AUSTRALIA 1:250 000

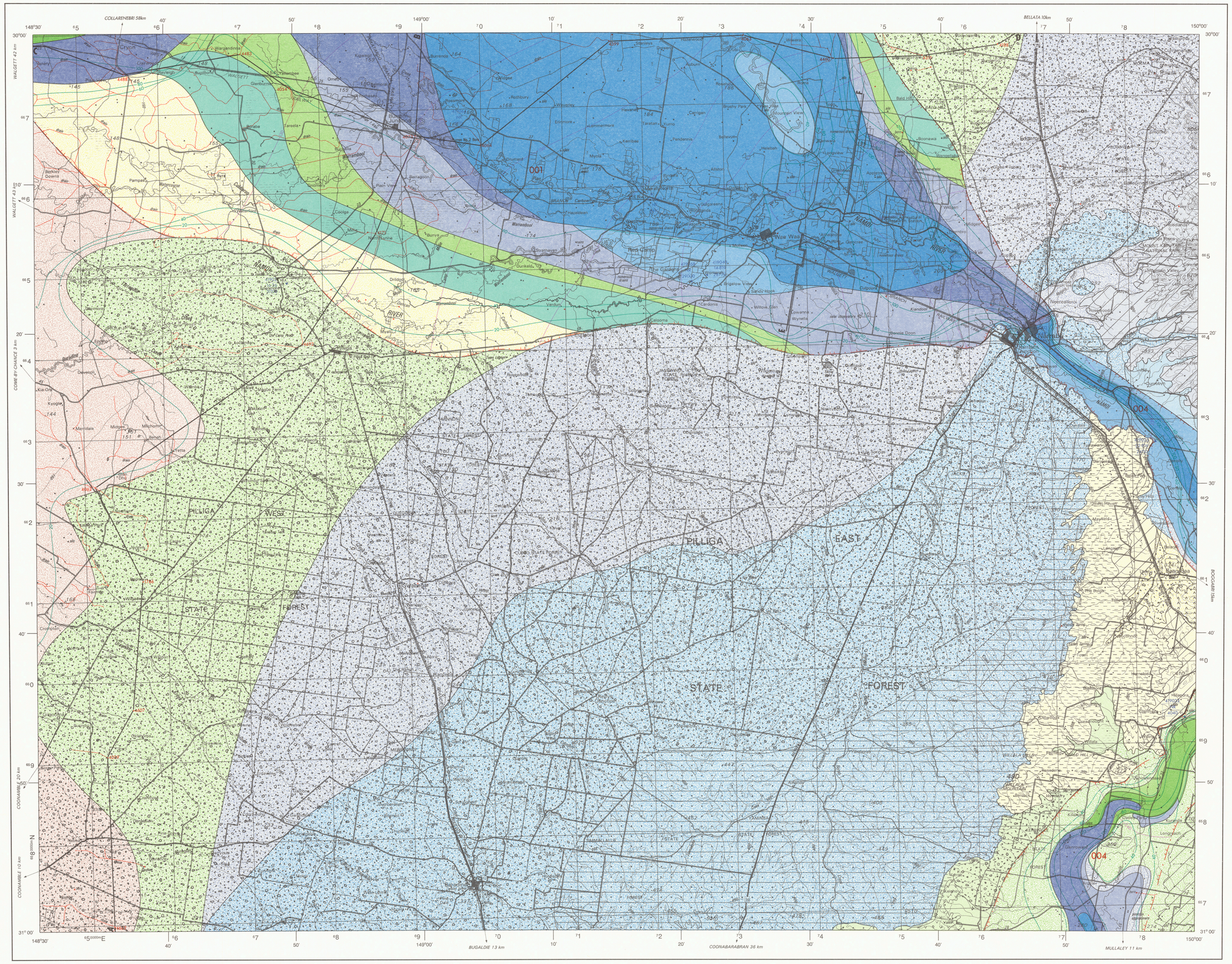
NARRABRI

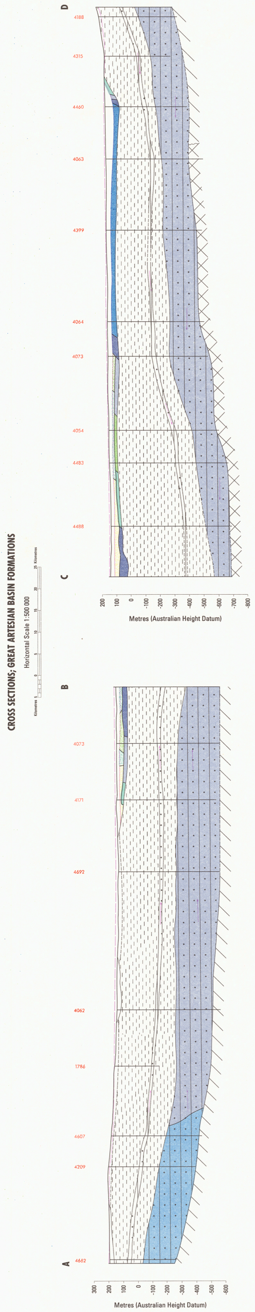
HYDROGEOLOGICAL SERIES SHEET SH 55-12

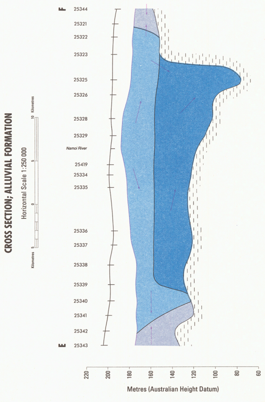
Department of Water Resources
NEW SOUTH WALES

NARRABRI

HYDROGEOLOGICAL MAP

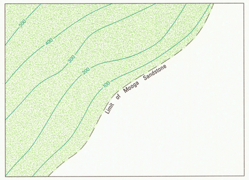




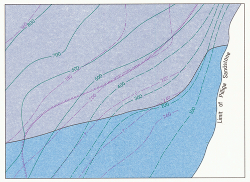


INSETS

MOOGA SANDSTONE



PILLIGA SANDSTONE



500	Contours indicating the depth to the base of the sandstone formations (100 metre intervals).
180	Contours indicating the piezometric surface of groundwater contained in the Pilliga Sandstone. (m AHD 1984).
	Limit of area of artesian flow.

NARRABRI
SHEET SH 55-12

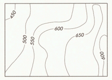
Copies of this map may be obtained from the Department of Water Resources, New South Wales, 10 Valentine Ave; Parramatta.

For more detailed geology of this area refer to the Narrabri Geological Map, Sheet SH 55-12 published by the Department of Mineral Resources, New South Wales.

1:250 000 SHEET INDEX

ANGLEDOOL	MOREE	INVERELL
WALGETT	NARRABRI	MANILLA
NYNGAN	GILGANDRA	TAMWORTH

MEAN ANNUAL RAINFALL



CONTOUR INTERVAL 50mm

SCALE 1:250 000

0 5 10 15 20 25 30 35 Kilometres

CONTOUR INTERVAL 50 METRES

TRANSVERSE MERCATOR PROJECTION

GREY NUMBERED LINES OUTSIDE THE NEATLINE INDICATE THE 10 000 METRE AUSTRALIAN MAP GRID, ZONE 55, AUSTRALIAN NATIONAL SPHEROID

Compiled by: Hydrogeology Unit, Department of Water Resources, New South Wales.

