



ID: WQEM 0626

## Event Summary Load Calculation Upper Burnett (Abercorn) January 1974

### Introduction

This fact sheet presents Event Mean Concentration (EMC) sediment load estimates collected from the Upper Burnett at Abercorn gauging station (Figure 1) associated with three days of rain in January 1974 (Figure 2).

### Methodology

Three suspended sediment samples (Table 1) were collected from the gauging station GS136101C (Figure 2), and recorded in the DNR archives. Discharge was assumed to be  $\pm 10\%$  of actual flow ([http://www.nrm.qld.gov.au/water/monitoring/pdf/wm\\_data\\_col\\_stds.pdf](http://www.nrm.qld.gov.au/water/monitoring/pdf/wm_data_col_stds.pdf)), although during high flows accuracy is likely to be poorer (David Amos, NRW Hydrographer, pers. comm.). Field replicates were not collected, so there was no precision estimate for concentration data.

To relate total suspended sediment (TSS in mg/L) with discharge ( $\text{m}^3/\text{s}$ ), the average TSS value for the three samples was assumed across the hydrograph. Error margins were 2 standard errors around the average TSS concentration, which were propagated across the hydrograph together with the 10% variation in flow. The event load was the sum of the products of hourly discharge and TSS concentrations (Table 2). The EMC was calculated by dividing the event load by the event volume (Table 2).

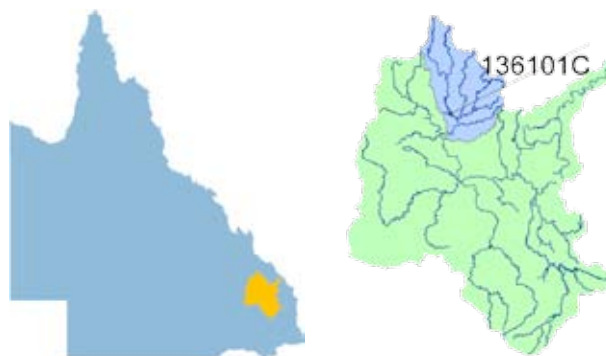


Figure 1. Upper Burnett event sampling location at Abercorn.

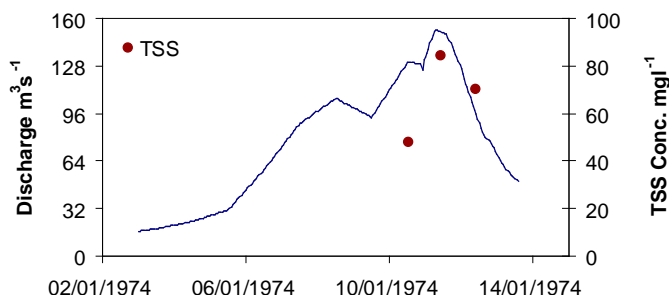


Figure 2. Sample times, discharge and TSS concentration of samples collected at Abercorn.

### Flow Event Description

Catchment:	Upper Burnett
Location:	Abercorn GS136101C, 25°07'S; 151°07'E
Catchment Area:	3951 km <sup>2</sup> (1539 km <sup>2</sup> upstream of the gauge)
Dominant Land Use: (upstream of gauge)	Grazing (71%), Forestry (12%), Nature conservation (upstream of gauge), (11%), Irrigated Cropping (3%), Cropping (2%)
Event Duration:	03/01/1974 - 13/01/1974

### Cumulative Rainfall (mm)

10/01/74 - 12/01/74

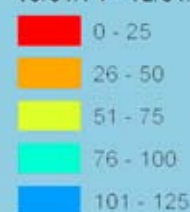


Figure 3. Cumulative rainfall during the event.

## Results

This was a strong runoff event from headwater confluences near Cania Dam, which drained a sub-catchment with an underlying geology of sedimentary rocks (86%) with minor limestones (11%) and acid-intermediate igneous rocks (11%). Soils are predominantly duplex with minor cracking clays. The EMC for TSS ( $67\text{mg l}^{-1}$ ) was relatively low compared with a unit discharge with similar magnitude at Walla Weir in 1976 ( $406\text{mg l}^{-1}$ ).

Table 1. Discharge and sediment data for the January 1974 event at Abercorn.

Date/Time	Gauge Height (m)	Q ( $\text{m}^3/\text{s}$ )	TSS (mg/l)
10/01/1974 12:30	6.26	124.608	48
11/01/1974 10:40	6.48	159.838	84
12/01/1974 10:10	5.79	71.451	70

Table 2. Estimated load and event EMC for the January 1974 event at Abercorn.

Gauging station number	136101C	Lower bound	Upper bound
Site Name	Abercorn		
Total Event Discharge (ML)	70,932		
Number of samples	3		
TSS Load (kilo-tonnes)	4.8	3.0	6.9
TSS EMC (mg/L)	67	42	97
Maximum Event Discharge ( $\text{m}^3/\text{s}$ )	152		
Period of record (yrs)	42		
Percent of time that the peak is equalled or exceeded	0.21		

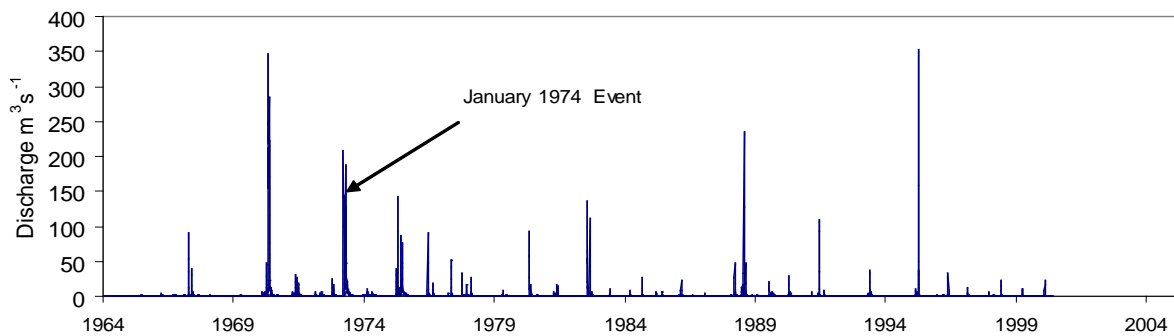


Figure 4. January 1974 event sampled at Abercorn in the context of historical (mean daily) discharge.

## For Further Information

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[www.wqonline.info](http://www.wqonline.info)

We would like to thank the NR&W Hydrographic unit, Bundaberg for collecting samples and supplying data.

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