Flood effects in the Georges Creek area

Height (m), Georges Creek gauge	Effect
10.0 (approx)	Inundation of low-lying farm land between Georges Creek and Bellbrook
13.0	Kempsey-Armidale road cut at Bass Lodge

Flood effects in the Upper Macleay area

Height (m), Bellbrook gauge	Effect
2.8	Bellbrook Bridge closes
3.2	Toorooka Bridge closes
3.5	Temagog Bridge closes
3.4	Turners Flat Bridge closes
4.0	Sherwood Bridge closes

Flood effects in the Lower Macleay area

Height (m), Kempsey gauge	Effect
4.6–4.9	Kinchela Creek and Belmore River floodgates opened; lower floodplain areas to south-east of river inundated below Kempsey
5.2-5.5	Roads downstream of Kempsey close, including Pacific Highway
5.5-5.8	Water in yards of low-lying properties below Kempsey
6.0-6.5	Inundation of residential land in Smithtown, Gladstone and Frederickton begins
6.15	Eden Street overtopped (beginning of flooding in Kempsey basin leading to CBD flooding)
6.9	Peak height, 10 March 2001
7.5	Smithtown and Gladstone completely flooded
7.9	Peak height, 27 August 1949

Note: the heights given are approximate. Particular effects do not occur at precisely the same gauge heights in all floods.

ANNEX B TO
THE KEMPSEY SHIRE
LOCAL FLOOD PLAN

EFFECTS OF FLOODING ON THE COMMUNITY

INTRODUCTION

Large areas of the Kempsey Shire are liable to flooding. The problems are many and the effects in the more severe events can be devastating. Roads and bridges can be closed, areas can be isolated and farming operations disrupted even in relatively frequent and low-level events. In the more severe floods there is a potential for massive stock losses on farms, great damage to infrastructure and private property and large-scale evacuations from the town of Kempsey and from Frederickton, Smithtown, Gladstone, Kinchela, Jerseyville and the rural areas of the lower floodplain.

In this annex, map grid references are provided to indicate locations at which flood waters close roads and bridges. The maps named are of a 1:25,000 scale.

RURAL AREAS

Flooding still affects large areas, especially in the lower Macleay valley. In minor floods up to 27,000 hectares can be inundated and this will rise to about 40,000 in floods equal in size to that of 1949. Substantial numbers of cattle - perhaps up to 60,000 head - must be moved to safety to avoid the stock losses which have occurred in the past, crops can be flooded and resupply to isolated farm dwellings is necessary. In bigger floods, substantial evacuations from these dwellings will be required.

KEMPSEY (1996 census population 8630)

Kempsey has been flooded on several occasions, with loss of life and severe property damage in the Central Business District and to nearby residences. The 1949 flood, the highest seen in the town, caused 5 deaths, destroyed 35 dwellings and forced 2000 people to evacuate. The much lower 1967 flood, the last one to inundate significant areas within the town, flooded 37 dwellings and the CBD and necessitated the evacuation of more than 100 people.

This is the worst affected area, and up to 450 people would have to be evacuated from it in a short time if the Eden St levee was likely to be overtopped. Evacuations may also be required in West, South and East Kempsey though the scale of the problem is lower in these areas.

Areas which need to be monitored for possible early evacuation are shown below (grid references relate to Kempsey map, 9435-1-N):

Central Kempsey

- Area behind Elrington's Car Park (GR 848611)
- Forth St, from Hopetoun St to Clyde St (GR 841616 -GR 849615)
- Lower end of Regent, Yaelwood and Hopetoun sts (GR 845618 – GR 841619)
- Verge St, Eden St and Austral St (GR 846611 – GR848612)

All roads within Central Kempsey would be cut in a levee-overtopping flood.

West Kempsey

- Low areas in Sea St (GR 830632) and Tozer St (GR 827631)
- Hennessy Park area, River St (GR 831618)
- Lower end of Tabrett and Polwood sts (GR 839631 – GR837632)

Other streets affected: Dangar, Short, Wide, Marsh, Cochrane, Cameron and Becke sts; Cooks, Perrins and Hudsons lanes and Colin Tate Ave.

East Kempsey

- Rudder St, between Bissett and Sullivan sts (GR 854614 – GR856617)
- Lower end of Stanley St (GR 856613)

Other streets affected: Little Rudder, Ferry, William and Ernest Larkin sts.

