Chapter 1
Introduction

1.1 The Sydney Water Catchment Management Act 1998 (the Act)

Section 42 of the Sydney Water Catchment Management Act 1998 (the Act) requires an audit of the state of the land of the Sydney drinking water catchment area (the Catchment) be undertaken every two years, and that a report on this audit be submitted to the Minister responsible for the Sydney Catchment Authority (SCA). Section 42 of the Act also requires that the Minister nominate a person other than the SCA to conduct the audit and prepare the audit report.

The Minister nominated the Environment Protection Authority (EPA) to undertake the 2003 Audit. The EPA’s successor organisations, the Department of Environment and Conservation (DEC) and the Department of Environment and Climate Change (DECC), undertaken the 2005 Audit and now the 2007 Audit respectively.

1.2 Overview of the Audit

The purpose of the 2007 Audit is to provide information to all stakeholders about the state of the Catchment during the period from 1 July 2005 to 30 June 2007. Information is provided on the indicators used to assess the pressures on and the state of the Catchment, and about changes in the state of the Catchment over time, by identifying trends in selected indicators where possible. Information from the 2007 Audit, and past audits, can be used to guide land managers and the community to make decisions about the management of the Catchment.

This is the fifth audit conducted under section 42 of the Act, with previous audits undertaken in 2005, 2003, 2001 and 1999. The Terms of Reference originally provided by the Minister for the 2003 Audit were used in 2005 and now again in 2007, namely:

- audit and report on the catchment consistent with current methods used for the purpose of New South Wales State of the Environment reporting, focusing on the priority sub-catchments
- as part of the audit, consult with stakeholders within and outside the catchment to seek information and data that may assist with the audit and to seek comments relating to the state of the catchment.

1.3 The Sydney drinking water catchment (the Catchment)

The Sydney drinking water catchment (the Catchment) collects and stores up to 2.6 million megalitres of water to supply Sydney, the Blue Mountains, the Illawarra and parts of the Shoalhaven area with between an average of 1,000 and 1,500 megalitres of water every day.

The Catchment covers part of the hydrologic catchments of the Hawkesbury-Nepean, Shoalhaven and Woronora rivers and extends over 16,000 square kilometres. The Catchment extends from north of Lithgow on the Coxs River, from the head of the Shoalhaven River in the south near Cooma, and from the Woronora River in the east to the source of the Wollondilly River west of Goulburn (Map 1.1). The Catchment is split into 28 sub-catchments. For the purposes of the audit, the Catchment also includes the hydrologic catchment of the Prospect Reservoir in western Sydney.

Priority sub-catchments

The Terms of Reference require the audit to focus on the priority sub-catchments. The Sydney Catchment Authority (SCA) developed a methodology to identify the priority sub-catchments by assessing the water quality, risk to the SCA reservoir water quality, and stream health. The 2007 Audit considers that this was an appropriate approach, and has adopted this method as the focus for some aspects of the audit process.
The priority sub-catchments are:

- Kangaroo River
- Mulwaree River
- Werriberri Creek
- Wingecarribee River
- Lower Coxs River
- Mid Coxs River
- Upper Coxs River
- Wollondilly River
- Upper Wollondilly River

1.4 Multiple barrier approach to drinking water quality management

The management of drinking water quality in the Catchment uses a multiple barrier approach. The strength of the multiple barrier approach is that a failure of one barrier may be compensated by effective operation of the remaining barriers, minimising the likelihood of contaminants passing through the entire treatment system and being present in sufficient amounts to cause harm to consumers.

Traditional preventive measures are incorporated as or within a number of barriers, including:

- catchment management and source water protection
- detention in protected reservoirs or storages
- extraction management
- coagulation, flocculation, sedimentation and filtration
- disinfection
- protection and maintenance of the distribution system.

**Catchment management**

Catchment management provides the first barrier for the protection of water quality. By decreasing contamination of source water, the amount of treatment and quantity of chemicals needed is reduced. There are a number of agencies that are responsible for aspects of catchment management in the Catchment, these include the Sydney Catchment Authority (SCA), the Department of Water and Energy (DWE), the Department of Environment and Climate Change (DECC), Catchment Management Authorities (CMAs) and councils. The roles and responsibilities of these and other agencies are outlined in Appendix B. The SCA seeks to provide leadership in catchment protection through a set of tools including regulatory powers, policy development, inter-agency cooperation, research, community education and funding for catchment enhancement works. The SCA operates as an owner, regulator and partner in the management of catchment lands. The Catchment has Special Areas around the water storage areas where access and usage are restricted, and outer catchment areas where land uses such as urbanisation, mining, agriculture and industrial activities are permitted.

**Storage and extraction management**

The detention of water in reservoirs can reduce the number of faecal microorganisms through settling and inactivation and allow other suspended material to settle. Where a number of water sources are available, there may be flexibility in the selection of water for treatment and supply. Within a single water body, selective use of multiple extraction points can provide protection against localised contamination either horizontally or vertically through the water column. The SCA’s primary activities in storage management are the selection of water from different storages and from different levels in the storages to meet bulk water quantity and quality requirements, destratification of storages where necessary, and monitoring water quality for a range of parameters.

**Delivery system management**

Effective maintenance procedures to repair faults and burst mains that prevent contamination, appropriate security to prevent unauthorized access to, or interference with water storages should be in place. Pipes need to be monitored for corrosion and the growth of biofilms should be minimized. The SCA has developed system management plans and standard operating procedures for the safe operation and maintenance of assets such as its reservoir off-takes, canals and pipelines.
Map 1.1: Sydney drinking water catchment