GRIFFITH LOCAL FLOOD PLAN

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

Chair, Local Emergency Management Committee

Griffith SES Local Controller

MARCH 2008 EDITION

TO BE REVIEWED NO LATER THAN MARCH 2013

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Griffith SES Local Controller	1
Griffith SES Unit	1
Murrumbidgee SES Region Headquarters	1
NSW SES State Headquarters	1
Griffith Local Emergency Operations Controller	1
NSW Police Force, Griffith Local Area Command	1
Griffith Local Emergency Management Committee Members	4
Griffith Local Emergency Management Officer	1
Griffith Local Emergency Operations Centre	1
Griffith Mayor	1
Griffith General Manager	1
Griffith Technical Services Department	1
NSW Fire Brigades, Griffith	1
Rural Fire Service, Griffith	1
Ambulance Service of NSW, Griffith	1
Telstra	1
Department of Environment and Climate Change	1
Department of Primary Industries, Yanco	1
Department of Community Services	1
Roads and Traffic Authority, South West Region Office, Wagga Wagga	1
Evacuation Centres (4 x 1 each)	4
Hospitals	1
Schools (7 x 1 each)	7
Council Libraries	1
Caravan Parks	1
Spare	1
TOTAL	38

AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to:

The Local Controller
State Emergency Service
PO Box 121
GRIFFITH NSW 2680

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)
BoM	Australian Government Bureau of Meteorology
CBD	Central Business District
DECC	Department of Environment and Climate Change
DISPLAN	Disaster Plan
DoCS	Department of Community Services
DVR	Disaster Victim Registration
DNR	Department of Natural Resources
GIS	Geographic Information System
HF	High Frequency
PMF	Probable Maximum Flood
PMR	Private Mobile Radio
PMP	Probable Maximum Precipitation
RTA	Roads and Traffic Authority
SES	State Emergency Service
SEWS	Standard Emergency Warning Signal
UHF	Ultra High Frequency

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 Australian Government Bureau of Meteorology in flood bulletins and flood warnings.

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

Flood 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 Development Manual. Such a plan usually includes both written and diagrammatic information describing how particular areas of flood prone land can be used and managed to achieve defined objectives.

Floodway. An area where a significant volume of water flows during floods. Such areas are often aligned with obvious naturally-defined channels and are areas that, if partially blocked, would cause a significant redistribution of flood flow which may in turn adversely affect other areas. They are often, but not necessarily, the areas of deeper flow or the areas where higher velocities occur.

Flood Watch. A Flood Watch is a notification of the potential for a flood to occur as a result of a developing weather situation and consists of short generalised statements about the developing weather including forecast rainfall totals, description of catchment conditions and indicates streams at risk. The BoM will also attempt to estimate the magnitude of likely flooding in terms of the adopted flood classifications. Flood Watches are normally issued 24 to 36 hours in advance of likely flooding. Flood watches are issued on a catchment wide basis.

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

Flume. An artificial channel used to convey water.

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 Australian Government Bureau of Meteorology.

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

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 Griffith area. It covers operations for all levels of flooding within the council area.

1.2 Authority

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

1.3 Area Covered By The Plan

1.3.1 The area covered by the plan is the Griffith City Council area and includes the villages of Beelbangera, Bilbul, Hanwood, Yenda and Yoogali.

1.3.2 The council area is shown in Map 3.

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

1.4 Description Of Flooding And Its Effects

1.4.1 The nature of flooding in the Griffith area is described in Annex A.

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

1.5 Responsibilities

1.5.1 The SES is by the authority of the NSW Displan the designated Combat Agency for dealing with floods, a role which includes coordinating the rescue, evacuation and welfare of affected communities. The NSW State Flood Plan outlines the general responsibilities of the NSW SES in relation to floods, and makes provision for some specific responsibilities for SES Local Controllers to be detailed in the Local Flood Plan.

1.5.2 The general responsibilities of local emergency service organisations and supporting services (functional areas) are recorded in the Local Disaster Plan (DISPLAN). Some specific responsibilities which relate to floods are listed in the following paragraphs, the extent of their implementation being dependant upon the severity of the flooding and the availability of resources.

1.5.3 **SES Local Controller.** The SES Local Controller is responsible for dealing with floods and will:

a. Maintain the Local SES Headquarters and ensure that volunteer members are trained to staff its Operations Centre and undertake flood operations tasks in accordance with policy in the SES Controllers' Handbook and the SES Operations Manual.

b. Liaise with the office bearers of local service and sporting clubs for the purpose of establishing and maintaining arrangements for the provision of casual volunteers during times of flooding to assist with tasks such as manning of telephones within operation centres, sandbagging, lifting/moving of household furniture and commercial stock, delivery of evacuation warnings, conduct of evacuations, etc.

c. Participate in floodplain risk management initiatives organised by the Griffith City Council.

d. Develop and maintain a flood intelligence system and coordinate the collection and recording of flood intelligence before, during and after floods.

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

f. Coordinate the development, maintenance and operation of a flood warning service for the community.

g. Coordinate a public education program appropriate to the flood threat within the area.

h. Control flood operations by directing the activities of SES units operating within the council area and coordinating the activities of supporting agencies and organisations. Subject to resource availability tasks may include:

- Provide a public information service in relation to potential and actual flooding. This may include details of flood behaviour, methods of limiting property damage, advice of road conditions and closures, and instructions concerning evacuations.
- Assist the NSW Police and Council with road closure and traffic control operations.
- Assist the Coolamon Shire Council to organise temporary repairs or improvements to levees.
- Coordinate operations to assist with the protection of property, eg arranging resources for lifting or moving of household furniture and commercial stock and equipment, for sandbagging properties, or for relocating animals.
- Direct flood rescue operations.
- Assist the Department of Primary Industries to carry out emergency fodder supply operations.

- Coordinate the provision of emergency food and medical supplies to isolated people and/or communities.
- Direct the evacuation of people and/or communities and where necessary provide immediate welfare support for evacuees.
- Arrange for support (for example, accommodation and meals) for SES volunteers, casual volunteers and members of emergency service organisations directly assisting the SES.
- Exercise financial delegations relating to the commitment of Natural Disaster Account funds through the use of Emergency Orders as per the provisions in the SES Controllers' Handbook.
- Submit Situation Reports to the Murrumbidgee SES Region Headquarters and appropriate local agencies and organisations. These will contain information on current and likely flood behaviour, current and likely operational activities, current and likely resource needs, and road conditions and closures.
- Keep the Local Emergency Operations Controller informed of the flood situation and operational response.
- Issue the 'All Clear' when flood operations have been completed.

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

j. Assist where appropriate with the establishment and deliberations of Recovery Coordinating Committees.

k. Ensure that the currency of the Griffith Local Flood Plan is maintained.

