Scott Creek

Map of River

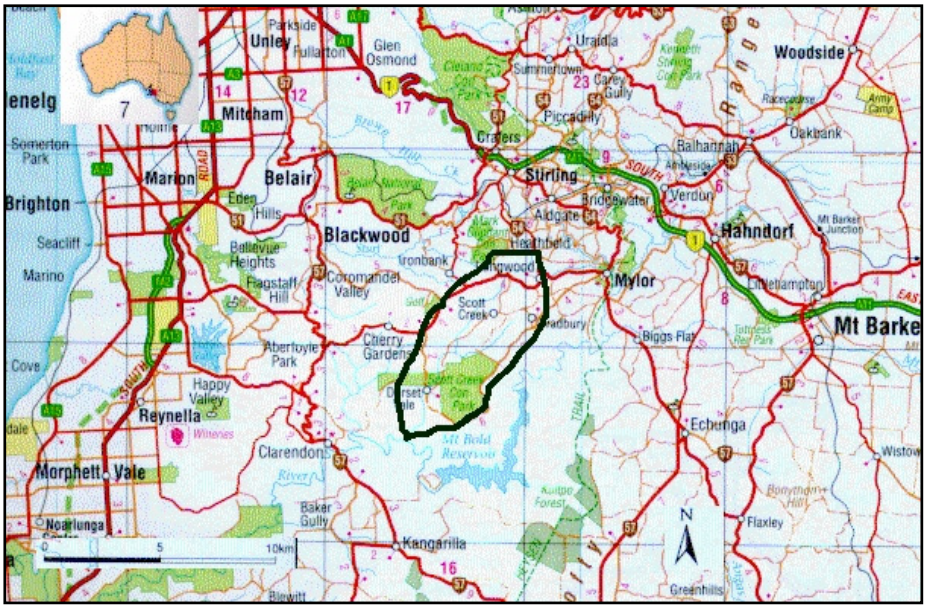


Table of Basic Data

Name: Scott Creek at Scott Bottom AW503502		**Serial No.:** Australia-6
Location: South Australia	S 35° 03' ~ 35° 07'	E 138° 38' ~ 138° 44'
Area: 26.7 km^2	**Length of main stream:** 10.5 km	
Origin: Stirling	**Highest point:** Heathfield 503 m	
Outlet: Onkaparinga River Gulf St Vincent	**Lowest point:** Scott Bottom~200 m	
Main geological features: Late PreCambrian with Quaternary formation along river channel, with tertiary feature along range.		
Main tributaries: None		
Main lakes: None		
Main reservoirs: None		
Mean annual precipitation: 992.6 mm (1884~1964) (see isohyetal map)		
Mean annual runoff: 147.8 mm (1969~1998) at sub-catchment outlet		
Population: approx. 1000	**Main cities:** Towns- Longwood, Scott Creek,Heathfield	
Land use: Natural Vegetation (48 %), Plantation Forest (0.5 %), Urban (0.8 %), Intensive Rural (0.7 %), Grazing (50 %)		

1. General Description

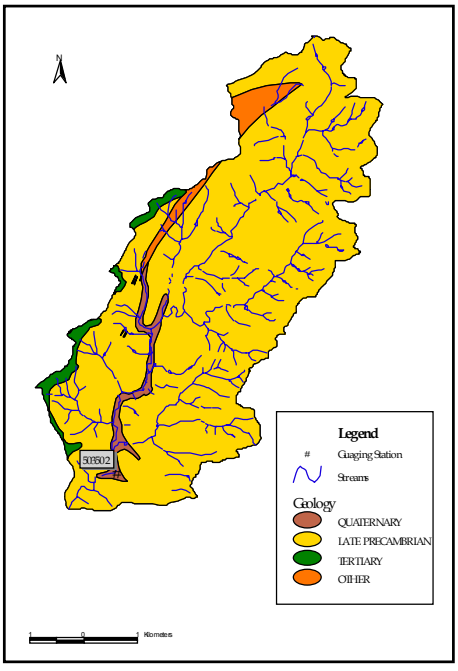
The Scott Creek has a catchment area of 26.7 km^2 at the gauging station at Scott Bottom and is a subcatchment of the Onkaparinga River in South Australia to the south east of Adelaide. Flowing in basically a southerly direction in this subcatchment, the length of Scott Creek to the Gauging Station is approximately 10.5 km. The climate of the catchment is typically temperate with high maximum daily temperatures and evaporation in summer. Rainfall tends to occur in winter and spring (from May to October) with the bulk of the rainfall in the winter months. The topography is dominated by the main range of the Mt Lofty Ranges. The topography ranges from steep to rolling hills in the west and east grading to undulating slopes around Scott Creek. A significant proportion of the Loftia Recreation Park is located in the northwestern corner of the subcatchment. The Scott Creek Conservation Park is located in the South Eastern corner of the subcatchment.