South Kempsey

- Bloomfield St (GR 830605)
- Green Wattle Creek, Gill Creek and Rudder's Lagoon areas (GR 855604)
- Area near the Greyhound track (GR 849594)

Other streets affected: Hill, Jersey, Druitt, Carri, Nicholson, Yarravel, Middleton, Macquarie and Goombi sts.

SMITHTOWN (1996 census population 580)

Natural and artificial levees provide some protection to Smithtown but only to about the level reached by the 20% AEP flood. Although a large percentage of houses is elevated the whole town is flood prone. All road access (except to Gladstone) is cut at just above the 40% AEP flood level and access for evacuations can be a major problem. An internal evacuation was conducted during the 1963 flood, but some evacuations could be required at a significantly lower level of flooding than was reached on that occasion. This is the worst problem area on the lower floodplain.

GLADSTONE (1996 census population 380)

Gladstone is located mainly on the natural river levee. Some parts are affected by backwater inundation in minor floods and virtually all of the town is inundated by major flooding. The town can be isolated by a flood with an AEP as low as 20% and was last isolated in May 1980 in a flood of only moderate proportions.

Both Smithtown and Gladstone are completely inundated in a 1% AEP flood, with 127 Smithtown dwellings and 101 in Gladstone being flooded above their floor levels. A total of 412 properties would experience over-ground inundation in such a flood.

FREDERICKTON (1996 census population 881)

Although most of the town is on relatively high ground, some low-lying houses in the southern portion (in Lawson and Macleay sts) are affected by floods as low as the 40% AEP event. Such floods can also cut the Pacific Highway near the northern end of the town for days, as occurred in 1980, but a bypass route to Kempsey is available via Spooners Ave.

Some 26 properties would be flooded above their floor levels in a 1% AEP event and an additional 7 properties would experience over-ground inundation.

KINCHELA (1996 census population 316, including Belmore River)

The village is located on a natural levee and most houses are raised, but over-levee flooding would inundate most properties. Evacuations are rendered difficult because road access is lost in floods of 40% AEP. Resupply is necessary during flood periods.

In a 1% AEP flood, 11 houses would experience over-floor flooding and an additional 12 properties would have over-ground inundation.

JERSEYVILLE (population less than 100)

The village is surrounded and isolated by major floods and access for evacuations can be a major problem. During 1949 flood waters in the village were up to a metre deep and stayed near that level for a day or so. The 1963 flood was more severe, however, because of oceanic influences.

Nearly all the dwellings are elevated, but 13 would have over-floor flooding in a 1% AEP event. A further 11 would experience over-ground inundation.

HAT HEAD (1996 census population 334)

Hat Head can be isolated for considerable periods by flooding over the road to Kinchela. There is normally no serious problem of inundation within the town, however, because Rowe's Cut (a natural outlet through the sand dunes)

opens up. Even if this did not occur, the inundation would probably be limited to low-lying areas of Creek St and Straight St.

A very severe flood on the Macleay River could cause overtopping of the levee along Korogoro Creek and the whole town would be inundated. Severe oceanic conditions could erode the sand dunes and allow seawater entry.

SOUTH WEST ROCKS (1996 census population 3514)

The lower parts of the town could be liable to flooding from the Macleay River flowing into Back Creek, and very high tides or storm surge activity could worsen the problem. The Macleay Valley Holiday Centre Caravan park would be flooded under such circumstances. Local flooding of low areas east and west of Gregory St and adjacent to Saltwater Creek can also occur.

South West Rocks and nearby Arakoon can both be cut off from Kempsey.

STUARTS POINT (1996 census population 751)

The village is essentially flood-free but it can be completely isolated by flood waters. A combination of flood waters and high seas could cause Stuarts Point Holiday Park to be inundated.

GRASSY HEAD

The Grassy Head Holiday Park and the Seventh Day Adventist Convention Centre could be flood prone in severe events.

CRESCENT HEAD (1996 census population 1175)

Apart from a few low-lying properties along Killick Creek which could be affected by storm surge conditions, no problems of inundation of property are likely. Access to Kempsey can be cut, however, at the Connection Creek causeway. This is likely only in relatively severe floods and could last for several days as happened in 1963.

BELLBROOK (population less than 200)

The village itself is flood free but a small number of farm houses in lower areas outside the village could be affected by severe floods. The main problems relate to disruption to communications and road closures.

WILLAWARRIN 1996 census population 328)

The main problem is disruption to communications and road closures, although the hotel and a few houses could be flooded during severe events.