1.5.4 **Griffith SES Unit Members:**

a. Assist the SES Local Controller to fulfil his responsibilities in relation to flood preparedness and community education activities.

b. Undertake training for flood operations.

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

- The staffing and management of the Griffith SES Operations Centre.
- Assisting with road closure and traffic control operations.
- Lifting and/or moving household furniture and commercial stock.
- Moving farm animals.
- Sandbagging.

- Levee monitoring, and assisting in repairing or improving levees.
- Resupply to isolated properties.
- Assisting with emergency fodder supply operations.
- Delivery of warnings and information.
- Evacuation.
- Providing immediate welfare for evacuated people.
- Flood rescue.
- Gathering flood intelligence.

1.5.5 **Ambulance Service of NSW, Griffith:**

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

b. Deploy ambulance resources to locations as deemed appropriate if access is expected to be lost.

1.5.6 **Australian Government Bureau of Meteorology (BoM):**

a. Provide Flood Watches for the Murrumbidgee River Basin.

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

1.5.7 **Australian Rail Track Corporation:**

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

b. Arrange trains for evacuations and/or commuting purposes.

1.5.8 **Caravan Park Proprietors: Griffith Caravan Village and Griffith Tourist Caravan Park:**

a. When floods are rising ensure that occupiers are informed of flood warnings and coordinate the evacuation of people and the relocation of moveable vans. Coordinate their return when flood waters have subsided.

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

1.5.9 **Country Energy:**

a. Provide advice to the Griffith 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.

f. Assist the SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence.

1.5.10 **Department of Community Services (DoCS):**

a. Manage the evacuation centres.

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

1.5.11 **Department of Primary Industries:**

a. Coordinate the supply and delivery of emergency fodder.

b. Provide advice on dealing with dead and injured farm animals.

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

d. Coordinate the operation of an animal shelter compound facility for the domestic pets and companion animals of evacuees.

1.5.12 **NSW Fire Brigades:**

a. Assist with the delivery of evacuation warnings.

b. Assist with the conduct of evacuations.

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

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

e. Deploy fire resources to appropriate locations if access is expected to be lost.

1.5.13 **NSW Police Force, Griffith Local Area Command:**

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.

d. Coordinate the registration of all evacuees.

e. Secure evacuated areas.

1.5.14 **Griffith Local Emergency Operations Controller:**

a. Monitor flood operations.

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

1.5.15 **Griffith Local Emergency Management Officer:**

a. Provide executive support to the Local Emergency Operations Controller in accordance with the Griffith Local Disaster Plan.

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

1.5.16 **Griffith City Council:**

a. Maintain a plant and equipment resource list for the council area.

b. Contribute to the development and implementation of a public education program.

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 advise the Griffith SES Local Controller, the Police and people who telephone the council for road information.

e. Provide filled sandbags to urban and village areas where flooding is expected.

f. Assist with the removal of caravans from caravan parks.

g. Provide back-up radio communications where necessary.

h. In the event of evacuations, assist with making facilities available for the domestic pets and companion animals of evacuees.

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

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

k. Establish and maintain floodplain risk management committees and ensure that key agencies are represented on such committees.

l. Provide flood studies, floodplain management studies to the SES.

1.5.17 **Private Companies, eg MIA Coaches, Griffith Showground, Toll Transport, Wineries, etc:**

Assist where appropriate 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. Space for evacuation centres..

1.5.18 **Roads and Traffic Authority (RTA):**

a. Close and reopen RTA roads and highways affected by flood waters and advise the Griffith SES Local Controller.

1.5.19 **Rural Fire Service, MIA Zone:**

a. Provide personnel in rural areas and villages to:

- inform the Griffith SES Local Controller about flood conditions and response needs in their own communities, and
- disseminate flood information.

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

c. Assist with the delivery of evacuation warnings.

d. Assist with the conduct of evacuations.

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

f. Assist with the removal of caravans.

g. Provide back-up radio communications where necessary.

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

i. Deploy fire resources to appropriate locations if access is expected to be lost.

1.5.20 **School Administration Offices (including the Department of Education & Training, Catholic Education Office and Private Schools):**

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

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

c. Assist if necessary with coordinating the evacuation of the following schools:

- Beelbangera, Bilbul, Hanwood, Yenda and Yoogali Public Schools
- St. Therese Primary School, Yenda; St. Marys Primary School, Yoogali.

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

1.5.21 **Telstra:**

a. Repair and restore telephone facilities damaged by flooding.

b. Provide additional telecommunications support for the Griffith SES Headquarters as required.

c. Assist the SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence.

1.5.22 **Transport Services Coordinator:**

a. Arrange transport facilities for evacuations and/or commuting purposes.

PART 2 - PREPAREDNESS

2.1 Maintenance Of This Plan

2.1.1 The Griffith 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 The Griffith SES Local Controller will ensure that the SES:

a. Participates in floodplain management committee activities when those committees are formed.

b. Consults with the flood prone community about the nature of the flood problem and its management.

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

2.3 Development of Flood Intelligence

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

2.3.2 The SES will develop and maintain a flood intelligence system.

2.4 Development of Warning Systems

2.4.1 The SES will establish and/or maintain a flood warning system for areas affected by flooding. This requires:

a. An identification of the potential clients of flood warning information at different levels of flooding (ie. who would be affected in floods of differing severities).

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

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

a. The Griffith SES Local Controller, with the assistance of the Griffith City Council, the Murrumbidgee SES Region Headquarters and the SES State Headquarters, is responsible for ensuring that the residents of the council area are aware of the flood threat in their vicinity and how to protect themselves from it.

2.5.2 Specific strategies to be employed include:

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

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

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

d. SES Display at the Griffith Show

2.6 Training

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

PART 3 - RESPONSE

3.1 Control

3.1.1 The SES is the legislated Combat Agency for floods and is responsible for the control of flood operations. This includes the coordination of other agencies and organisations to assist with flood management tasks.

3.2 Operations Centres

3.2.1 The Griffith SES maintains an Operations Centre within its Local Headquarters building located at the corner of Oakes and Harris Roads.

3.2.2 The Griffith Local Emergency Operations Centre is located within the Council building at 1 Benerembah Street..

3.2.3 In the unlikely event of the Griffith SES Operations Centre being inundated during an extreme flood the SES Local Controller would relocate his Operations Centre into the Local Emergency Operations Centre.

3.3 Liaison

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

3.3.2 Liaison officers are to:

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

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

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

3.4 Communications

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

3.4.2 The primary means of communication to and between deployed SES resources is by the SES's Private Mobile Radio system.