The average catchment elevation is approximately 355 m. Overall, the soils of the catchment can be considered to be moderately permeable, finer grained felspar rich consisting of coarse sandy material overlying weathered rock. Grazing comprises the major land use in the catchment with native vegetation existing on the steeper slopes of the catchment. Approximately 1 % of the catchment is irrigated and irrigation application rates tend to be high. A large portion of water for irrigation comes from captured surface water. Within the Scott Creek catchment there are 65 dams.

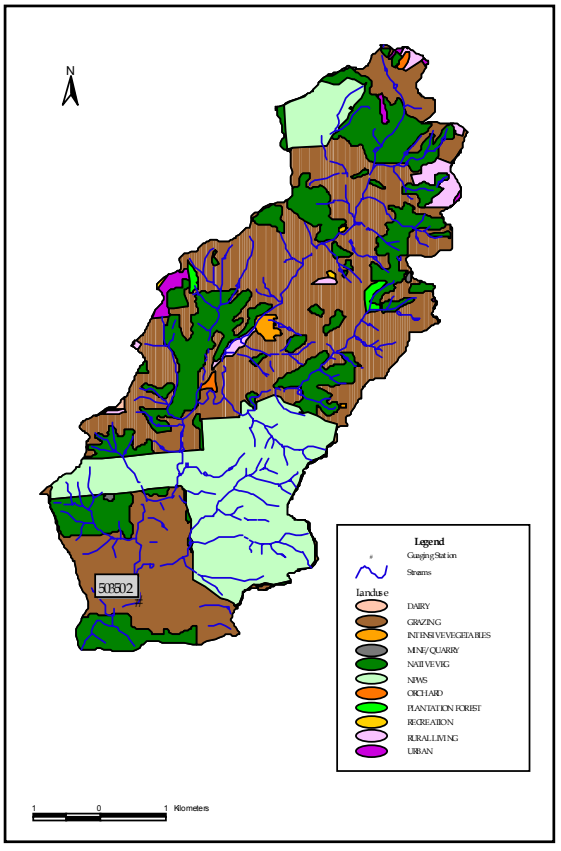
Issues within the Scott Creek catchment include water quality decline due to seepage from existing septic systems which eventually enter the watercourses and runoff from small acreage hobby farms, riparian zone health and exotic trees on water courses.

