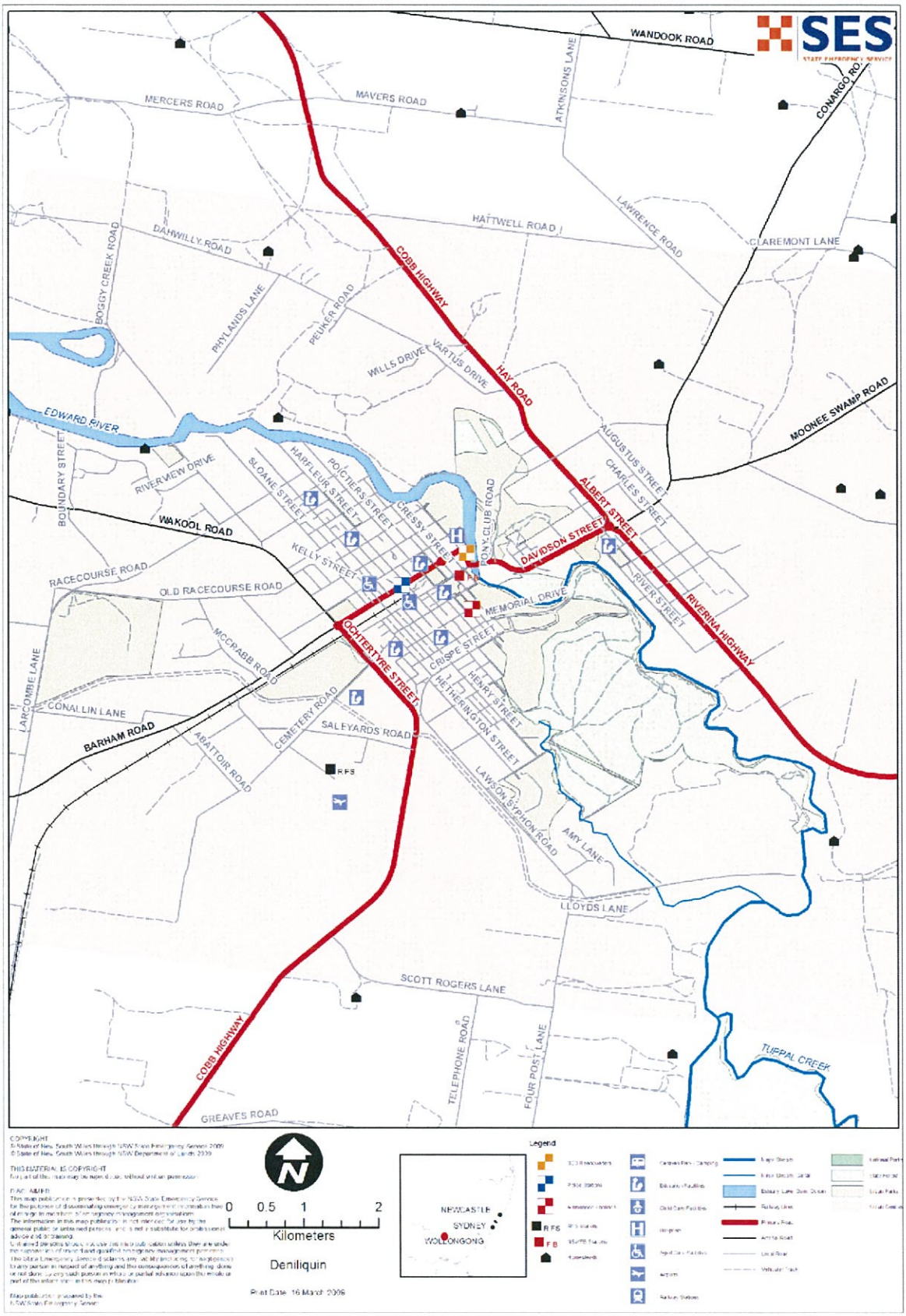