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

3.4.4 Back-up communications are provided by the Rural Fire Service and Council radio networks.

3.5 Start of Response Operations

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

3.5.2 Response operation will begin:

a. On receipt of a Bureau of Meteorology Flood Watch or Severe Weather Warning indicating the likelihood of flash flooding in the Griffith City Council area.

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

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

3.5.4 The following persons and organisations will be advised of the start of response operations regardless of the location and severity of the flooding anticipated:

a. Griffith SES Local Controller and Unit members.

b. Murrumbidgee SES Region Headquarters.

c. Griffith Local Emergency Operations Controller (for transmission to the NSW Police Force Local Area Command Headquarters).

d. Griffith Local Emergency Management Officer (for transmission to the Mayor and appropriate council officers and departments).

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

3.6 Flood Intelligence

3.6.1 Sources of flood intelligence during times of flooding are:

a. **Bureau of Meteorology**. The Bureau provides:

- Flood Watches, which give an early appreciation of developing meteorological situations that could lead to flooding. These are normally provided on a whole-catchment basis for the Murrumbidgee River.

- Weather Forecasts warning of potential storm activity including Severe Weather Warnings and Severe Thunderstorm Warnings.

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

c. **Griffith City Council.** Council distributes information relating to road closures.

d. **Department of Natural Resources, Leeton.** This office advises flow rates and rates of rise for MIA irrigation canals. Daily river reports containing information on gauge heights and river flows for the Murrumbidgee River are available from the DNR website.

e. **Active Reconnaissance.** The Griffith SES monitors the following problem areas after thunderstorms or heavy rain:

- Houses in in the low lying areas of Griffith, Yenda and Hanwood.
- The Yenda-Leeton Road
- Kidman Way between Darlington Point and Willbriggie
- Gum Creek Road
- Brogden Road
- MacKay Avenue, Griffith
- Dredge Street Yenda

3.7 Preliminary Deployments

3.7.1 When flooding is expected to be severe enough to cut roads, the Griffith SES Local Controller will ensure that resources are in place for the distribution of foodstuffs and medical supplies to the areas that could become isolated.

3.7.2 When road access between Griffith and Darlington Point or Yenda is expected to be cut, the Griffith SES Local Controller will advise appropriate agencies so that consideration can be given to redeploying resources (including sandbags, fire fighting appliances, ambulances, etc.) to ensure that operational capability is maintained.

3.8 Warnings

3.8.1 Warning services operate according to the following arrangements:

a. The Griffith SES Local Headquarters:

- Provides advice to the Murrumbidgee SES Region Headquarters on current and expected impacts of flooding.
- Where appropriate, coordinates the delivery of warnings to the community by door-knocking, telephone, mobile public address systems, local radio stations and two-way radio.

b. Where flooding is widespread, the Murrumbidgee SES Region Headquarters issues warning information in the form of SES Region Flood Bulletins to media organisations and agencies listed in Annex D.

3.8.2 Warnings are provided as follows:

a. **Bureau of Meteorology Flood Watches.** If there are signs of impending floods, Flood Watches will be incorporated in SES Flood Bulletins issued by the Murrumbidgee SES Region Headquarters.

b. **Bureau of Meteorology Severe Weather Warnings for Flash Flooding**. Provide a warning of the possibility for flash flooding as a result of intense rainfall. These warnings are issued when severe weather is expected to affect land based communities within 6 to 24 hours. These are issued direct to the media by the BoM and incorporated into SES Bulletins.

c. **Bureau of Meteorology Severe Thunderstorm Warning.** These are issued direct to the media by the BoM.

d. **Evacuation Warnings.** A template guide to the content of evacuation warning messages is at Annex D.

e. **Special Warnings.** A community self-help warning system exists for riverine flooding from the Mirrool Creek, advice of flooding being passed on by rural landowners downstream from Mirrool to Beckom to Ardlethan to Barellan to Yenda. These warnings are also passed to the Griffith SES Local Controller, who, in addition to the officers and organisations listed above, also advises the following by phone or radio:

- Radio 2RG/STARFM and Griffith Community Radio (FM 95.1).
- Farmers within the Griffith City Council area with properties along the Mirrool Creek.

f. **Standard Emergency Warning Signal (SEWS).** This signal may be played over radio and television stations to alert communities to Evacuation or Special Warnings. Approval to use the signal will be obtained by the Griffith SES Local Headquarters from the Murrumbidgee SES Region Headquarters.

3.9 Information

3.9.1 During region-wide flooding, the Murrumbidgee 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.

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

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

a. The Griffith SES Local Controller provides road status reports for main roads in the council area to the Murrumbidgee SES Region Headquarters

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

3.9.4 The Griffith SES Local Controller is to ensure that the Murrumbidgee SES Region Controller is regularly briefed on the progress of operations and on future resource needs.

3.10 Road Control

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

3.10.2 In addition to its own local roads, Council in its capacity as an agent of the RTA will close and re-open the Kidman and Irrigation Ways should they become inundated to the extent that they are not safely accessible by a family car.

3.10.3 The NSW Police Force has the authority to close and re-open roads but will normally only do so if the Council has not already acted and it is considered that public safety requires such action.

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

3.11 Traffic Control.

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

3.12 Flood Rescue

3.12.1 The Griffith SES Local Controller is responsible for the coordination of flood rescue.

3.12.2 Flood rescues, may be carried out by accredited units using high clearance vehicles, flood boats and (under some circumstances) helicopters.

3.12.3 Additional flood boats and crews can be requested through the Murrumbidgee SES Region Headquarters.

3.13 Evacuations

3.13.1 The need to evacuate parts of the community is only considered likely in the event of an extreme flood occurring. Overfloor flooding of low-lying houses could be exacerbated by blockage of drains and subways running under the Irrigation Canals.

3.13.2 If evacuations are necessary they will be controlled by the Griffith SES Local Controller and will be conducted by SES personnel, assisted where necessary by Police, RFS or volunteer personnel.

3.13.3 When evacuations are possible, the Griffith SES Local Controller will advise DoCS so that evacuation centres and welfare support can be set up in timely fashion.

3.13.4 Some residents may make their own decision to evacuate and move to alternative accommodation using their own transport. Such evacuees must be advised via the media to inform the Police or the SES of their evacuation and their temporary address.

3.13.5 Field teams conducting doorknocks will record and report back to the Operations Centre:

- Addresses and locations of houses doorknocked and/or evacuated
- Number of occupants
- Details of support required (such as transport, medical evacuation, assistance to secure house and/or property and raise or move belongings)

3.13.6 The field teams will then carry out evacuations as required. Details of these premises will be passed on to the local Police Station which will provide security for evacuated areas.

