

**SINCLAIR KNIGHT & PARTNERS PTY. LTD. CONSULTING ENGINEERS**

Mr Peter Dampney  
"Billabong"  
NARRABRI NSW 2390

SJH:gcp:4696

26 January 1983

Dear Peter

**MIRRABOOKA - RAINFALL/RUNOFF ANALYSIS**

A computer analysis of 100 years (1892 - 1981) of daily rainfall data for Narrabri has been undertaken to establish the potential yield of stormwater runoff from the catchment above Mirrabooka.

Results of the analysis, which are forwarded for your information, include estimates of daily, monthly and annual runoff volumes.

A graphical summary of the results has been prepared showing total estimated annual runoff volumes and average monthly runoff volumes for the 100 years of record. With regard to total annual runoff, the probability of receiving various runoff volumes in any one year has been estimated. The results indicate a 90% chance of receiving 200 megalitres (ML), or more, a 76% chance of exceeding 400 ML, a 63% chance of exceeding 600 ML and about a 50% chance of receiving 1000 ML or more.

The analysis of average monthly volumes indicates that the January to March period accounts for around 50%, on average, of the total annual runoff. Evaporation losses are high in this period therefore substantial storage losses could occur before irrigation of the proposed cereal crops commences in May. As the graph shows, average runoff for May is 130 ML which could replace the above storage losses. You should be aware, however, of the limitations of the analysis and the need to correctly interpret the predicted runoff volumes. Basically, the method used will accurately reflect trends and probabilities although the predicted results for individual storm events may be considerably in error.

Similarly, average results such as the monthly runoff volumes referred to above, may be subject to wild fluctuations involving lengthy periods of little or no runoff separated by years in which monthly runoff may exceed ten times the average.

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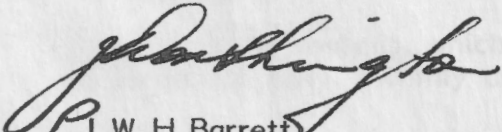
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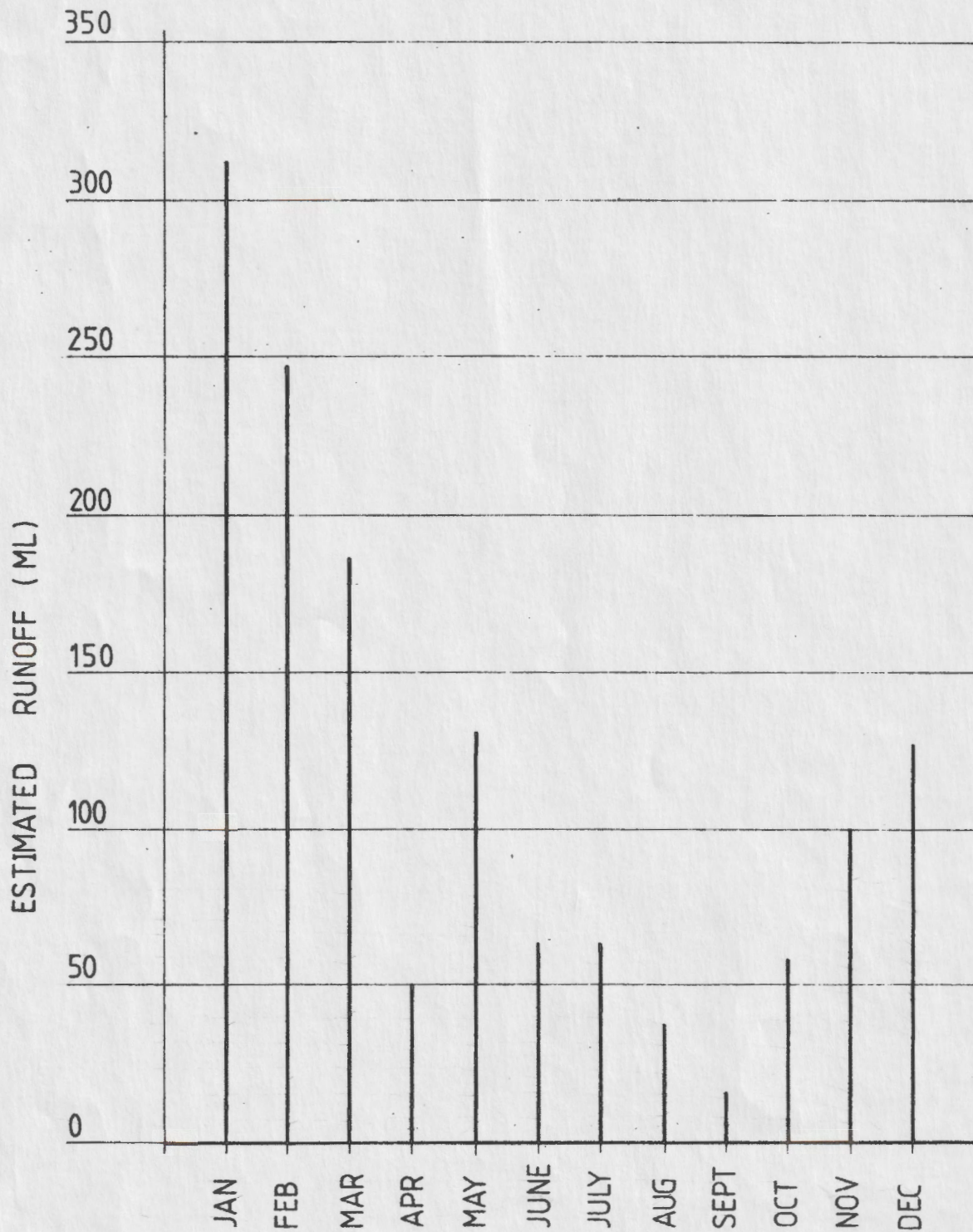
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Generally, however, a storage capacity of 200 to 400 ML would appear reasonable with a 90% to 75% chance of the storage being filled during the year. Limited inflows can be expected from April to October with most runoff occurring during the December to March period.

We trust this information satisfies your requirements at this stage and look forward to providing further assistance with the project should you decide to proceed.

Yours faithfully

  
J W H Barrett  
Associate



MIRRABOOKA  
AVERAGE MONTHLY  
RUNOFF VOLUMES  
1882 - 1981