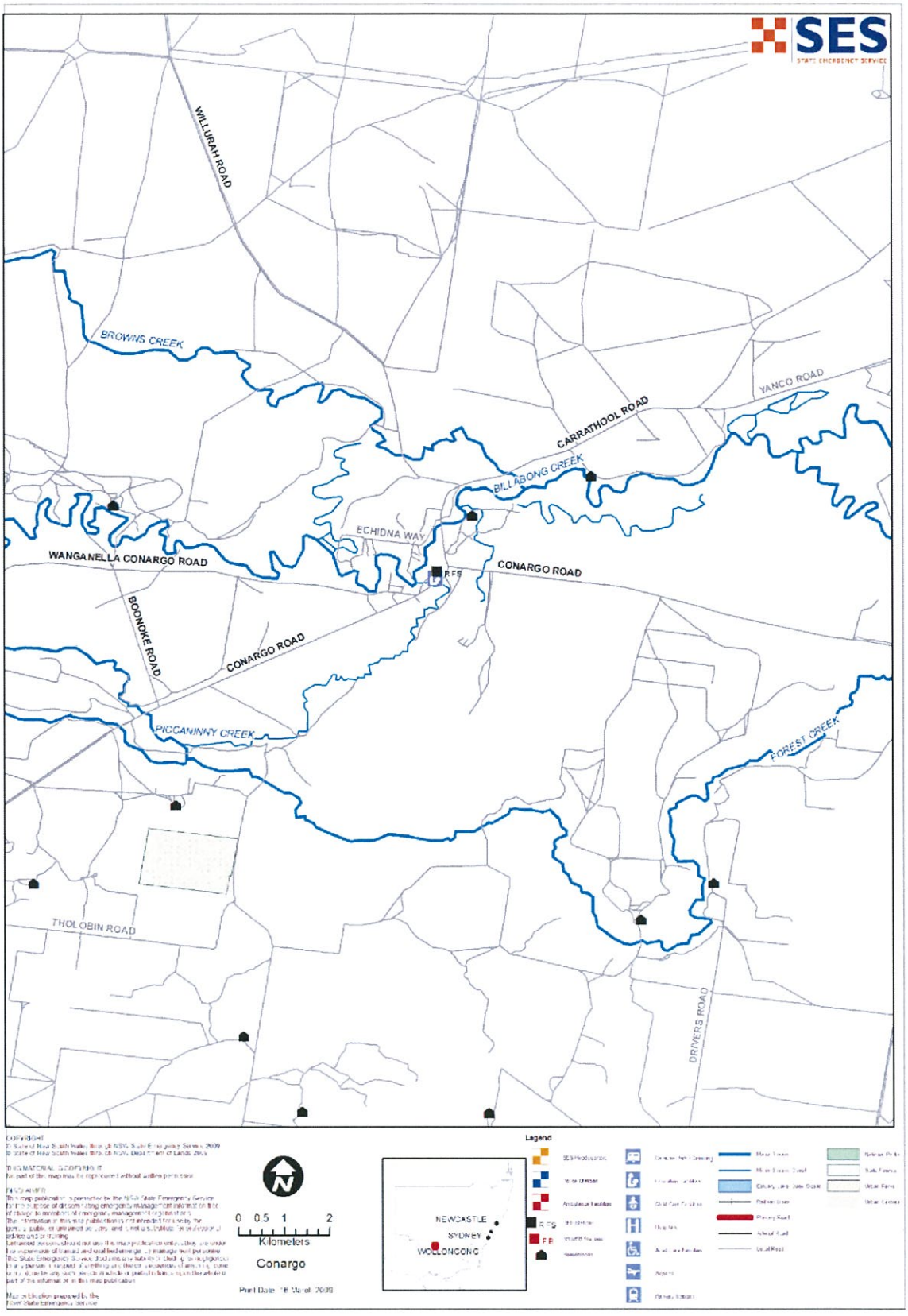
MAP 4 - DENILIQUIN