3.13.7 Evacuees will be taken to or advised to go to the nearest accessible evacuation centre, which may initially be established at the direction of the Griffith SES Local Controller but which will be managed as soon as possible by the Department of Community Services. Any or all of the following sites may be suitable for use as evacuation centres:

- Police-Citizens Club, Olympic Street, Griffith
- South Side Leagues Club, Jondaryan Avenue, Griffith
- Yoogali Catholic Club
- Griffith Ex-Servicemens Club, Jondaryan Avenue, Griffith

3.13.8 On arrival, evacuees will be registered, medically checked if necessary and provided with their immediate welfare needs.

3.13.9 Transport and storage of furniture from flood-threatened properties will be arranged if time and resources permit.

3.14 Registration

3.14.1 NSW Police Force 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.

3.15 Management of Evacuees' Pets

3.15.1 In the event of a large-scale evacuation animal shelter compound facilities will be set up for domestic animals and companion animals. These facilities will be operated by the Department of Primary Industries.

3.15.2 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.

3.16 Essential Services

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

3.17 Logistics

3.17.1 The Griffith SES Local Headquarters maintains a small stock of sandbags, and back-up supplies are available through the Murrumbidgee SES Region Headquarters. A motorised sandbag-filling machine is available from the Griffith SES Headquarters.

3.18 Aircraft Management

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

3.18.2 Air support operations will be conducted under the control of the SES Region Headquarters which may allocate aircraft if considered warranted. The SES Local Controller may task aircraft allocated by the Region Headquarters for flood operations within the Council area.

3.18.3 Suitable helicopter landing points are located at:

- Collina Oval
- Griffith Airport

3.18.4 Access to the Griffith airport remains open from flooding at all times. The airport is capable of handling up to a Dash 8 type aircraft.

3.19 Resupply of Isolated Towns and Villages

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

3.19.2 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.

3.19.3 Where practicable the Griffith 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, floodboats or, on occasions, aircraft.

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

3.20 Resupply of Isolated Properties

3.20.1 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 Griffith SES, through DoCS, or through their own social networks.

3.20.2 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.

3.21 Assistance for Animals

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

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

3.22 Stranded Travellers

3.22.1 Travellers seeking assistance as a result of being stranded by floodwaters will be referred to the Department of Community Services for the arrangement of temporary accommodation.

3.23 All Clear

3.23.1 When the danger to life and property has passed, the Griffith 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 The Department of Community Services will provide for the long-term welfare of people who have been evacuated.

4.2 Recovery Coordination

4.2.1 The Griffith 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 Griffith Local Emergency Management Committee on the details of the flooding and assisting where considered necessary with 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 Arrangements for Debriefs / After Action Reviews

4.3.1 As soon as possible after flooding has abated, the Griffith SES Local Controller will advise participating organisations of arrangements for the conduct of an After Action Review of the response operation.

4.3.2 The Griffith SES Local Controller will ensure that adequate arrangements are in place to record details of the After Action Review and that 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 Griffith Local Emergency Management Committee.

ANNEX A - THE FLOOD THREAT

Landforms and River Systems

1. The Griffith Council area is made up of flat to undulating country, most of which is drained by Mirrool Creek. This creek, which rises in the Bland and Temora Council areas, enters the Griffith Council area as a poorly defined stream which causes widespread but shallow inundation along the eastern boundary during floods. The creek then flows through a channel in a south-westerly direction through Widgelli before tending north-west and flowing into Barren Box Swamp. In times of heavy flooding it continues on from there until its confluence with the Lachlan River.

2. A small area in the south of the council area drains to the Murrumbidgee River, which forms a section of the council's southern boundary. A map showing the river basin is attached as Map 2.

3. Water to support the regions agriculture is supplied to the Griffith area from the Murrumbidgee River via the Main Canal of the Murrumbidgee Irrigation System. This canal commences midway between Wagga Wagga and Narrandera at Berembed Weir and extends north-west for about 155 kilometres, running through Narrandera and Leeton. As it nears Yenda two large secondary supply canals known as the Northern Branch Canal and the Mirrool Branch Canal stem from it. Runoff from a local sub-catchment known as Main Drain "J" cannot flow naturally into the Mirrool Creek because of obstruction from the embankments of the Main, Northern and Mirrool Branch Canals. Runoff from this area instead enters Main Drain "J", a man-made earth-lined channel which is the major artery that drains stormwater runoff from the agricultural lands south-east of the CBD . It diverts the water in a south-westerly direction until it joins the Mirrool Creek at a location approximately 10km west of Griffith at an area known as the Warburn Escape. The Main Drain "J" catchment covers an area of nearly 1,000 km^2 and extends approximately 60kms north of Griffith along a wide floodplain that is bound by the Cocoparra Range to the east and the McPhersons and Melbergen Ranges to the west.

Storage Dams

4. Lake Wyangan is a natural low lying depression downstream of Griffith and acts a water storage facility for the area. It has no dam wall.

Weather Systems and Flooding

5. The council area has a dry climate, most of its territory receiving less than 400mm of rainfall annually. Flooding can occur, however, usually as a result of sequences of fronts crossing the Riverina during the late autumn, winter and spring months. Summer floods can result from the penetration of deep depressions from northern Australia, or on a small scale as flash flooding from high-intensity convective thunderstorms.

Characteristics of Flooding

6. The city of Griffith does not lie on the banks of a major river system and as a result damaging floods emanating from the Mirool Creek or the Murrumbidgee River is rare.

7. The main threat is flash flooding of the City, surrounding villages, orchards and farms caused by localised heavy storms over the Main Drain "J" catchment. The villages of Beelbangera, Bilbul, Hanwood, Yenda and Yoogali are all situated on the floodplain of Main Drain "J", and each can be affected by flooding. The effects can include inundation of farmland necessitating the movements of stock and equipment, the closure of roads, and the inundation of residential yards and private dwellings in Hanwood, Yenda and Yoogali. In very rare and severe events, small numbers of houses could be inundated or isolated, necessitating evacuation.

8. Such flooding is strongly influenced by the prescence of three large irrigation canals which obstruct the natural flow of floodwater. Hence the upper (above the Northern Branch Canal), central (between the Northern Branch and the Main Canals) and lower (between the Main and Mirrool Branch Canals) sections of this catchment generally experience "backwater" flooding as the subways running beneath the Canals only have limited capacity to discharge floodwater.

9. During floods, a proportion of water from the upper catchment of Main Drain "J" flows beneath the Northern Branch Canal via a subway at a location known as Myall Park, with water in excess of the capacity of the subway remaining temporarily stored behind the Canal. However during very large floods, floodwaters have discharged across the top of the Northern Branch Canal into the central section of the catchment of Main Drain "J".

