

SECTION 1: WATER RESOURCES

Water Resource Use

The *Water Resources Act 1998* (the Act) came into full effect in December 1999, providing the Territory with the tools to effectively and sustainably manage its water resources. The Act provides for the preparation of Environmental Flow Guidelines that establish the methods used to identify flows necessary to protect all ACT waterbodies. These guidelines are currently under review.

The Act also requires the preparation of a Water Resources Management Plan, which was recently updated as *Think water, act water*. The Water Resources Management Plan describes the water resources of the Territory, quantifies environmental flows on the basis of the Environmental Flow Guidelines, identifies water available for use, and identifies allocations that can be made over the next 10 years.

Water allocations are only issued in accordance with this plan and thus ensure that the total quantity of water that could be used from ACT water resources is sustainable. Licence conditions are used to ensure that water allocations are only taken from ACT water resources when and where the water is available. These measures ensure the Territory's water resources are managed appropriately.

Water catchments boundaries used for this purpose are set out in Figure 3.

The Act makes it clear that control of all water use in the Territory is vested in the Territory. This means that a licence to take water is needed to use groundwater, water from streams and rivers and water from dams, except the taking of surface water for stock and domestic purposes where the lessee has legal access to the waterway. ACTEW hold a licence to take water and so customers of ACTEW are not required to hold a licence to take water when using water supplied by ACTEW.