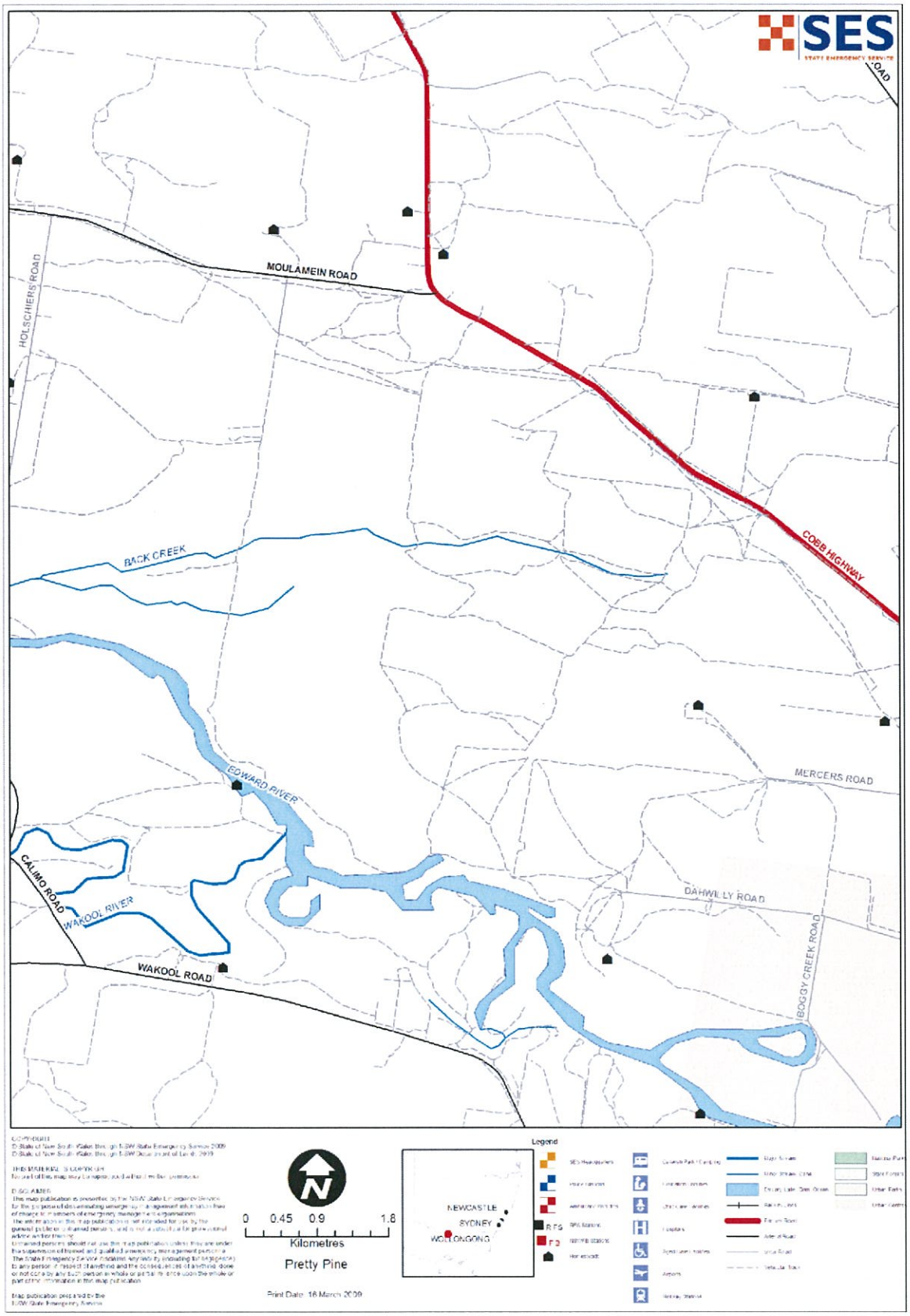


MAP 5 - CONARGO

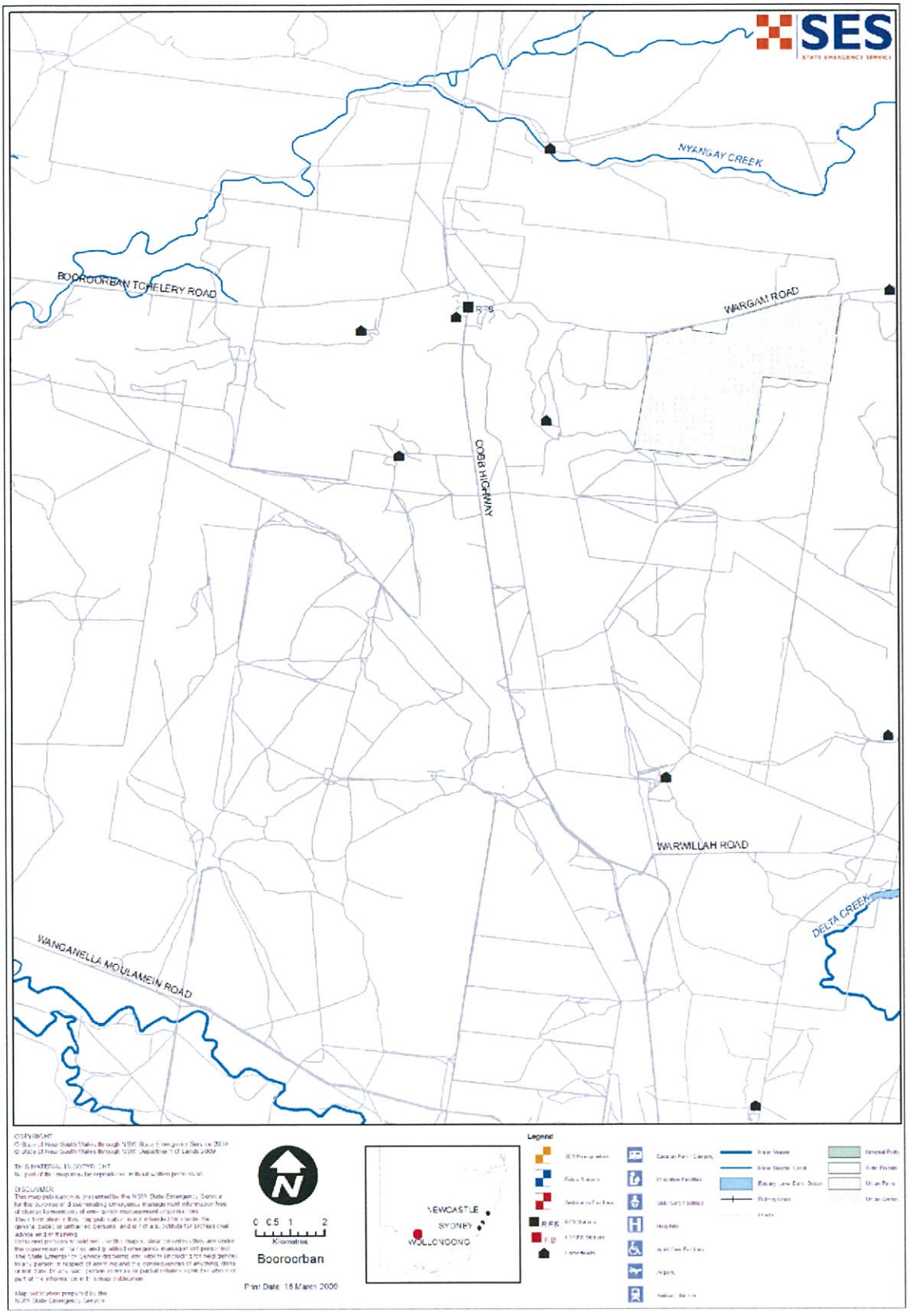


MAP 6 - BLIGHTY

MAP 7 - PRETTY PINE



MAP 8 - BOOROORBAN



MAP 9 - WANGANELLA