EXTREME FLOODING

In an **extreme** flood (that is, a flood much worse than a 1% AEP event or a 1949 type flood), it is possible that more than 500 houses might be inundated above floor levels in Frederickton, Smithtown, Gladstone, Kinchela and Jerseyville. This is roughly double the number that would experience such flooding in a 1% event.

There would also be flooding of properties, not inundated by the 1% event, in West, South and East Kempsey. The total number of flooded dwellings in these areas in an extreme flood could exceed 1000. Additional rural dwellings would also experience over-floor flooding.

TRANSPORT DISRUPTION

Five low-level bridges across the Macleay River upstream of Kempsey which may be closed by flooding are located at:

Sherwood (Sherwood 9435-4-N: GR 743636)
Turners Flat (Sherwood 9435-4-N: GR 724691)
Toorooka (Willawarrin 9436-3-N: GR 600791)
Temagog (Willawarrin 9436-3-N: GR 669729)
Bellbrook (Willawarrin 9436-3-N: GR 526901)

Additional bridges which may be closed by flooding are:

Moparrabah Bridge (Parrabel Creek) (Willawarrin 9436-3-S: GR 543728)
Dungay Creek/Wittitrin Bridge (Dungay Creek) (Sherwood 9435-4-N: GR 679589)

The Kempsey-Armidale road closes in very severe floods at various locations in the Bellbrook and Willawarrin areas. In lesser floods, landslips are common west of Willawarrin and these too may close the road.

Many roads in the Kempsey area and downstream are cut by flood waters. Critical points to be watched are as follows:

Pacific Highway (SH 1) (Kempsey, 9435-1-N)

- Glenrock Drain (GR 856639)
- Second Lane (GR 858639)
- Christmas Creek (GR 859657)
- Easter Creek (GR 862660)
- Dangar Lane (GR 907685)
- Sutherland Lane, Bellimbopinni (GR 914700)
- Seven Oaks/Smithtown turnoff (GR 930702)
- Clybucca Flat (GR 951751 to GR 942796)
- Gills Creek (GR 842593 and GR839585)

A detour may remain open between East Kempsey and Clybucca (through Gladstone) for a short time after the Pacific Highway is cut by flooding north of Kempsey. After this detour is closed by flooding (on South West Rocks Rd), traffic between South Kempsey and Frederickton may still be re-routed through Green Hill and Collombatti via Spooners Ave.

Crescent Head Rd: (Kempsey, 9435-1-N)

- Rudders Lagoon (GR 845589)
- Stanley Folkard Place (GR 866584)
- Corduroy at Crescent Head (GR 969495 to GR 944509)

Loftus Rd: the back road from Belmore River to Crescent Head, at causeway (GR 984581 – GR 994579)

Seale Rd: (Belmore River to Crescent Creek Rd), at causeway (GR 955579 – GR 923551)

South West Rocks Rd (MR 198):

- Red Hill (Kempsey 9435-1-N: GR 876640)
- Austral Eden (Kempsey 9435-1-N: GR 916697)
- Gladstone Drain (Kempsey 9435-1-N: GR 970696)
- Kinchela (Clybucca 9436-2-S: GR 988715)
- Mannix Corner (South West Rocks 9536-3-S: GR038777)

By-roads off South West Rocks Rd:

- Back Creek (Clybucca 9436-2-S: GR 989717)
- Hat Head Rd (Clybucca 9436-2-S: GR 994712)
- Kinchela Creek Rd (Clybucca 9436-2-S: GR 988712)
- Belmore River (Kempsey 9435-1-N: GR 948667)
- Old Station Rd (Kempsey 9435-1-N: GR 933660)
- Inner and Outer rds, Austral Eden (Kempsey 9435-1-N: GR 916679)
- Pola Creek Rd (Kempsey 9435-1-N: GR 861615)
- Frederickton Lane (Kempsey 9435-1-N: GR895655)

Two Hills Lane: North of Smithtown Rd at Seven Oaks (Kempsey 9435-1-N: GR 702930)

Summer Island Rd at McCabes Drain, downstream of Smithtown (Clybucca 9436-2-S: GR 979746).

The North Coast railway line is subject to closure both north and south of Kempsey. In 1963 and 1974 it closed at Tamban and Kundabung and at low points between them.
Kempsey Airport may be unusable in very severe floods because of inundation of the airstrip. Even in lesser floods, the access road from the Kempsey-Armidale road can be cut at Ronella Drive (Kempsey 9435-1-N:GR 794639).