10. As the central section of the Main Drain "J" catchment is relatively flat, floodwaters generally travel slowly along the network of open drainage channels towards the Beelbangera subway which runs beneath the Main Canal. This subway provides the means to convey water from the central sections of the catchment and into the upstream end of DC "605 J" which joins Main Drain "J" near Yoogali. Flows in excess of the capacity of the Beelbangera subway "build up" behind the embankment formed by the Main Canal and are temporarily stored. However if it reaches an elevation in excess of 127.4m AHD then the water will overtop Bilbul Road and discharge in a south-westerly direction along a flowpath that is generally contained between the Main Canal and the Temora-Roto railway. Floodwaters that discharge along this flowpath will flow into the catchment of DC Collina. A small proportion of the flow will be conveyed through the Collina subway, however the majority of flow will continue in a south-westerly direction before "building up" behind higher ground near the Griffith industrial area which is situated near the junction of the Roto-Temora and Yanco-Griffith railway lines. Floodwaters are predicted to pond in this area until the water is conveyed beneath the Main Canal by the DC "637 J" subway. During very large floods there is also potential for floodwaters to discharge across the Griffith Industrial Area and into the CBD.

11. The lower section of the catchment between the Main Canal and the Mirrool Branch Canal is characterised by flat topography bisected by Main Drain "J" which runs in a westerly direction within it until its point of discharge into the Mirrool Creek. During

severe flooding the Main Drain "J" channel can "back-up" along feeder drains and break its banks, inundating large areas of surrounding land. Although this area is mainly used for intensive cropping, shallow flooding during a severe flood can have an impact on adjoining villages, causing minor flooding of roads and low-lying areas in Bilbul and the southern fringes of Griffith, and inundation of private dwellings in Yoogali and Hanwood.

12. Although the CBD and residential areas of Griffith are situated on land that is above the level of the Main Drain "J" floodplain, sections of the CBD have been flooded in the past. This flooding has been attributed to impediment to overland flow by the Main Canal and the Roto-Temora railway line leading to localised "ponding", the flat topography across much of the area, and insufficient capacity of the existing sub-surface pipe drainage system. In normal circumstances stormwater runoff from this area is discharged to Main Drain "J" via a number of subways that drain water beneath the Main Canal. However sections of the sub-surface pipe network have very limited flow-carrying capacity, and as a result during large storms the majority of runoff is discharged overland. This can lead to inundation of low-lying areas within the CBD including flooding of basements within Banna Avenue and inundation of buildings in Yambil Street.

13. Warning times are in the order of days for floods on Mirrool Creek and up to a few weeks for floods on the Murrumbidgee River. Warning times are much shorter for floods emanating from localised thunderstorms.

Flood History

14. Since European settlement and construction of the irrigation canals in 1912, the area has experienced a number of floods. Major floods occurred in 1931, 1956, and March 1989, the latter being the most comprehensively documented due to its relatively recent occurrence.

15. **1931 FLOOD**

The 1931 flood caused significant flood damage within the Main Drain 'J' system but no data exists indicating the amount of rainfall that led to the flooding and no literature has been uncovered that gives an indication of observed flood behaviour, extents or levels. Photographic records show that Yenda was severely impacted by a build up of water behind the Main Canal, with evidence suggesting that blockage of the Yenda subway exacerbated the severity of the flooding in that area.

16. **1956 FLOOD**

The 1956 flood is considered to be one of the most severe floods since settlement of the area. It resulted in significant damage to horticulture, a large number of vineyards and trees across the floodplain of Main Drain 'J' being destroyed. A build up of water behind the Main Canal caused significant flooding in sections of the CBD, particularly along Yambil Street where depths of over one metre were reported.

17. **1989 FLOOD**

The most severe flood in recent history occurred as a result of extended periods of heavy rainfall on the 14th March 1989. The total depth of rainfall over the 15 hours

duration of the storm was 103mm. Significant affluxes were reported at many bridge and culvert crossings, which is believed to have exacerbated the severity of flooding.

A comparison between statistically derived rainfall data and historic 1989 rainfall records was undertaken by Water Studies Pty Ltd (Griffith City Council, June 1992). This indicated that the 1989 rainfall had a return period in the vicinity of 50 to 100 years. However, it is understood that the preceding two months were particularly dry. Therefore, the 1989 storm did not necessarily translate into a 50-100 year recurrence flood as a considerable amount of the initial rainfall was lost due to infiltration and interception.

As detailed hereunder, this flood inundated areas of the CBD and affected surrounding villages.

Yenda

In 1989 flood waters inundated extensive areas of Yenda including Bridge Street, Leaver Street, Henry Street, Park Street, West Avenue and Railway Avenue. The Beelbangera-Yenda Road was cut at the Myall Park Road Intersection. Peak floodwater depths were estimated to be in the vicinity of 1 metre.

It is considered that partial blockage of the Yenda subway made a significant contribution to the severity of flooding at Yenda. The partial blockage prevented floodwaters from being discharged into DC 'TJ', instead 'building up' behind the Main Canal. The canal embankment effectively created a flood storage basin behind it, which likely reduced the severity of flooding within the upper reaches of Main Drain 'J', but increased the severity of flooding around Yenda.

Bilbul

Minor flooding of sections of Bilbul were reported during the 1989 flood. However, it is believed that the flooding was primarily associated with floodwaters backing up along secondary and tertiary drains from Main Drain 'J'.

Yoogali

Significant flooding was recorded at Yoogali during the 1989 flood. Floodwater depths of up to 1 metre were recorded with floodwaters inundating Edon Street, the local butchery, the school and Henderson Oval. Sandbagging was required to protect the General Store.

It is understood that floodwaters may have overtopped the banks of DC '650J' near the corner of McCormack and Bosanquet Roads, discharging through Henderson Oval and then through the village. It is also thought that afflux at the Griffith-Yanco Railway Railway Bridge and the Mackay Avenue/Irrigation Way Bridge may have caused Main Drain 'J' to overtop it's banks and inundate lower lying section of the village immediately upstream of the Railway Line.

Griffith

The urban area of Griffith suffered from some inundation during the 1989 flood. However, it was suggested that most of the flooding within the urban areas was the

result of the existing drainage system having insufficient capacity or being partially blocked with debris. Properties along Banna Avenue suffered from flooded basements and most low lying streets and intersections in the Griffith CBD were submerged.

Some flooding along the southern and western fringes of Griffith also occurred as a result of backwater effects from main Drain 'J'. However, this was generally in areas that were largely undeveloped

Hanwood
Hanwood also reported shallow flooding during the 1989 storm. Floodwaters reportedly overtopped the banks of DC 'A' and DC '114A' and inundated sections of Hanwood Avenue, Hanwood Road, Malle Street, Wattle Street, School Street and Leonard Road.

