

PHYSICAL SETTING

Climate

The southern ACT catchment experiences a dry, continental climate typical for inland areas located in the middle-latitudes. As a result the catchment experiences hot summers and cold winters. Cool easterly winds penetrate the catchment from the coast during many summer evenings which can sometimes bring cloud in with the moister air. By contrast winters are cool to cold with generally westerly winds and snow falling on the ranges to the west. However winter is also a time when Canberra can experience clear, sunny days with light winds and frosts.

The following information is supplied through the Commonwealth Government's Bureau of Meteorology and is subject to change:

Hottest month: January

Mean daily maximum temperature: 27.7°C

Mean daily minimum temperature: 13.0 °C.

Coldest Month: July

Mean daily maximum temperature: 11.2°C

Mean daily minimum temperature: -0.2 °C

Highest recorded maximum temperature: 42.2 °C on 1st February 1968.

Lowest recorded minimum temperature: -10.0 °C on 11th July 1971.

Overall autumn tends to be the most stable period for weather. Rainfall across the catchment varies considerably, with much higher rainfall occurring in the ranges to the west.

Average annual rainfall: 629 mm

Wettest month: October

Driest month: June

Geology

The southern ACT catchment consists mainly of rolling grasslands and is bounded to the west by the Australian Alps, with the peaks of Mt Bimberi, Mt Ginini, Mt Franklin and Mt Aggie forming the western border. To the south-west the catchment joins Kosciuszko National Park and the Bimberi and Scabby Range Nature Reserves with Brindabella National Park on the north-western border. Mt Clear borders the southern most area of the catchment.



Paddys River (May 2004)

The oldest exposed rocks in the catchment are found in Namadgi National Park, containing sedimentary sandstone, mudstone and shale. These were deposited between 470 and 440 million years ago during the Ordovician Period. They contain the remains of small marine animals called graptolites, which indicate that the sediments were deposited in fairly deep seawater. Between 350 and 400 million years ago there were major earth movements in the area that caused rocks to fold and rise into high mountains and since then the Namadgi area has been above the sea.

Most of the rocks in the catchment are from the end of the Silurian period, roughly 400 million years ago and are mostly pyroclastic deposits from volcanic eruptions. A mudstone/siltstone formation known as the *Yarralumla Formation* occurred during this period. The formation extends from Red Hill and Woden in the south to Yarralumla and Lake Burley Griffin in the north and is evidence of the last major marine sedimentary period when eastern Australia was still covered by shallow seas. It shows fossil evidence of trilobites, coral and primitive crinoids.



The area of Namadgi was intruded by a huge body of granite known as the *Murrumbidgee Batholith* during the late Silurian or early Devonian times. The many fantastic granite boulder formations that are to be found in the Park resulted from this intrusion.

The rest of the catchment was primarily limestone plains being fed by rivers and creeks that originated from the mountain ranges to the southwest. However today there is little limestone evident at the surface within the district. The Murrumbidgee escarpment cuts across the catchment from south-east to north-west with the rural and urban areas to the east and two belts of mountainous terrain separated by the Cotter River valley to the west.

Landform

The southern ACT catchment area is divided into three major landform types: uplands, rolling or undulating country, and plains. The uplands are areas 800 metres above sea level and occur mainly west of the Murrumbidgee River with the prominent escarpment of the Murrumbidgee Fault marking their eastern reaches. These consist of a series of parallel north-south ridges separated by the Gudgenby, Naas, Cotter and Paddys Rivers. The uplands lie mainly on erosion-resistant, ancient, sedimentary rocks and granites.

Rolling or undulating country forms the eastern parts of the catchment, along the Murrumbidgee River Corridor to the south at generally 600-900 metres above sea level and are formed across moderately weathered rocks. This country is crossed by minor streams that connect with the Murrumbidgee from the east such as Guises Creek.

The plains of the southern ACT catchment are found at elevations of 550-650 metres above sea level. Plains are relatively flat land formed on top of readily weathered rocks and on stream sediment surrounding isolated hills and ridge or erosion-resistant rock. Generally plains are areas used for urbanisation. Yarralumla, Weston and Tuggeranong Creeks are located within the plains, although they are now highly modified in the lower reaches.