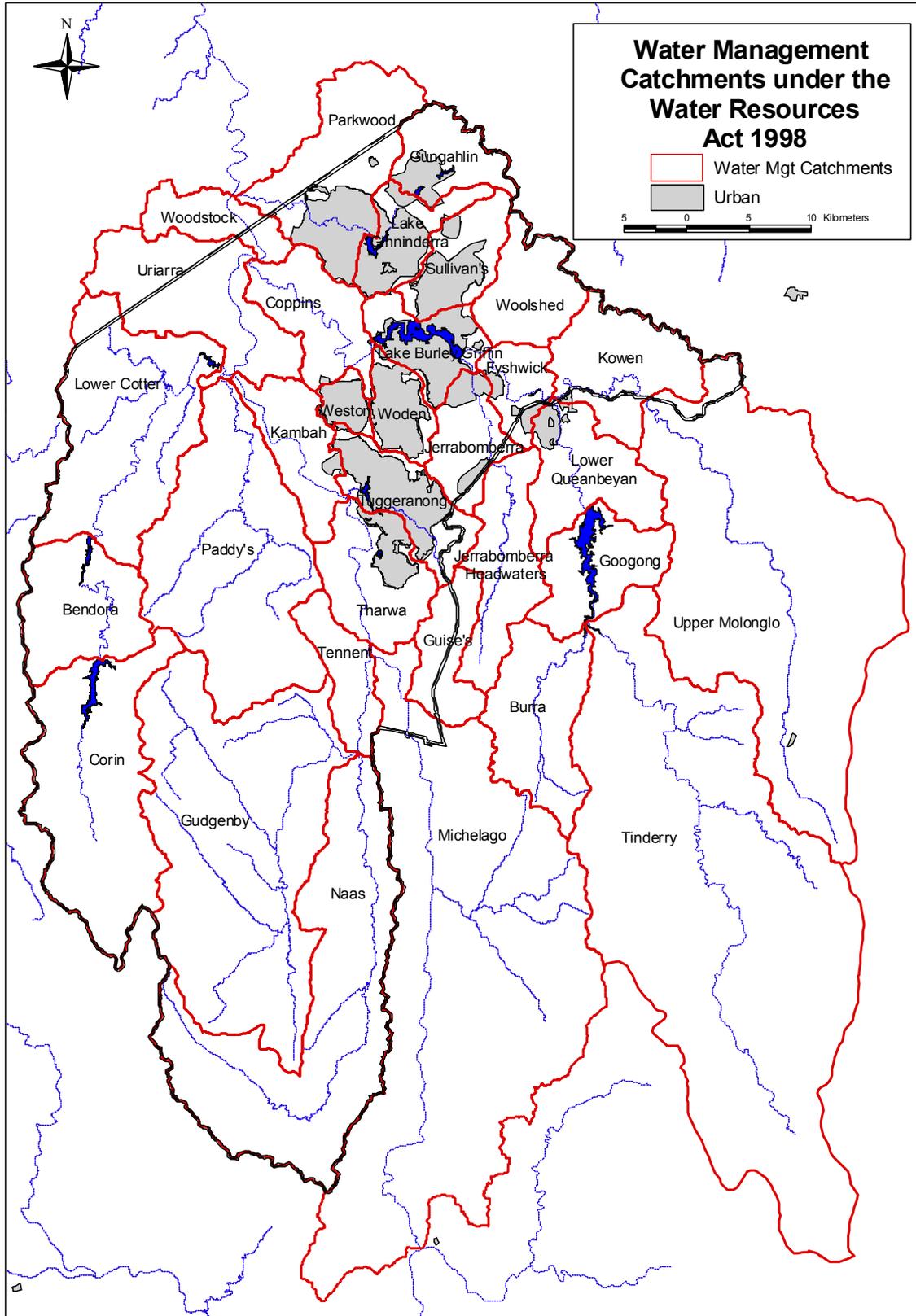


Figure 2: Boundaries of Water Management Catchments Under the *Water Resources Act 1998*.

The Environment Protection Authority (EPA) issues bore construction permits, licence to take water (Table 2) and water control structure permits (needed for construction of dams) subject to conditions and volume considerations. Volumes of licensed water use are considered with respect to the volumes of water sustainably available as specified in the Water Resource Management Plan (*Think water act water volume 3, 2004*). Details of permits issued by the EPA are available for inspection in the Water Resource Act Register, appointments for inspection can be made by contacting 6207 5728.

There has been a continued increase in the number of applications for groundwater licences during this reporting period. These increases are predominantly within urban subcatchments, and are likely to be caused by the implementation of water restrictions on potable water use. Consequently nine urban subcatchments have reached the sustainable limit for licenced groundwater abstraction. In consequence the Act was amended to establish a moratorium on granting access to new or augmented use of water (effective 1 of September 2005). The intention is that during the period of moratorium, the government will develop more equitable arrangements for allocating water.

It is recognised that there may still be unlicensed bores in use and existing licence holders may exceed their licenced volume. There is a monitoring and compliance program in place to address this issue.

Table 2: Licences to take water by subcatchment and type of use

Subcatchment Name	Number of Licences			Total Licenced Volume ML
	Groundwater (only)	Surface water (only)	Surface + Groundwater	
Bendora		1		21000 ^φ
Burra		1		1600 ^φ
Coppins	1			3
Corin		1		29700 ^φ
Fyshwick	9	11	1	1231
Googong		1		1200 ^φ
Gudgenby	1	1	1	31
Guises	2			4
Gungahlin	1		1	311
Jerrabomberra	5	1	1	251
Kambah	2		1	203
Kowen	2			6
Lake Burley Griffin	55			74
Lake Ginninderra	4	1	1	231
Naas	1			2
Paddys	2	2	1	119
Parkwood	4			21
Sullivans	5	1	2	370.5
Tennent	2			3
Tharwa	5	3		58
Tinderry		1		10280 ^φ
Tuggeranong	3	1		56.5
Upper Molonglo	1			2
Uriarra		2	1	18
Weston	5			24
Woden	3	1		189
Woolshed	3	3	2	222
Total	112	32	12	67210

^φ These subcatchments include volumes from ACTEW's licence for potable water supply.

Prior to the moratorium four new allocations were issued within this reporting period. Of these, two were for stock and domestic use, including use in rural locations with no access to mains water. Another allocation was for agricultural production and one for parks/sporting grounds replacing potable water use, thus demonstrating industry and agency support of the target to reduce potable water use identified in *Think water, act water*.

Table 3: Number and Volume of Allocations* by Subcatchment

Subcatchment Name	No of allocations	Total Volume (ML)
Bendora	1	21000
Burra	1	1600
Coppins	0	0
Corin	1	29700
Fyshwick	9	107
Googong	1	1200
Gudgenby	2	18
Gungahlin	2	311
Jerrabomberra	2	25
Kambah	1	192
Kowen	1	2
Lake Burley Griffin	1	2
Lake Ginninderra	4	209
Michelago	0	0
Naas	0	0
Paddys	2	66
Parkwood	1	12
Sullivans	5	349.5
Tennent	0	0
Tharwa	6	70
Tinderry	5	10280
Tuggeranong	1	50
Uriarra	2	18
Weston	2	11
Woden	2	39
Woolshed	6	141
Total	58	65402.5

* An allocation is not needed where groundwater is taken from a lease that is dated before 11 December 1998.

