ALICE SPRINGS TOWN BASIN
MONITORING REVIEW
1996-1997

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Water Resources Branch,
Alice Springs.
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1. Town Monitoring Overview.

* Regular water level monitoring of the Town Basin commenced in 1959 and was interrupted between early 1972 and late 1975 because of the cessation of major extraction during this period. Water levels from 42 observation bores are currently monitored on a 6 weekly basis. [figure 1]

* From 1980 water sampling had been on an ad hoc and infrequent basis but since the early 1990's has been introduced on an annual basis with 24 bores being sampled. [figure 2]

* Water Resources have records for Todd River flow size and duration from 1952-3 with computer records from 1972.

* Water Resources have records of local rainfall, on computer, from 1976 supplemented by Bureau of Meteorology records dating from 1967.

* Recharge has been shown to occur predominately during large and prolonged river flow events such as occurred during 1974 when the Todd River flowed for approximately 300 days causing a dramatic rise in groundwater levels. [graph 1]

2. Town Basin Overview.

By 1971 the Roe Creek borefield was the sole reticulated water supply for Alice Springs and since then the Town Basin production bores have been mainly used for irrigation of sports grounds and open spaces. [figure 3] Relatively poor quality groundwater usage data exists for most of this period due to a number of problems mainly concerned with the accurate monitoring of extraction. Estimates have been made of annual usage over the years, with the figure gradually rising to the level where extraction is now between 700 and 830 megalitres per year with PAWA and The Golf Club being the major users.

Current water management strategy is to increase the use of Town Basin groundwater, reducing the water level in the basin between river flows, allowing recharge of better quality water.
3. Water Level Data

The water levels in the 42 bores currently monitored show that at the end of 1997 they were at a higher level than at a comparative time in 1996. This may be attributed to the recharge effect following the good rains and resulting stream flow in the Todd River in February 1997 and to a lesser extent to a smaller event later in the year. Graphs 3a-3m which are plots of water levels taken over the last ten years together with rainfall and streamflow events over the same period, show the response to both extraction and recharge within the borefield.

4. Water Quality Data

The bores which are now sampled on an annual basis continue to show in the main an improvement in water quality, although it will need several more years of records to confirm a trend. Some minor adjustments were made to the number and location of bores sampled, the final total of 24 are shown on figure 2. Graphs 4a-4c show the results of water quality sampling to date, together with an example of bore water levels in the same area.

5. Streamflow Data

The Todd River flowed for a total of 27 days in 1997 with the largest event occurring in February. A continuous flow for approximately 23 days, with a maximum gauge height of 2.6m [relates to a 1:3 event] saw a rise of water levels within the Town Basin. Graphs 3a-3m show the extent of the recharge. Graph 5 shows the number of flow days per year over the last ten years.

6. Rainfall Data

352mm of rain for the calendar year 1997 was recorded by the monitoring station at the Water Resources Smith St. Depot located in Town. This was considerably more than in 1996 and above the mean average of 250mm a year. 9 out of the 12 months received rainfall with January and February accounting for two thirds of the annual total. Graph 6 shows rainfall figures for the last ten years.

7. Production Data

The past 12 months has seen an increase in extraction from the Town Basin by PAWA from 328,700 kls in 1996 to 378,806 kls in 1997- this is in keeping with current water management strategy. An upgrading of the monitoring system now provides a more reliable guide to actual extraction, and has also led to a rationalisation of the number of production bores that are used. Extraction by the Golf Club, who are now the second largest user, dropped from 394,395 kls in 1996 to 284,499 kls in 1997 a fall of 100,000 kls. This can be partly explained by a faulty meter on one of the bores, which
resulted in the usage being shown as something less than actual, and because of the good rains that fell in the two peak usage months of the year. Discussions with the Golf Club indicate that the power consumption used to run their bores was also lower in 1997. Estimates have been made of usage by DET 421 and St. Philips, neither of these bores have meters, it is hoped to have this rectified some time in 1998. It was also established that a number of bores previously listed on the Town Basin Production Bores map, [figure 3. 1996 Report] are no longer being used for extraction and they have subsequently been removed from this year's report. Graph 7 shows the individual pumping figures for the Town Basin production bores.
LEGEND

- Extent of Alluvial Basin
- Outcropping Bedrock
- Monitoring Bore
- Rain Gauge
- River Gauge