Hydrogeology by: S. Hamilton, J.B. Ross, R.M. Williams.

Cartography by: Central Mapping Authority of New South Wales.

Topographic base compiled and drawn by the Royal Australian Survey Corps, 1987.
Base map supplied prior to final production and may contain some errors.

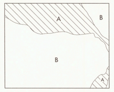
Printed by the Central Mapping Authority of New South Wales.

Published by the Department of Water Resources, 1988.

Reference

Roads: Sealed two or more lanes; Sealed one lane.
Roads: Unsealed two or more lanes; Unsealed one lane.
Vehicle track; Foot track or trail.
Railway: Multiple track with station; Single track.
Built-up area; Homestead.
Town/Settlement: Large, Small; Yard.
Lake: Perennial; Intermittent.
River or Creek.
Subject to inundation; Marsh or Swamp.
Contour; Cliff.
Horizontal control point; Spot elevation. (·235)

HYDROGEOLOGICAL RELIABILITY DIAGRAM



A Regional scale refraction seismic traverses and test drilling, regular monitoring of water levels.

B Interpretation of the data from licensed bores held on the Groundwater Data Base, Dept. of Water Resources and Dept. of Mineral Resources.

This map is based on such data as are available, and approximations have been made to accommodate data scarcity, variability of geological formations and the scale used. It should be used as a guide only, and advice should be sought for specific areas.

