

23. WATER QUALITY IN AUSTRALIA – KEY FINDINGS

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WATER IN A DRY LAND

Australia is a dry island continent – rainfall and consequently river flow and groundwater recharge are extremely variable. Access to an adequate supply of good quality water is essential to the economic and social well being of all Australians.

The National Land and Water Resources Audit has produced Australian Water Resources Assessment 2000, an audit of Australia's water resources that considers all water users, including the environment. It includes assessments of surface and groundwater availability (Fast Facts 22), and surface water quality and groundwater salinity (Fast Facts 23). The Audit's assessment is based on the best available information provided by State and Territory water management agencies.

DEFINING AUSTRALIA'S WATER QUALITY

To better understand water quality, Australia's water resources are divided into management areas.

Surface water is divided into

- 12 drainage divisions
- 246 river basins
- 325 surface water management areas

Groundwater resources are divided into

- 69 groundwater provinces
- 538 groundwater management units

DESCRIBING WATER QUALITY

The major water quality issues in Australia can be described by three key variables:

Salinity – the salt concentration in water as measured by electrical conductivity

Nutrients – primarily the concentration of phosphorus and nitrogen in water

Turbidity – the clarity or “dirtiness” of water (roughly proportional to the concentration of suspended solids)

Information is also provided on other water quality measures, such as pH (acidity / alkalinity) and faecal coliforms (bacteria from human and animal waste), in the full Australian Water Resources Assessment 2000 report.

Other issues, including toxic chemicals, algal blooms and heavy metals were not included in the assessment.

SURFACE WATER QUALITY – KEY FINDINGS

Water quality data are limited. There are sufficient salinity, turbidity and nutrient data to assess water quality status for about 30% of Australia's 246 river basins. Using State or Territory water quality guidelines for nutrients, salinity or turbidity:

- Major nutrient exceedances were found in 43 river basins, 61% of the 70 which could be assessed
- Major turbidity exceedances were found in 41 river basin, or 61% of the 67 which could be assessed
- Major salinity exceedances were found in 24 river basins or 32 % of the 79 which could be assessed

	Number of basins with major exceedance ¹	Number of basins with significant exceedance ²	Number of basins assessed
Total Nitrogen	19	19	50
Total Phosphorus	40	20	75
Salinity	24	18	74
Turbidity	41	10	67

¹ major exceedance occurs where more than 33 % of the river basin area did not meet “good” water quality guidelines for that variable

² significant exceedance occurs where between 5 and 33 % of the river basin area did not meet “good” water quality guidelines for that variable

MORE ABOUT SURFACE WATER QUALITY

NUTRIENTS

Australia has a wide range of soil, vegetation and climate types that affect the natural nutrient levels in water. State and Territory water quality guidelines take account of this natural variation, the pattern of land use within a catchment and the water values requiring protection.

This assessment shows that nutrients are a major water quality issue, particularly in the more intensively developed river basins in the North-East Coast, Murray Darling, South-East Coast, and South-West Coast Drainage Divisions.

Rivers basins assessed to have nutrient levels within the guidelines generally have more extensive vegetation cover and are less intensively developed. These include river basins of north Queensland, north-eastern Victoria and south-western Western Australia.

SALINITY

Australia's ancient weathered landscapes and some surface waters are naturally salty. River salinity is compounded by the outbreak of dryland salinity which has mobilised salt stores in the soil (see Fast Facts 21).

This Water Resources Assessment reveals salinity is a significant water quality issue in much of temperate southern Australia and affects river basins in most of the South-West Coast, the southern South-East Coast and southern Murray-Darling Drainage Divisions.

The availability of data and the intensity of monitoring limit the comprehensiveness of this assessment.

TURBIDITY

Australia's variable rainfall and stream flow and highly erodible soils combine to create naturally high turbidity levels in waterways. To varying degrees, State and Territory water quality guidelines for turbidity take account of this natural variation, as well as land use patterns of the river basins and the values for which the river basins are managed.

Exceedance of surface water turbidity guidelines is widespread across Australia. The affected areas include most inland and lower rainfall river basins in the North-East Coast and Murray-Darling Drainage Divisions, and the more intensively developed river basins in the southern South-East Coast Drainage Division. Exceedance analysis indicated turbidity was not an issue in relatively well forested, less developed and high rainfall coastal basins.

The co-occurrence of both turbidity and nutrient exceedances within river basins point toward the role suspended sediments play in transporting nutrients and the importance of managing soil erosion.

GROUNDWATER SALINITY – KEY FINDINGS

Water quality data for groundwater are very limited. A review of the salinity of groundwater revealed that approximately 72 % of Australia's readily accessible groundwater is suitable for drinking.