Flood Mitigation Systems

18. There are a number of flumes on the MIA irrigation channel system. These exist at the following locations:

- West of Griffith near Browns Road
- Bellbangera Road Yenda
- Briggs Road Yenda on Mirrool Creek

Extreme Flooding

19. Modelling shows that there is generally only a relatively small difference in peak flood levels between each of the simulated design floods. For example at the Yanco-Griffith Railway crossing the peak 100 year recurrence flood level is only predicted to be about 0.4 metres higher than the peak 20 year recurrence interval.

20. During the 100 year recurrence flood peak floodwater depths across most areas of the Main Drain "J" floodplain are expected to generally be less than 0.3 metres.

21. The probable maximum flood (PMF) is the largest flood that could conceivably occur at a particular location. Estimates of the PMF are typically derived from the Probable Maximum Precipitation (PMP) with the resultant runoff routed through the catchment over which the rainfall occurs. However due to a number of factors none of the traditional methods of estimating the PMF were considered valid for Griffiths Main Drain "J" catchment. Reasons include:

- limited historical data related to extreme precipitation and flooding in inland catchments
- the assessed critical storm duration of 12 hours not being within the parameters required for calculation based on precipitation

- the considerable storage effects of the irrigation canal embankments
- the potential for flood flows to discharge laterally into adjacent sub-catchments

An alternative approach to derive an extreme rainfall estimate that could reasonably be expected to occur at Griffith generated a total rainfall depth at Griffith of 210mm for the 12 hour critical storm duration. The extrapolated 100,000 year recurrence rainfall depth for the 6 hour storm duration is about 181mm. A map showing the anticipated extent of inundation from a PMP flood within the Main Drain 'J' catchment is attached as Map 4.

ANNEX B - EFFECTS OF FLOODING ON THE COMMUNITY

Community Profile

1. The City of Griffith is a well established regional centre with consistent population growth. Its population distribution is close to State and regional averages, and its industry is performing better than State and industry averages. Employment is evenly spread across occupation groups, with the predominant employers being Agriculture (18%), Retail (16%) and Manufacturing (15%)

2. Statistics from the 2006 Census give an overview of the demographics of people living in the area:

Census Description	LGA	Beelbangera	Bilbul	Griffith	Hanwood	Yoogali	Yenda
Total Persons	23800	304	246	16182	582	762	1066
Total Dwellings	8097	96	83	5612	701	239	405
Total persons aged 65 years and over	3199	23	19	2392	61	87	155
Total persons aged below 15 years	5546	77	64	3691	147	164	254
Total persons with a need for assistance (severe disability)	1000	12	7	791	21	20	36
Total persons of indigenous origin	893	17	7	722	14	14	15
Total persons using Internet	4165	51	58	2668	119	146	210
Single parent families	837	12	3	654	19	18	30
Persons living alone	1841	13	14	1424	42	36	104
Persons who do not speak English well	803	0	3	636	26	19	23
Total persons who lived at a different address 5 years ago	7288	53	59	5483	122	182	278
Households without vehicles	619	3	3	541	13	6	21
Persons residing in caravans or cabins	50	0	0	31	0	0	5
Mean household size	3	3	3	3	3	6	3

Specific Risk Areas

Bilbul

3. Minor flooding of sections of the village may result from heavy rainfall within the Main Drain 'J' Catchment from water which backs up along secondary and tertiary drains.

Griffith

4. Low-lying properties within Griffiths CBD and central urban area are threatened with inundation from water as a result of the existing drainage system having insufficient capacity to cope with heavy local rainfalls. During very large floods there is also potential for floodwaters from the Main Drain 'J' catchment to overtop Bilbul Road and travel overland in a south-west direction to discharge across the Griffith Industrial Area into the CBD. Flooding of properties along the southern and western fringes of the town is also possible due to backwater from Main Drain 'J'.

Hanwood

5. Shallow flooding of residential properties in the low-lying areas of Hanwood is possible when water which has fallen within the Main Drain 'J' catchment overtops local drainage channels.

Yenda

6. Minor flooding of sections of the village may result from heavy rainfall within the Main Drain 'J' Catchment as a result of water which builds up behind the irrigation areas Main Canal. This build-up can be exacerbated by partial blockage of the subway which drains water underneath the canal near the south edge of the village, and can lead to inundation of properties in the low-lying areas of the streets which adjoin the canal.

Yoogali

7. Minor flooding of sections of the village may result from heavy rainfall within the Main Drain 'J' Catchment as a result of water overtopping the banks of Main Drain 'J' and its secondary drainage channels. This floodwater threatens low-lying residential and commercial properties, Henderson Oval and the local Public School.

Rural Areas

8. Rural properties adjoining the Mirrool Creek or Murrumbidgee River can on infrequent occasions have their low lying land inundated with shallow levels of floodwaters. Similarly, landowners with properties within the Main Drain 'J' catchment can be inundated from overland flooding emanating from heavy rainfall in the local catchment.

Camping Reserves

9. There is no recorded data known to the SES detailing specific risks posed by flooding to Camping Reserves within the Griffith area..

Road Closures

10. The following roads are known to have been cut by flooding:

    a. Mirrool Creek flooding

        - Yenda-Leeton Road
        - Mackay Avenue
        - Gum Creek Road
        - Brogden Road

    b. Murrumbidgee River flooding

        - Kidman Way, between Willbriggie & Darlington Point
        - Darlington Point-Carrathool Road (north of Murrumbidgee River)

    c. Local flooding of Main Drain 'J' Catchment

        - Dredge Street, Yenda
        - The Beelbangera-Yenda Road , at the Myall Park Rd. intersection

Effects on Utilities and Infrastructure

Extreme flooding on the Murrumbidgee River near North Darlington Point could inundate the Murrumbidgee Electricity sub-station, blacking out most of the Griffith council area. This could necessitate large-scale evacuations of residents if power supplies could not be readily restored.

ANNEX C - DISSEMINATION OF SES FLOOD BULLETINS

The Murrumbidgee SES Region Headquarters or Griffith SES Local Headquarters will, as appropriate, distribute SES Flood Bulletins and other information related to flooding in the Griffith area to the following regional outlets:

Television Stations:

Station	Location
Prime	Wagga Wagga
WIN	Griffith

Radio Stations:

Station	Location	Frequency	Modulation
2RG	Griffith		963
Star FM	Griffith	99.7	
ABC Radio Riverina	Wagga Wagga	102.7	
2MIA Community Radio	Griffith	95.1	

Newspapers:

Name	Location
The Area News (Printed Mon/Wed/Fri)	Griffith
Daily Advertiser (Printed Mon-Sat)	Wagga Wagga

Other Agencies:

- Griffith City Council
- Griffith Local Emergency Operations Controller
- Griffith Police Local Area Command
- NSW Fire Brigades
- NSW Rural Fire Service, Murrumbidgee Irrigation Area Zone
- Country Energy
- Telstra
- Department of Primary Industries
- Department of Community Services
- Ambulance Service of NSW
- Australian Rail Track Corporation, Junee

ANNEX D - TEMPLATE EVACUATION WARNING MESSAGE FOR [..enter name of area..]