2. Geographical Information

2.1. Geological Map



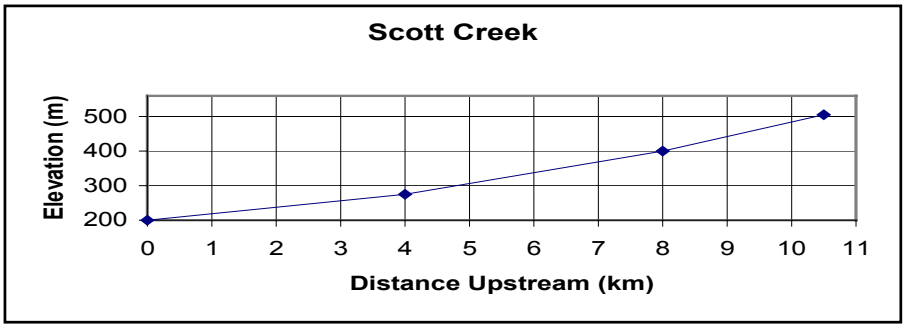
2.2. Land Use Map



2.3. Characteristics of River and Main Tributaries

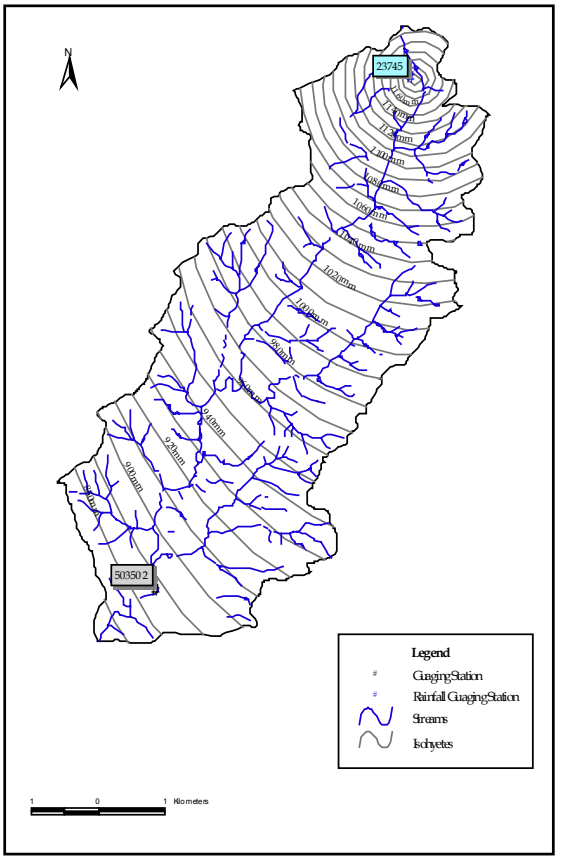
No.	Name of river	Length [km] Catchment area [km^2]	Highest peak [m] Lowest point [m]	Land use [%] (1998)
1	**Scott Creek**	10.5 26.7	503 200	Natural Vegetation (48%), Forest (0.5%), Urban (0.8%), Intensive Rural (0.7%) Grazing (50%)

2.4. Longitudinal Profile



3. Climatological Information

3.1. Mean Annual Precipitation Map and Observation Stations



3.2. List of Meteorological Observation Stations

Station No.	Station	Elevation [m]	Location	Observation period	Mean annual precipitation [mm]	Mean annual evaporation [mm]	Observation items [1)]
023801	**Lenswood Research Centre**	452	S 34° 57' E 138° 48' 36"	1968~1998	1 041	1 280	P, E
023745	**Stirling**	430	S 35° 03' E 138° 47'	1884~1964	1 191		P
AW503502	**Scott Creek GS**	200	S 35° 07' E 138° 40'	1969~1999	512		TBP

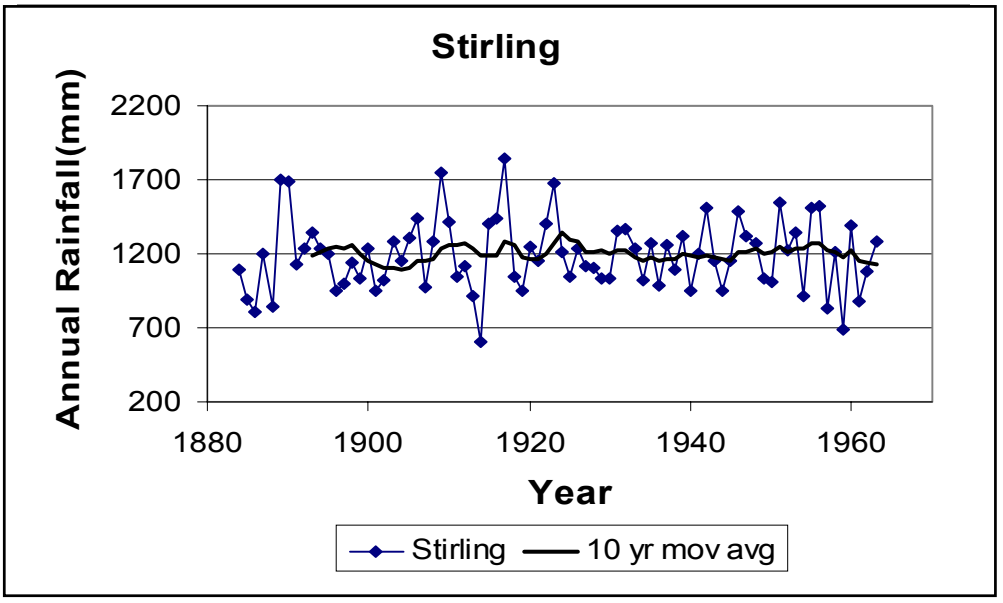
1) P: Precipitation (daily read raingauge 203 mm), TBP: Tilting bucket pluviograph, E: Evaporation (Class A Pan - 120 cm).

