The Hawkesbury Nepean Catchment
1.1 The Hawkesbury Nepean Catchment

The Hawkesbury Nepean catchment covers 21,400 square kilometres. It includes the coastal beaches from Turimetta Headland to Barrenjoey and extends three nautical miles out to sea as shown on Figure 2. The Hawkesbury Nepean is a catchment of national significance, much of which relies on the health of its rivers. The number of people that depend on the Hawkesbury Nepean catchment for drinking water grows every year.

The catchment also contains the largest quarry in Australia and supports extensive coal mining, horse breeding and turf industries and a major tourism industry.

The Hawkesbury Nepean is also a catchment of biological diversity and world heritage significance. The region includes a variety of natural landscapes, from rainforests to open woodlands, grasslands to wetlands, and a river system that flows from highland freshwater streams to the Hawkesbury River estuary at Broken Bay. Although many of these landscapes have been altered due to development and agriculture, almost half of the catchment is protected in over 1 million hectares of national parks and reserves. This reserved land includes:

- much of the Greater Blue Mountains World Heritage Area which contains almost 10% of the Australian vascular plant flora
- 591 flora species of conservation significance
- Australia’s premier cave system, the Jenolan Caves, with the highest diversity of cave fauna in New South Wales.

1.2 Rivers of the Hawkesbury Nepean

The Hawkesbury Nepean catchment has many major rivers, including the Hawkesbury Nepean, Wollondilly, Mulwaree, Tarlo, Wingecarribee, Nattai, Cox, Kowmung, Grose, Capertee, Colo and Macdonald.

The rivers of the Hawkesbury Nepean Catchment:

- Supply almost all the reticulated water for the 4.13 million people living in Sydney from the Warragamba, the Upper Nepean and the Mangrove Creek dams, the main water supply reservoirs for the Sydney Metropolitan Area, including Gosford and Wyong on the Central Coast
- Supply 23% of the State’s power by the provision of water for the Wallerawang and Lower Portland power station schemes
- Support the State’s second largest oyster and prawn producing areas (although the oyster industry has been devastated by an outbreak of QX disease in recent years)
- Contain pristine or near pristine rivers in declared wilderness of the Wollemi Wilderness area, the state’s largest wilderness area, and the Nattai, Kanangara Boyd and Yerranderie wilderness areas
- Support a major tourism industry with the main Hawkesbury Nepean River alone attracting more than 10 million visits a year
- Support major irrigation industries with agricultural production in the region valued at more than $1 billion dollars and that supplies much of Sydney’s fresh vegetables, flowers, and fruit.
1.2.1 Condition of the Hawkesbury Nepean rivers

Although there have been some gains in recent years, the health of the Hawkesbury Nepean river system continues to be under significant pressure from a range of catchment impacts.

Loss of natural flows in the rivers combined with significant land use change in the catchments is contributing to the declining health and biodiversity of the rivers. Changed water and land uses have resulted in the rivers having increased levels of nutrients and toxins, and altered habitats that support fewer species of native aquatic biota. River behaviour has been significantly changed by dams and weirs built during the twentieth century for water supply purposes. (Hawkesbury Nepean River Management Forum, 2001:12)

Climatic conditions, such as drought, have exacerbated the problems of flows and river health.

The pressures on the river are experienced differently in the area of the catchment above the major drinking water storages (Avon, Cataract, Cordeaux and Upper Nepean dams and Lake Burragorang), referred to as the ‘upper’ catchment, and those sections of the catchment that are downstream of these dams, referred to as the ‘lower’ catchment. In both upper and lower catchments the significant areas in protected reserves and water supply catchments contribute a great deal to river health, but impacts from the remainder of the catchment are sufficient to threaten the health of the river as a whole. Land use in the headwaters of the protected areas provides challenges to maintaining rivers in those areas in good health.

In the upper catchment, the Sydney Catchment Authority’s 2003 audit indicates a range of issues contributing to significant areas of the 16,000 square kilometres drinking water catchment being in poor condition. Indicators of reduced ecosystem health include: water quality that has the potential to affect ecosystem health, ‘low’ AusRivAs ratings in 41% of sampled locations, and poor native fish species diversity and high proportion of exotic fish above water supply dams. In the upper catchment, factors that have led to poor condition include little or no native riparian vegetation especially in the Upper Wollondilly, Upper Cox’s and Mulwaree subcatchments, extensive erosion, extraction for town water supply and irrigation and weed invasion of riparian lands, especially willows (Department of Environment and Conservation, 2003).

In the lower catchment, the health of the Hawkesbury Nepean River is in decline in many areas. Signs of this include increasing frequency of toxic algal blooms, excessive growth of aquatic weeds, reduced numbers of native fish, contamination of oyster beds, eroded river banks and siltation. (Hawkesbury Nepean River Management Forum, 2001).
The Australian Government Report Card on the Hawkesbury Nepean lists significant natural resource management challenges, all of which impact directly or indirectly on the health of rivers in the catchment:

- sharing water with the environment and between people
- making the Hawkesbury Nepean River system a place that people can safely swim in and enjoy
- improving river health and aquatic biodiversity
- conserving, rehabilitating and sustaining native vegetation and terrestrial biodiversity
- protecting the soil
- the need for sustainable development
- recognition and protection of cultural heritage, and
- pest plants and weeds.

Salinity is also a significant issue in the region and is a hazard for agriculture and urban land uses. Acidic and sodic soils are emerging issues in the catchment and in many places will overtake salinity as the priority issue for the region.

Climate change is another major challenge which is introducing uncertainty in water resource management and will pose a significant issue for decision-makers with the responsibility to integrate the implications into strategies and management activities. For example, in the Hawkesbury Nepean, global warming may cause a temperature rise between 0.55 and 1.27 degrees by 2030, with associated changes in precipitation trends of +5 to -15% (Independent Expert Panel on Environmental Flows, 2002).