Evacuation Warning for [ ]

Date/Time of Issue: [ ]

Authorised By: [ ]

Very heavy rain has fallen within Griffith's local catchment and as a result flooding is expected to occur within low-lying areas of Griffith. This means that the following area(s) may be inundated **[ ]**.

It is recommended that you prepare to evacuate/for evacuation within the next [ ] hours. To prepare for evacuation, you should:

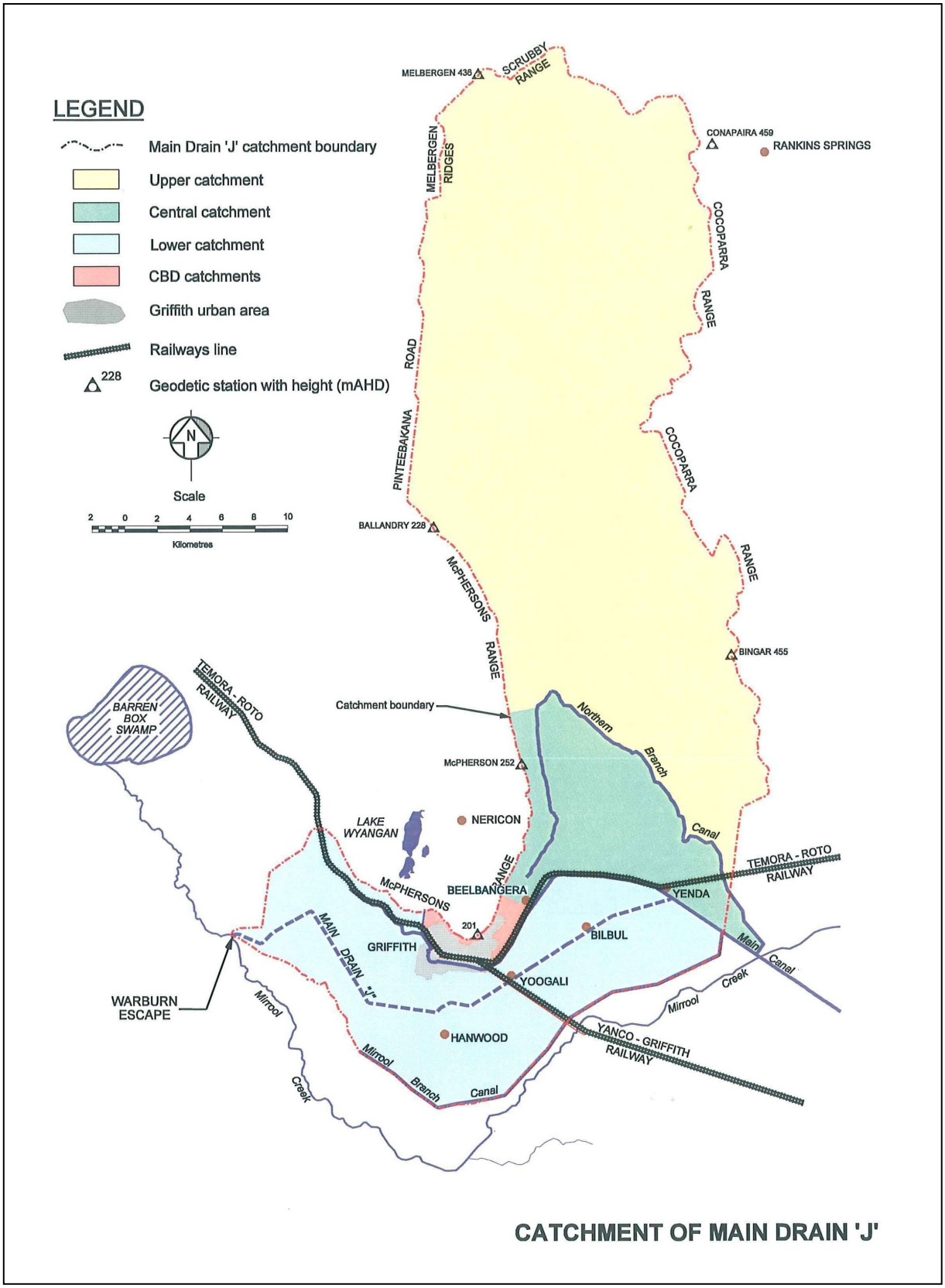
- Raise belongings by placing them on tables, beds and benches. Put electrical items on top. Some items may be able to be placed in ceilings.
- Gather medicines, personal and financial documents and mementos together to take with you.
- If possible, check to see whether your neighbours need help.
- Make arrangements for care of pets or companion animals.
- Listen to 2MIA Community Radio FM 95.1 or 2RG for further information and to confirm this warning.

The State Emergency Service is monitoring the situation and will advise you if/when it will be necessary to leave your property.