Climate and Water Resources

The availability of the ACT's water resources is influenced by rainfall. Groundwater recharge in the ACT's low yield fractured rock aquifers is closely linked to recent rainfall history, unlike other groundwater sources such as the great artesian basin which has stored rainfall from millions of years ago. Streamflow in the ACT is directly linked to local rainfall except for the Murrumbidgee and Molonglo Rivers, which have substantial areas of their catchment outside the ACT.

The Rainfall in the ACT is strongly affected by the landform. In the mountainous region to the west of the Murrumbidgee River, annual average rainfall ranges from 800-1000 mm. The flatter tablelands on which Canberra is built are in a rain shadow area and the annual rainfall reaches 600-700 mm. In this 12-month reporting period the annual average rainfall was 585 mm, which is down on the average long term for Canberra Airport of 622.8 mm, but was up from last year (518 mm) and much more than the 2002-2003 period when the total was approximately 350 mm.

Rainfall is measured at numerous sites in the ACT. Rainfall in an urban area (Charnwood Road in Belconnen) and in a water supply catchment area (Cotter Hut, above Corin Reservoir) is depicted in Figure 4. Both the long-term average monthly rainfall from data collected since 1990, and the monthly rainfall for the 2003-2004 reporting period are presented.

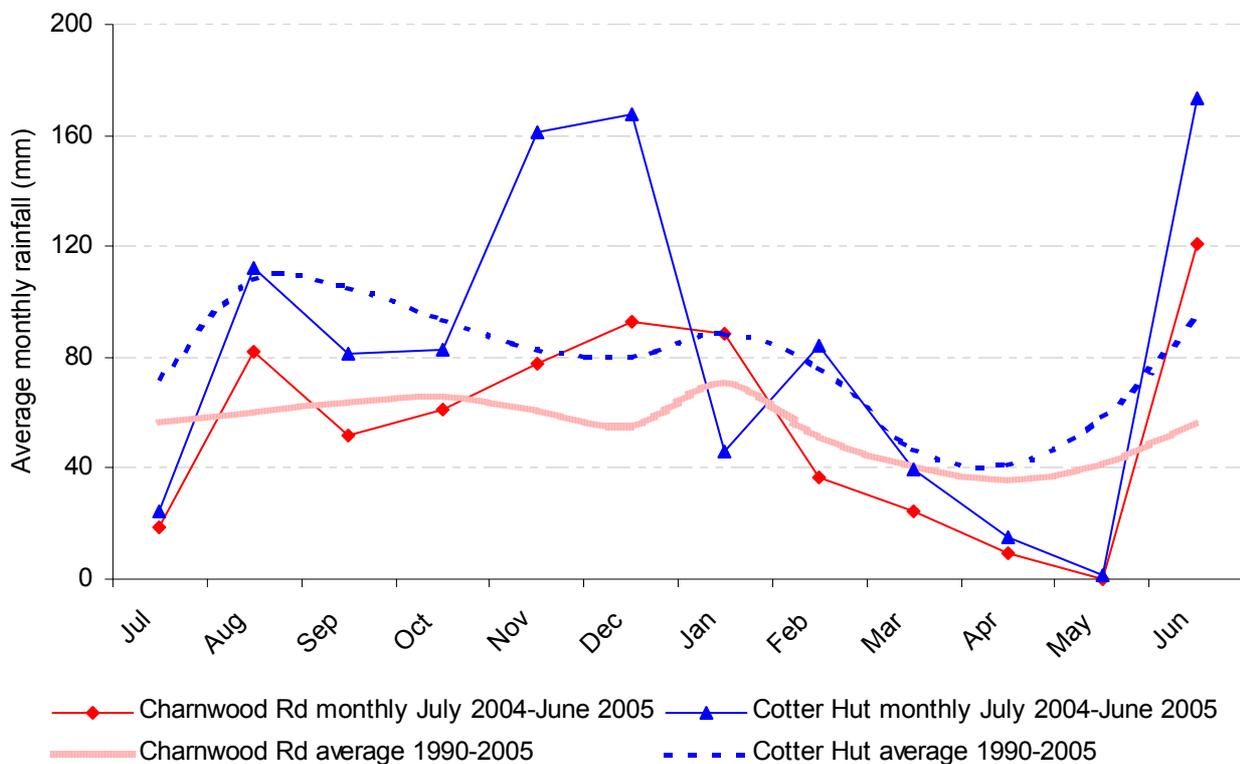


Figure 3: Comparison of 2004-2005 Average Monthly Rainfall in Belconnen near Charnwood Road and Cotter Hut in the Corin Reservoir Catchment with the Long Term Average Monthly Rainfall