3.3. Monthly Climate Data

Observation item	Observation station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Period for the mean
Temperature [°C] Max.	**Lenswood**	25.2	25.7	22.8	18.9	14.9	12.0	11.4	12.4	14.5	17.7	20.6	23.2	18.3	1967~1996
Temperature [°C] Min.	**Lenswood**	12.9	13.5	12.3	10.7	8.6	6.7	6.0	6.3	7.1	8.5	10.0	11.6	9.5	1967~1996
Precipitation [mm]	**Lenswood**	35.1	27.6	43.2	78.7	112.5	134.1	165.6	151.4	117.9	82.4	46.5	46.4	1 041.4	1967~1996
Raindays [No.]	**Lenswood**	7..3	5..8	8..8	12..9	16..6	17..7	19..6	20.1	16..5	14..0	10..6	9..0	158..9	1967~1996
Evaporation [mm] (Pan) [1]	**Lenswood**	196..2	168	136.4	81	49.6	33	33	49.6	72	114.7	141	176..7	1 251	1967~1996
Duration of sunshine [hr]	**Lenswood**	9.8	9.4	7.8	6.3	4.7	3.9	4.1	5.2	6.1	7.6	8.7	9.2	6.9	1967~1996

1) Class A Pan (120 cm)
Note Lenswood is in an adjacent catchment

3.4. Long Term Variation of Annual Precipitation



4. Hydrological Information

4.1. Map of Streamflow Observation Stations

See Climatological Map

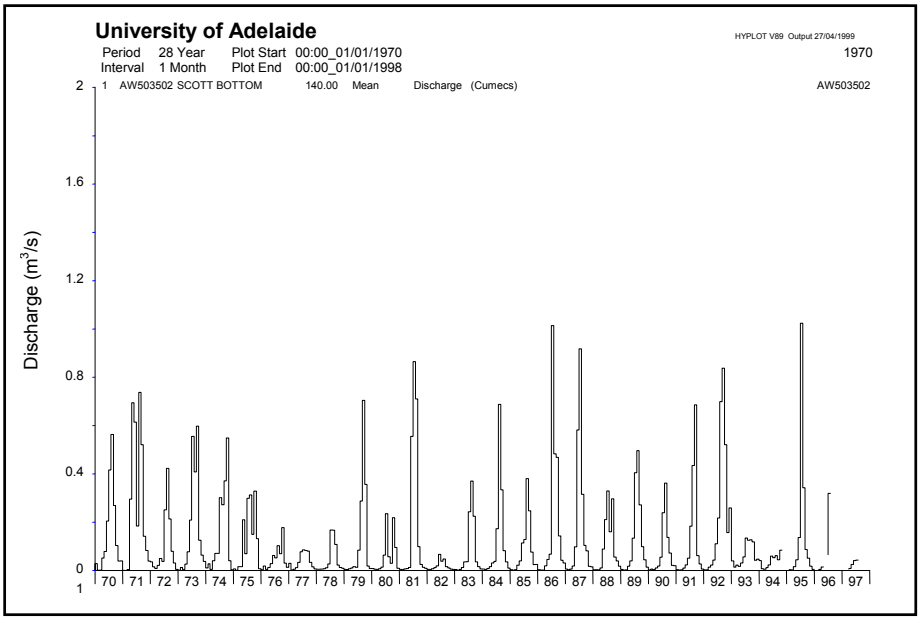
4.2. List of Hydrological Observation Stations

Station No.	Station	Location	Catchment area (A) [km^2]	Observation period	Observation items (frequency)
503502	**Scott Creek at Scott bottom**	S 34º 48' E 139º 03'	26.7	1973 ~1997	Continuous height record, Rainfall