TOWN BASIN
MONITORING BORES
ALICE SPRINGS
1997

Figure 1
Figure 2
Figure 3
Hydrograph Showing Recharge Effect in Town Basin Monitoring Bore
After 300+ Days flow in Todd River in 1974

Graph 1

- <1964 Alice Springs Water Supply extracted from Town Basin only
- 1964-1971 Water Supply extracted from Town Basin & Roe Creek Borefield
- >1971 Water extracted for irrigation only

Ground Level

RN 5819

Graph 1

hydrogryn 17/12/96 amended 17/03/98
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<thead>
<tr>
<th>Main Consumers 96/97</th>
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<tbody>
<tr>
<td>PAWA</td>
<td>378806</td>
<td>KLS</td>
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<tr>
<td>GOLF CLUB</td>
<td>284499</td>
<td>KLS</td>
</tr>
<tr>
<td>MISC</td>
<td>60887</td>
<td>KLS(ESTIMATED)</td>
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<tr>
<th>Misc. Includes</th>
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<td>ST.PHILIPS</td>
<td>12000</td>
<td>KLS(ESTIMATED)</td>
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<tr>
<td>DET421</td>
<td>10000</td>
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<tr>
<td>CASINO</td>
<td>38887</td>
<td>KLS</td>
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| Total Estimated Consumption 96/97 | 724,192 | KLS |

<table>
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<tr>
<th>% Usage 1997</th>
<th>1996</th>
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<tbody>
<tr>
<td>PAWA</td>
<td>53%</td>
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<tr>
<td>GOLF CLUB</td>
<td>39%</td>
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<tr>
<td>MISC</td>
<td>8%</td>
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</table>

% Usage by Main Consumers Town Basin 1996-97

PAWA 53%
GOLF CLUB 39%
MISC 8%
Period 11 Year Plot Start 00:00 01/01/1987
Interval 6 Day Plot End 00:00 01/01/1998

NT Water Resources 1987

Graph 3a

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<tr>
<td>Level (m)</td>
<td>1.2</td>
<td>1.76</td>
<td>2.32</td>
<td>2.88</td>
<td>3.44</td>
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HYPLIT V88 Output 17/03/1999

RN005824 BLOOMFIELD ST. 100.11 Line Level (m)
RN005818 TRAEGER PK 109.11 Line Level (m)
R0060009 Rainfall Smith St. 10.00 Total Rainfall (mm)
G0060009 Flows Todd River 100.00 Max & Min Level (m)
### HYPLOT V06 Output 1700/1998

**NT Water Resources 1987**

- **Period**: 11 Year
- **Plot Start**: 00:00 01/01/1987
- **Interval**: 6 Day
- **Plot End**: 00:00 01/01/1998

#### Graph 3e

- **RN01134**: STOTT TCE EASTSIDE 100.11 Line Level (m)
- **RN013923**: FEDERALS CLUB E.SIDE 100.11 Line Level (m)
- **RN015094**: ROSS PK OVAL 100.11 Line Level (m)
- **R0060009**: Rainfall Smith St. 10.00 Total Rainfall (mm)
- **G0060009**: Flows Todd River 100.00 Mex Min Level (m)
TODD RIVER AT ANZAC OVAL - NUMBER OF FLOW DAYS PER ANNUM 1987-1997

Note: Number of flow days is approximate due to unstable cease to flow at Anzac Oval.
ALICE SPRINGS ANNUAL RAINFALL TOTALS RECORDED BY WATER RESOURCES AT SMITH ST. DEPOT 1987-1997

Graph 6
### Table:

<table>
<thead>
<tr>
<th>Bore Number</th>
<th>1996 Usage</th>
<th>1997 Usage</th>
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<tr>
<td>RN006134/5</td>
<td>5000</td>
<td>30000</td>
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<tr>
<td>RN005808</td>
<td>10000</td>
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**Legend:**
- **PAWA:**
- **GOLE:**
- **GOLF:**
- **COUNCIL:**
- **ST.PHILIPS:**
- **CASINO:**
- **DET 421:**
- **MEMO.CLUB:**
- **PACIFIC:**
- **Misc:**
- **No Longer Used:**
- **Still Available:**

**Graph:**

The graph shows the usage in kilolitres for different bore numbers. The usage is classified into categories such as PAWA, GOLE, GOLF, COUNCIL, ST.PHILIPS, CASINO, DET 421, MEMO.CLUB, PACIFIC, Misc, No Longer Used, and Still Available. The Y-axis represents the bore number, and the X-axis represents the usage in kilolitres.