LEGEND

AQUIFERS

Aquifers are rock formations from which water can be obtained in useful quantities. They occur in a variety of geological units which can be grouped into three major types: unconsolidated sediments, sedimentary rocks and fractured rocks. Although all types may be represented in one area, only the major occurrences are shown on this map.

Unconsolidated Sediments

1. Alluvium

These sediments are generally Mid Miocene (15 million years BP) to Recent age and have been deposited by the ancient and present day Namoi River and major tributary creeks. Clean sand and gravel layers separated by clay, silt and sandy clay lenses, are the main source of water.

2. Colluvium

These formations are generally Recent age although there are some remnants of older deposits. They are generally weathering products that overlie a variety of rock types although some are deposited materials of minor tributaries. Predominantly thin clay, silt and sand deposits with few aquifers.

Sedimentary Rocks

Jurassic and Cretaceous rocks (63 to 181 million years BP) occur over much of the sheet area except in the far eastern areas, but are extensively obscured by unconsolidated sediments.

1. Sandstone

Clean sandstone beds separated by shale and siltstone sequences are the main source of water. The Mooga Sandstone (Cretaceous) and the Pilliga Sandstone (Jurassic) are important aquifers in the Great Artesian Basin. Sandstone outcrops in the south-east are intake areas for the Basin.

2. Shale, Siltstone, Minor Sandstone and Coal

These sediments are confining layers for the sandstone strata and are rarely aquifers. The Bungil Formation (Cretaceous), Orallo Formation (Jurassic) and Purlewaugh Formation (Jurassic) are the main geological units in this part of the Great Artesian Basin.

3. Undifferentiated Lower Mesozoic and Palaeozoic Rocks

A variety of sedimentary rocks of Triassic (230 million years BP) and Permian age (280 million years BP) crop out in the far eastern part of the sheet and occur below the sedimentary rocks of the Great Artesian Basin in the Gunnedah Basin. Sandstone units are local sources of water.

Fractured Rocks

Groundwater is stored in fractures in these rocks and there are considerable variations in yield. The salinity of the groundwater varies over a wide range, being generally dependent on the rock type and the residence time of the groundwater.

1. Basalt

Extensive basalt flows of Early Miocene age (18 million years BP) crop out in the north east part of the sheet. These highly fractured rocks yield useful quantities of water. Basalt and dolerite of Jurassic age (165 million years BP) occur in the south east. These are generally poor aquifers.

2. Andesite, Rhyolite

Small occurrences of these rocks occur in the eastern part of the sheet. They are of Permian age (280 million years BP) and are rarely aquifers.

3. Other

Older rocks of Lower Palaeozoic age (280 to 500 million years BP) form the basement to the Great Artesian Basin and Gunnedah Basin sediments. They comprise slate, phyllite, schist, granite and volcanics and do not occur in outcrop.

GROUNDWATER MANAGEMENT AREAS

Several groundwater management areas have been defined for the groundwater reserves, particularly those located within the unconsolidated sediments. The allocation and control of these resources is closely monitored. In the lower Namoi Valley area (Management Area 001), there is an embargo on new groundwater entitlements from the alluvial sediments.

GROUNDWATER SALINITY/YIELD

Milligrams per litre (mg/L)	1500	3000	7000
Conductivity (E.C. units)	2650	5000	11000

The main map shows the salinity and yield of the surficial aquifer systems. In the area underlain by alluvium there are multiple aquifers but only the most productive aquifers are shown on this map.

The insets show the limit, salinity and yield of the two major underlying sandstone aquifers — the Mooga Sandstone and the Pilliga Sandstone.

BORE YIELD L/s

SALINITY (mg/L TDS)	<0·5	0·5–5	5–50	>50	
<500					All purposes, domestic and irrigation.
500–1000					Most purposes.
1000–1500					Most purposes, upper limit for drinking.
1500–3000					All livestock.
3000–7000					Most livestock.
7000–14000					Some livestock.
14000–35000					Limited industrial use, ore processing.

REFERENCE

80	Contours indicating the depth to basement of the alluvial sediments (20 metre intervals).
120	Water table contours for groundwater contained in alluvial sediments, with elevation in metres (10 metre intervals).
412057 / 23·5 / 16100	Stream Gauging Station (NR — No Record, EFFL — Effluent): Department of Water Resources Number; Mean Annual Flow (m^3/second); Catchment Area (km^2)
	Direction of Groundwater Flow.
4662	Bore and Registered number, Bore drain.
001	Boundary of groundwater management area with number.