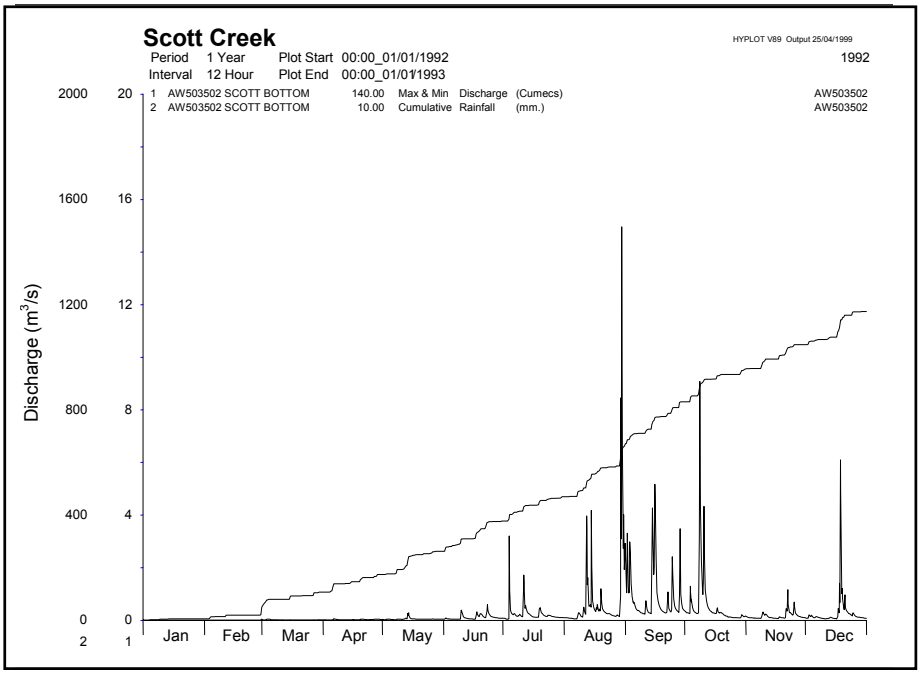
Station No.	$\overline{Q}$ [1)] [m^3/s]	Q max [2)] [m^3/s]	$\overline{Q}$ max [3)] [m^3/s]	$\overline{Q}$ min [4)] [m^3/s]	$\overline{Q}$ / A [m^3/s/100km^2]	Q max / A [m^3/s/100km^2]	Period of statistics
503502	0.123	18.34	0.277	0.020	0.4	68.7	1973 ~ 1998 *

1) Mean annual discharge
2) Maximum discharge
3) Mean annual maximum discharge.
4) Mean annual minimum discharge
* Record is not continuous

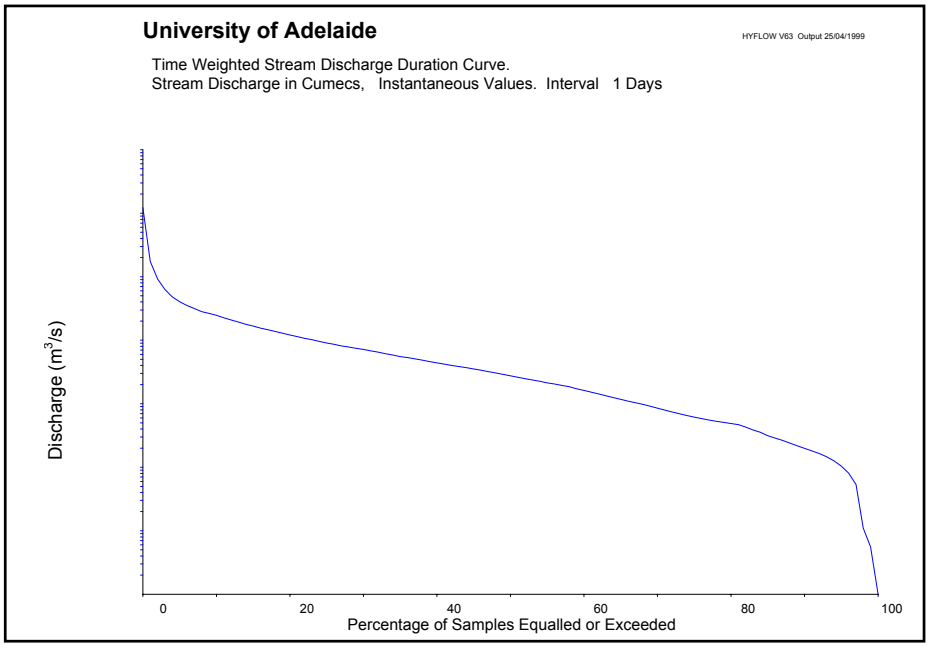
4.3. Long-term Variation of Monthly Discharge