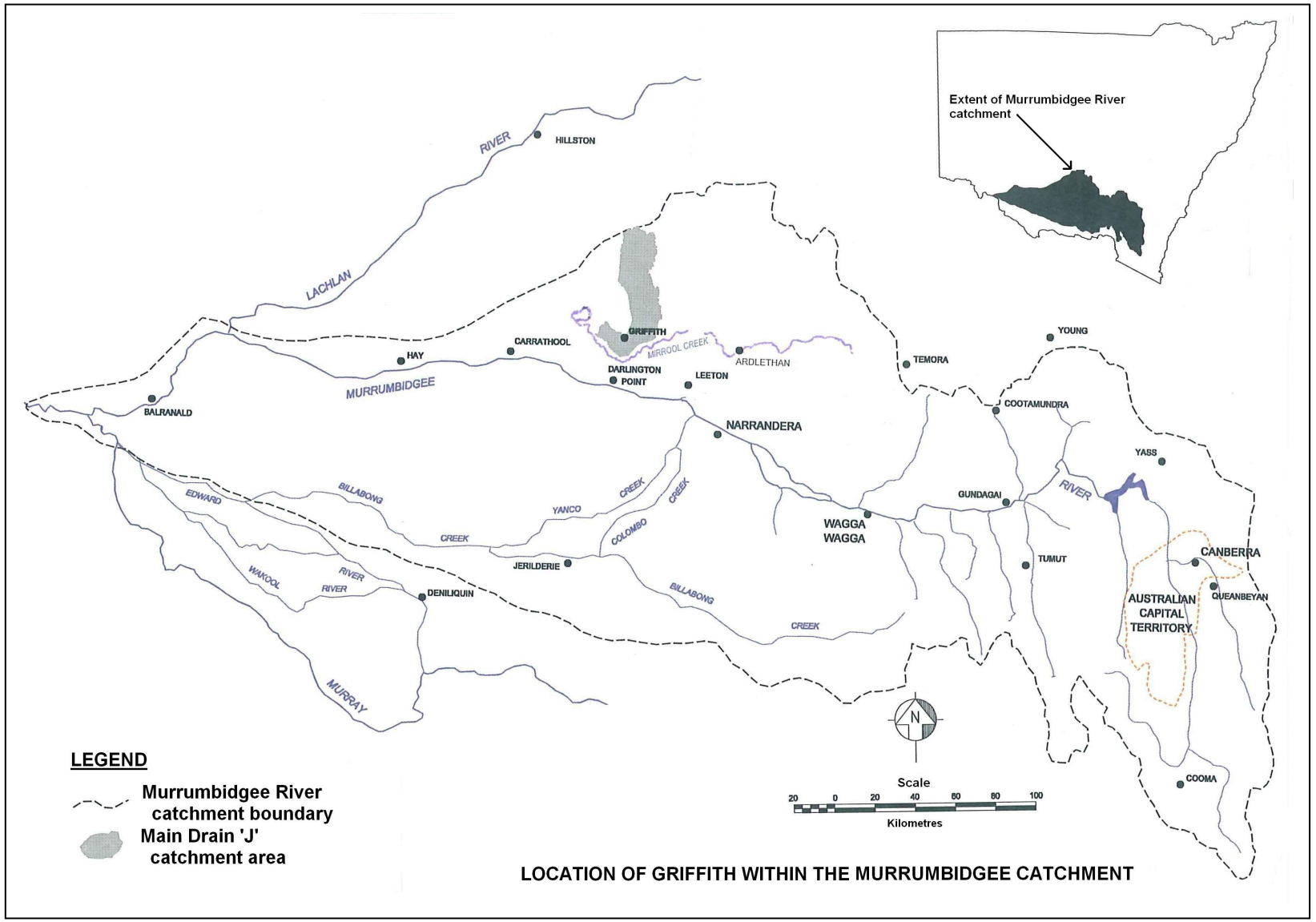
If evacuation is necessary be prepared to:

- 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 [ ].
- If you don't have a car, special transport will be provided on request by telephoning [ ].
- So that you can be accounted for, it is important that you register at the evacuation centre located at [ ].
- 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.

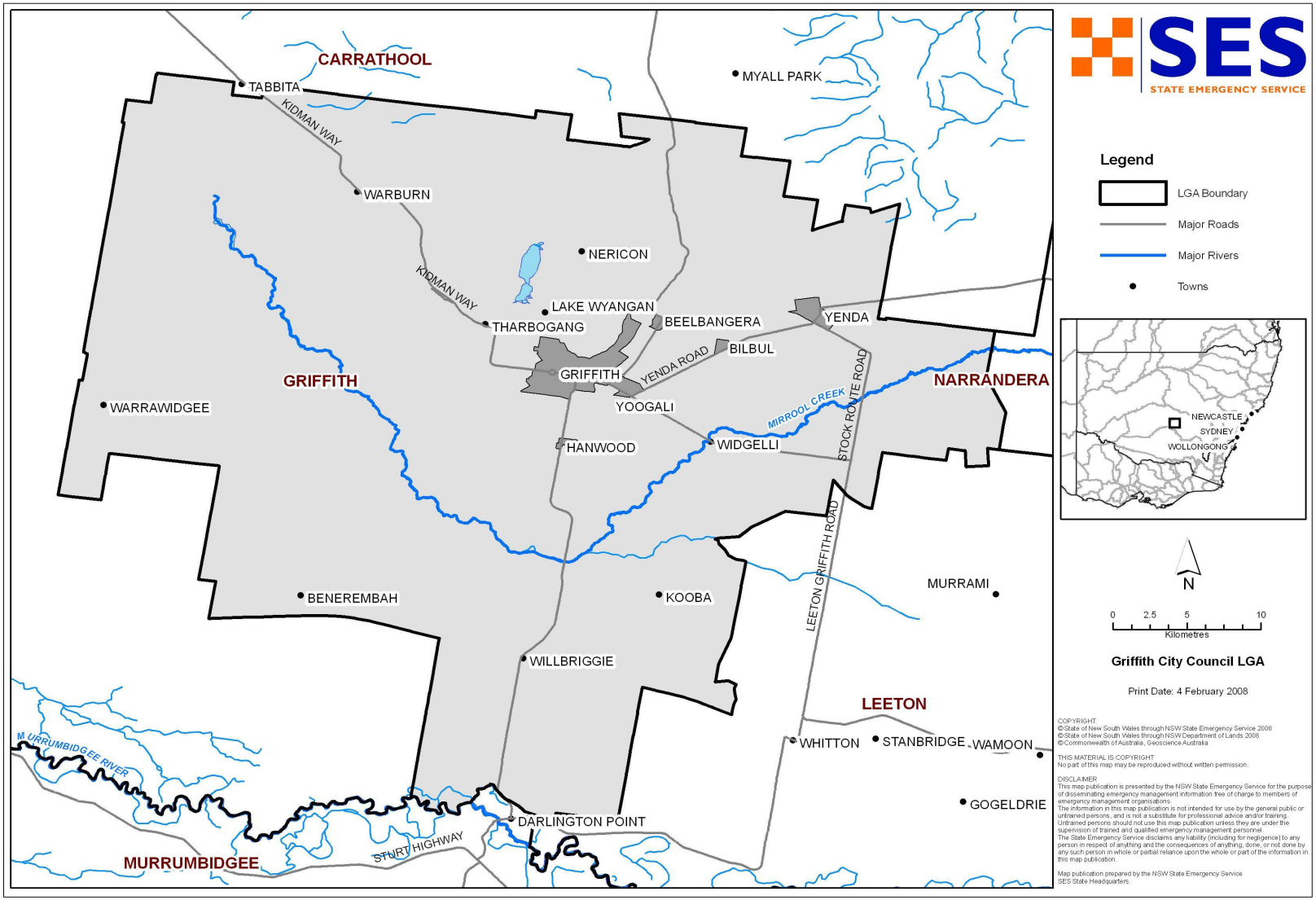
MAP 1 - MAIN DRAIN 'J' CATCHMENT



MAP 2 - MURRUMBIDGEE RIVER BASIN



MAP 3 - GRIFFITH LGA



MAP 4 - EXTENT OF INUNDATION IN EXTREME FLOOD