Land Use

For the purposes of the strategy, land use categories in the southern ACT catchment area have been divided into the following three areas: conservation areas, rural lands and urban development. Conservation areas refer to landscapes that hold both natural and cultural values such as Canberra's National Parks and Reserves and Heritage sites. Rural lands are defined as any land or property that is used for agriculture, including rural leases. Plantation pine forests were a significant land use within the southern ACT catchment area until the aftermath of the 2003 bushfires. The ACT Government has agreed that there will be no more commercial or broad-acre pines in the catchment. The 1,285 ha of existing pine plantations will be managed on a non-commercial basis and liquidated when it is feasible to convert the area to a primarily, native vegetation cover. Water catchment will be the primary land use for the Cotter catchment.

Urban development includes the residential area, services centres, industry and supporting infrastructure.

MAJOR LANDUSE TYPES IN THE ACT, 1995 TO 2003 (taken from the 2003 ACT State of the Environment Report)

Landuse Type	1995*	1997	2000	2003
Conservation	123972	127092	127198	127917
<i>National Parks</i>		105845	105845	105845
<i>Nature Reserves</i>		21247	21353	22072
Forestry operations (Plantations and associated lands)**	24570	24570	24570	24570
Agriculture	nd	53055	52795	51587
<i>Grazing</i>		51468	49968	
<i>Cropping</i>		266	266	266
<i>Horticulture</i>		125	125	159
<i>Horse paddocks</i>		1196	1196	1194
Urban	29263	29444	29666	30154
<i>Built area</i>		18851	19456	19851
<i>Open space (zoned and other open space)</i>		6231	5848	5941
<i>Transport (roads, airport, railway)***</i>		nd	4362	4362
Waterbodies	1768	1768	1768	1772
Other	4661	4661	4661	4661

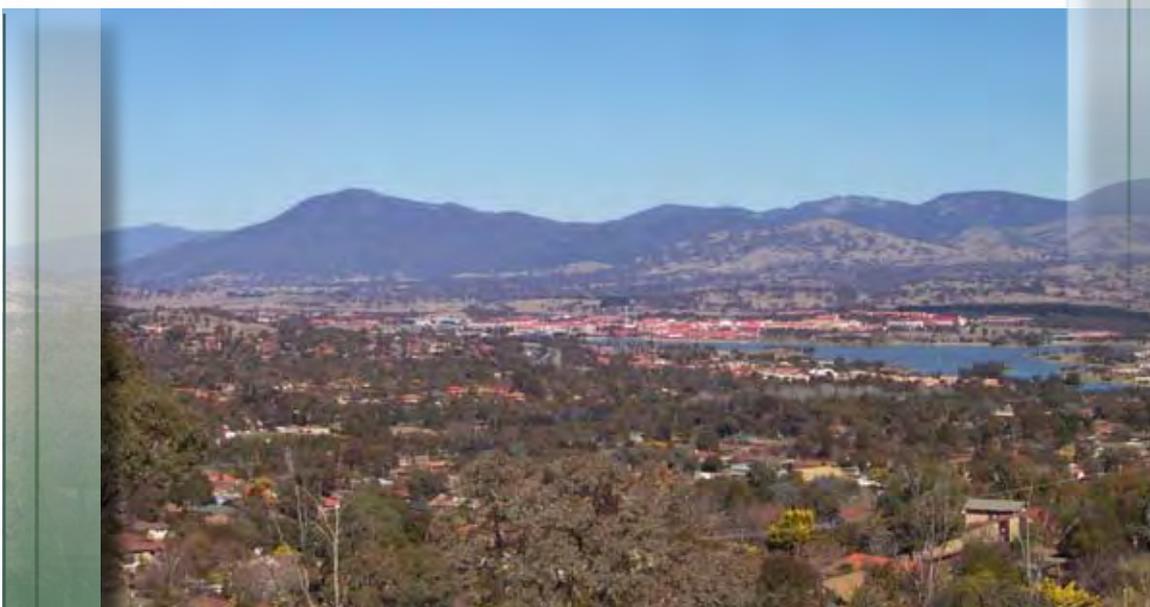
Note: totals do not add up to the total area for the ACT because of some overlaps, for example between waterbodies and other uses;

* 1995 figures are estimates only, and are used to show indicative trends;

** Forestry data supplied by ACT Forests (Forests area changed since 2003 bushfires);

*** nd = no data

Table 2



Tuggeranong (August 2003)