4.4. Annual Pattern of Discharge



Annual Plot of flows 1992



Flow Duration Plot (m^3/sec)

4.5. Unique Hydrological Features

The runoff from Scott Creek is highly seasonal, being concentrated in the winter spring seasons (December to March). During the summer season, Scott Creek ceases to flow. This subcatchment has close to the highest rainfall in South Australia.

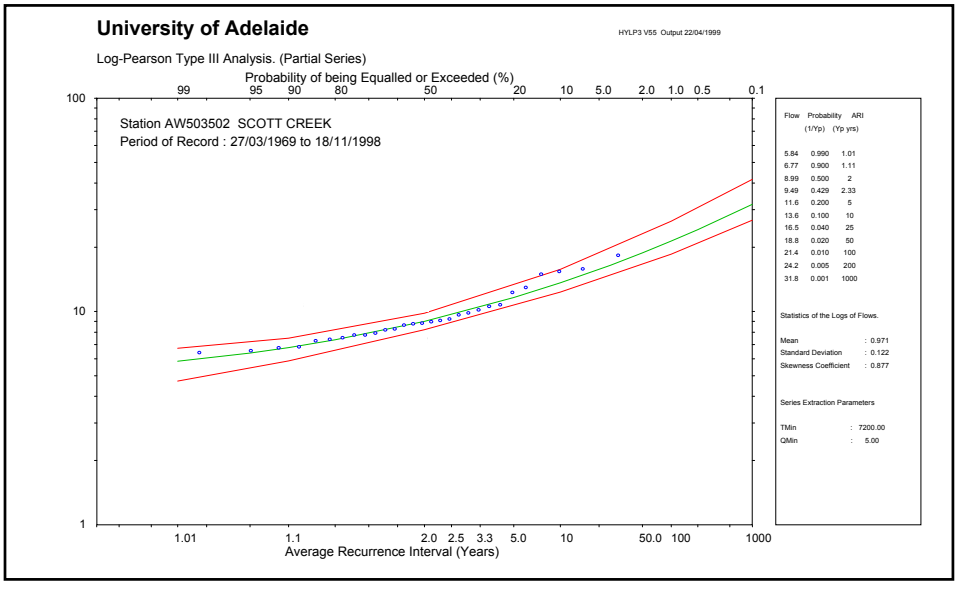
4.6. Annual Maximum and Minimum Discharges

Scott Creek at Scott Bottom [26.7 km^2]