The long-term average annual rainfall since 1990 in Belconnen at the Charnwood Road site is 664 mm and the annual rainfall for this reporting period, 1 July 2004 to 31 July 2005, was essentially equivalent to the long term average at 662 mm. The site at Cotter Hut has a long-term annual rainfall of 946 mm and for this reporting period the total rainfall was 988 mm. This slightly above average rainfall follows previous years of lower than average rainfall, and higher than average temperatures, however, above average rainfall would be needed for some time to alleviate the drought conditions.

The high summer rain was reflected by peaks in stream hydrograph in both the urban area (Fig. 5) and the water catchment (Fig. 6) however overall stream flow for both these regions in the ACT was below the long-term average. Ginninderra Creek, which drains a highly urbanised catchment with large areas of impervious surfaces, showed a much quicker response to the high rainfall in June 2005 (Figs. 4 and 5) whilst the forested catchment surrounding the Cotter River released the rainfall to the stream in a much gentler manner (Fig. 6), and it might be expected that the peak flow would show up a month later in July.

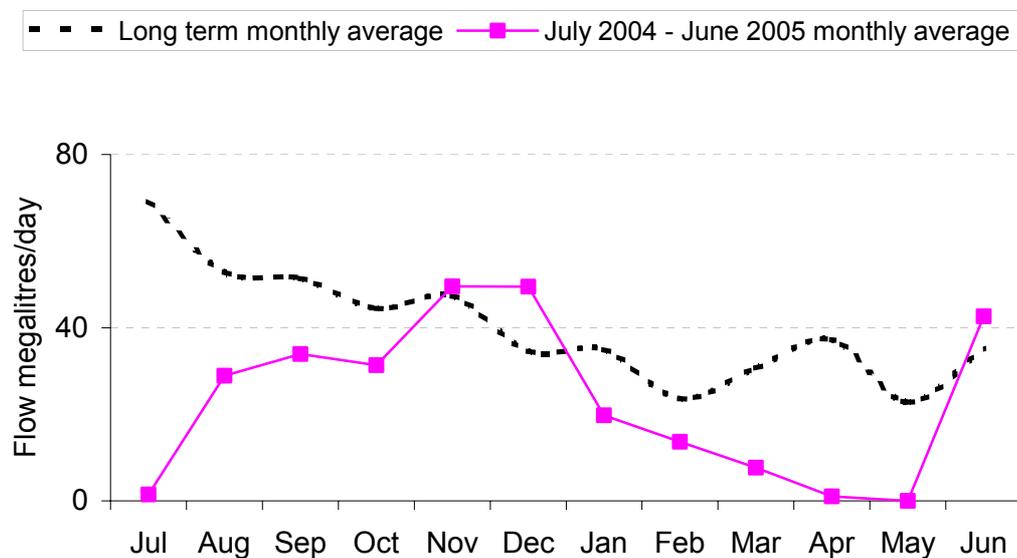


Figure 4: Average Monthly Flow July 2004 to June 2005 in Ginninderra Creek Upstream of Charnwood Road Compared with the Long Term Average Monthly Flow for that Site.