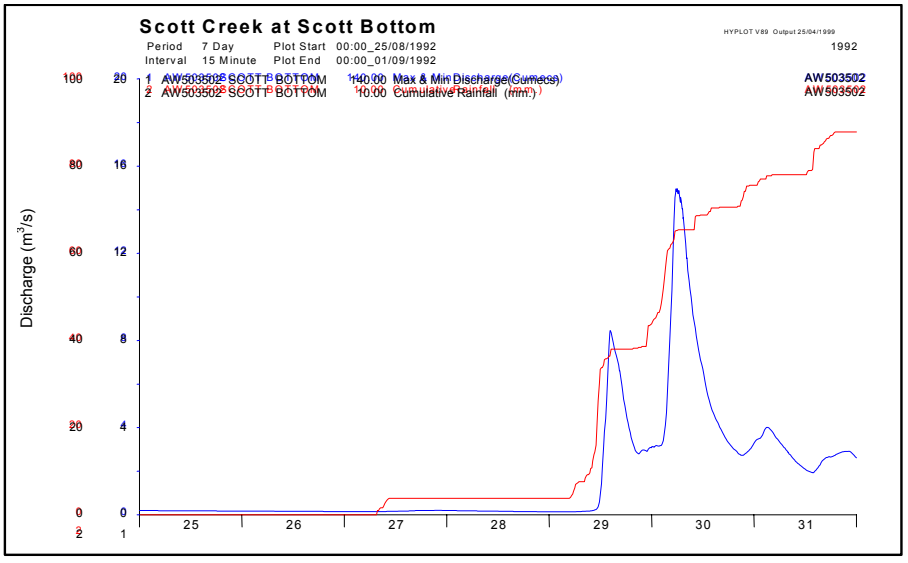
Year	Maximum [1]		Minimum [2]		Year	Maximum [1]		Minimum [2]	
	Date	[m^3/s]	Month	[m^3/s]		Date	[m^3/s]	Month	[m^3/s]
1971	26/4	10.75	5, 12	0.0	**1986**	3/7	12.26	many	0.0
1972	10/8	5.47			**1987**	24/6	15.83	many	0.0
1973	16/7	10.56			**1988**	21/7	4.96	many	0.0
1974	24/10	8.27	1, 3	0.0	**1989**	29/7	7.76	many	0.0
1975	31/7	5.83	1~5, 12	0.0	**1990**	15/8	4.11	many	0.0
1976	17/10	1.26	Many	0.0	**1991**	27/8	7.93	many	0.0
1977	15/1	0.51	Many	0.0	**1992**	30/8	14.95	many	0.0
1978	5/7	6.12	Many	0.0	**1993**	7/7	3.61	many	0.0
1979	12/10	8.63	1~7, 12	0.0	**1994**	4/10	1.48	many	0.0
1980	12/10	7.41	1~4, 12	0.0	**1995**	22/7	10.17	many	0.0
1981	26/6	18.34	1~5,11,12	0.0	**1996**	4/8	15.39	many	0.0
1982	11/8	1.85	Many	0.0	**1997**	7/8	5.02	many	0.0
1983	25/8	8.80	Many	0.0	**1998**	28/7	5.87	many	0.0
1984	21/9	8.94	Many	0.0					0.0
1985	6/8	5.45	Many	0.0					0.0

1), 2) Instantaneous observation by recording chart

Flood Frequency Distribution



4.7. Hyetographs and Hydrographs of Major Floods



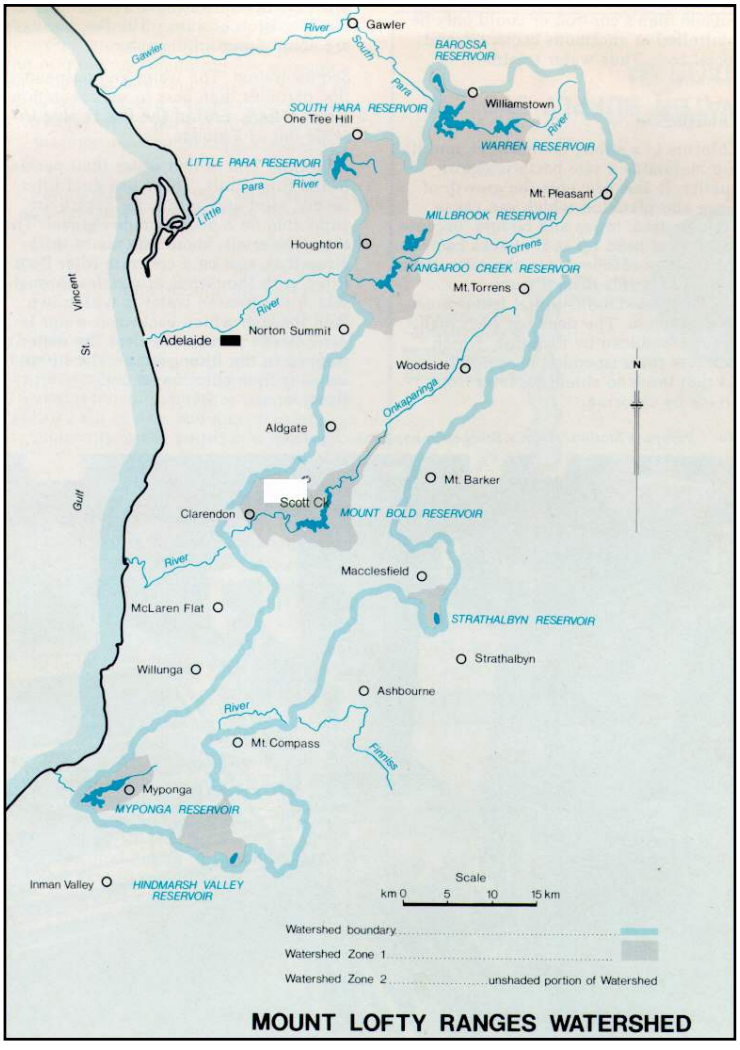
5. Water Resources

5.1. General Description

More than any other factor, the scarcity of water resources has limited the development in South Australia. Approximately 83 % of the State receive less than 250 mm of rainfall annually. Only 3.3 % of the state receive an annual rainfall of over 500 mm. On an overall basis, there are limited water resources in South Australia. It is estimated that major ground and surface water resources have the potential to provide approximately 3 500 x 10^6 m^3/year of which 3 000 x 10^6 m^3/year is termed fresh and marginal water (water 0~1 500mg/l TDS) (E&WS, 1989). The scarcity of water resources has made it necessary to develop water that would be considered to be marginal elsewhere and to pump water over long distances. South Australia is very dependent on the River Murray, which originates outside the state. In an average season this river supplies over 50 % of South Australia's urban water consumption and in a dry year this can be as high as 90 %. The largest factor affecting the present and possibly future water supplies is water quality and significant catchment management programmes have been implemented to halt degradation and improve the quality of runoff. In the Mount Lofty Ranges the quality of runoff water entering the local reservoirs is being addressed. In the selection of the site of the city of Adelaide an adequate water supply was sought. This was achieved by using the Torrens and Onkaparinga Rivers.

River Murray water is discharged into the Onkaparinga River in the upper catchment and is extracted at Clarendon Weir downstream of Scott Creek

5.2. Map of Water Resources Systems



5.3. List of Major Water Resources Facilities

The water resources facilities listed here are those that are in the Onkaparinga River catchment. The Onkaparinga catchment is the largest in the Mt Lofty Ranges, with annual rainfall averages varying between 832 mm at Woodside and 1 053 mm at Bridgewater. The Onkaparinga River was the only source of supply for the Happy Valley and Mount Bold Reservoirs until the Murray Bridge-Onkaparinga Pipeline was commissioned in 1973.

Mount Bold, a concrete gravity arch dam was built between 1932 and 1938, but was raised to 6l4 m in 1962 to give it a capacity of 45.9 x 10^6 m^3. It is a storage reservoir rather than a service reservoir, and releases water into the river as required to maintain the level in the Happy Valley Reservoir.

Happy Valley is a service reservoir which although relatively small ($12.7x10^6$ m^3) serves more consumers than any other reservoir. It is an off-stream storage, formed by an earthen embankment built between 1892 and 1896. It is fed by a 5 km long tunnel from the Clarendon Weir.

Major Reservoirs

Name of river*	Name of dam (reservoir)	Catchment area [km^2]	Gross capacity [$10^6 m^3$]	Purpose [1)]	Year of completion
	Happy Valley Reservoir	Earth Dam, Offstream Storage	12.7	W	1896
Onkaparinga River	**Mt Bold Reservoir**	384	30.2 45.9	W	1938 mod 1962

1) W: Municipal water supply

6. Socio-cultural Characteristics

The climate of the Mt Lofty Ranges was conducive to being populated by early settlers. It had the highest annual rainfall area within the state. Settlement of other country regions was confined to places that had small streams, soaks or springs augmented by small earthen dams and wells. The development of South Australia has been characterized by the development of pipelines from the River Murray. The River Murray provides a source of water for domestic, industry and agricultural pursuits along its banks. It is also the main source of water for Adelaide and many towns far distant from the river including Whyalla, Woomera and Keith. Serious consideration for augmenting Adelaide's water supply include utilizing local runoff, rainwater tanks, urban stormwater runoff in conjunction with aquifer storage and recovery, and treated effluent.

7. References, Databooks and Bibliography

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