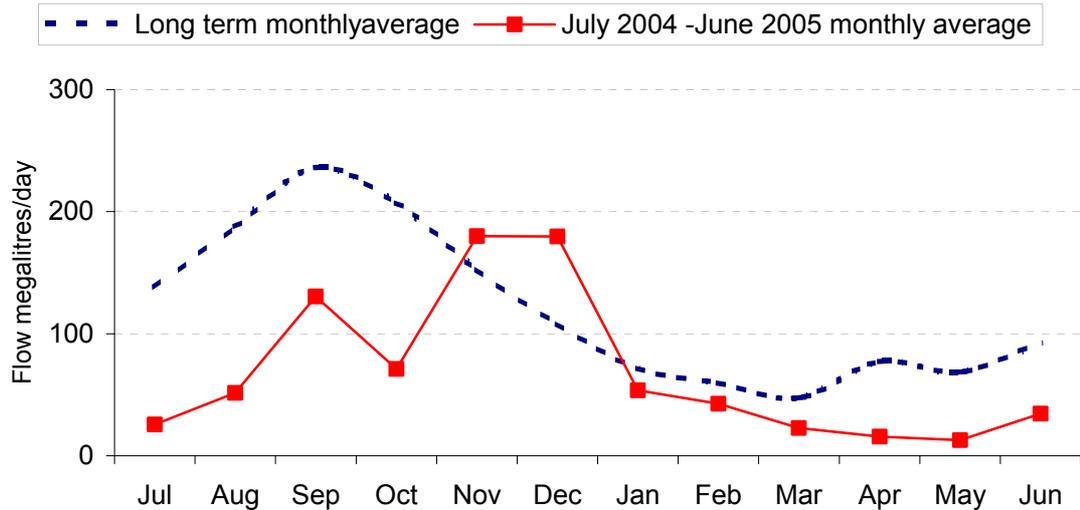


Figure 5: Average Monthly Flow July 2004 to June 2005 in the Cotter River Upstream of Corin Reservoir Compared with the Long Term Average Monthly Flow for that Site.

Although the ACT has had reduced environmental flows and increased pressure for water use because of the drought, the ACT remains a net exporter of water into the Murrumbidgee River. A comparison of the volume of water flowing (in the case of the Queanbeyan River water that would flow if not for Googong Dam) into the ACT with the volume of water leaving the ACT is shown in Figure 7

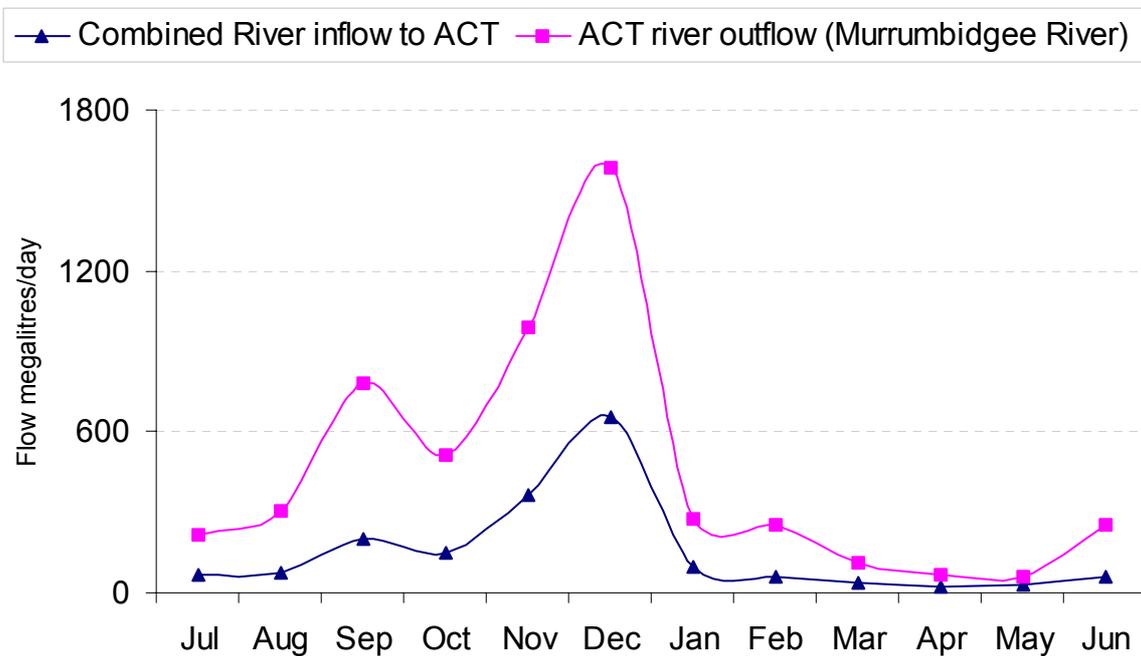


Figure 6: A Comparison of Combined Monthly River Flow (Murrumbidgee, Molonglo and Queanbeyan rivers) into the ACT with the Monthly Flow of the Murrumbidgee River, just after the Downstream Exit of the ACT Border, at Halls Crossing for the July 2004 to June 2005 period