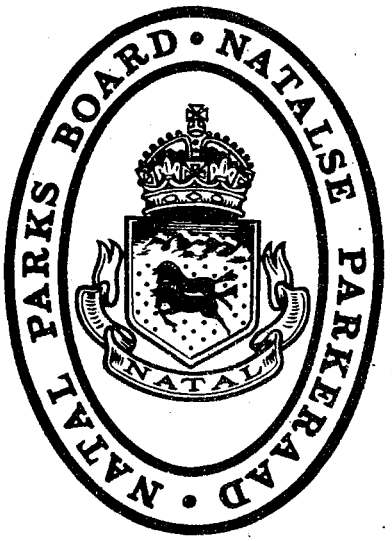
DOCUMENT NO. 554

ST LUCIA DOCUMENT COLLECTION




**Author** VAN HEERDEN I HOUART C BLOK T

**Title** REPORT ON FLOW RECORDINGS - ESENGENI, 29 SEPT. 1970 TO 27 JAN. 1971

**Source** 1971 UNPUBLISHED REPORT

**Keywords** MONITORING*HYDROLOGY,LAKE*

554

# REPORT ON FLOW RECORDINGS - ENSENGENI

29th September, 1970 - 27th January, 1971




Surveyed by I. van Heerden

Written by I. van Heerden

Checked and Authorised by C. Houart

T. Blok

# REPORT ON FLOW RECORDINGS: ENSENGENI

## INTRODUCTION

The purpose of this report is to give the reader some information as to the goings on, flows recorded at KM 15, i.e. Ensengeni done from the 29th September, 1970, to 27th January, 1971.

# REPORT ON FLOW RECORDINGS - ENSENGENI

## APPARATUS

The Ott flow meter was used for X-Sections and no continuous flows were measured.

# REPORT ON FLOW RECORDINGS - ENSENGENI

## PROCEDURE

### X-Section Runs - Using Ott Flow Meter

X-Sections were done, starting at the E shore, at the end of the jetty approximately 10m from the shore line.

Note: This distance changes with change in water level. It was then continued at approximately 20m intervals.

At the 6 position the "Test Reading" was done, i.e. at a position 50 cms below M.S.L. This being the same place as the "Test Instrument" was to be put at later dates. This reading is used in the plotting of the flow curves.

The starting and ending times were noted as well as the water levels and wind velocities.

Note: All levels at Ensengeni were checked both before and after the X-section runs.

# REPORT ON FLOW RECORDINGS - ENSENGENI

## GRAPH OF FLOW RATE OF TEST INSTRUMENTS V.S. ACTUAL DISCHARGE FOR AN INCOMING TIDE

| DATE | FLOW RATE M/S | DISCHARGE $M^3/S.$ |
|---|---|---|
| 29/9/70 | ,4250 | 43,3000 |
| 7/10/70 | ,2000 | 23,2100 |
| 7/12/70 | ,4954 | 53,2500 |
| 6/1/71 | ,2046 | 22,4000 |
| 7/1/71 | ,0674 | 3,1439 |

## GRAPH OF FLOW RATE OF TEST INSTRUMENT V.S. ACTUAL DISCHARGE FOR AN OUTGOING TIDE

| DATE | FLOW RATE M/S | DISCHARGE $M^3/S$ |
|---|---|---|
| 30/9/70 | ,0700 | 8,5400 NEG. FLOW |
| 16/12/70 | ,2017 | 15,3320 |
| 20/1/71 | ,0800 | 7,8369 |
| 27/1/71 | ,0185 | 1,4000 |

REPORT ON FLOW RECORDINGS: ENSENGENI

## DISCUSSION OF RESULTS

1. Wind apparantly has the greatest effect on the flow.

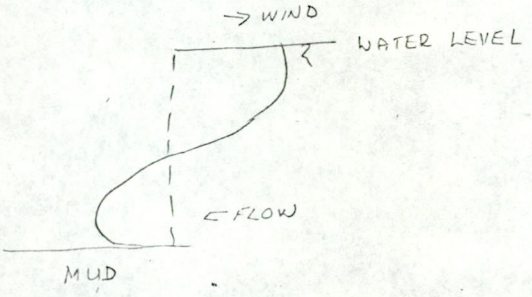
On the 7th January, 1971, the wind from the North, being rather strong was trying to push the water from the Southern Lake out via the estuary while the incoming tide from the sea was trying to do the opposite. At about Ensengeni the two forces were meeting and as a result at Ensengeni there was very little flow while the water level rose very quickly.

2. On the 21st January, 1971, the wind, being from the South was too strong for recordings to be made. On the outgoing tidal cycle there was an inflow.

The reason being that because the lake was below sea level the outgoing flow is never very strong and the strong wind on this day was strong enough to create a neg. flow.

On the 17th December, 1970, there was no outflow or inflow during the outgoing tide, the wind was from the North but was a mere breeze. At the time the level at Ensengeni was about M.S.L.

3. On various occasions in the area stretching from the jetty to about 60 M out various counter currents, eddy current have been noticed giving flow diagram of this shape:




4. The nett result of these readings, at this time, was that the inflow of salt waters far exceeds the outflow, which appears to be only remedied by the closing of the mouth.

REPORT ON FLOW RECORDINGS: ENSENGENI

## CONCLUSION

Quite a satisfactory result although still quite a source of errors:-

1. The actual X-Sectional width changes with changes in water level - this can be remedied.

2. When reading off the curve water level changes cannot be considered - this could be remedied at a later date when a lot more plottings have been done and separate curves be drawn for every 10 or 20 cms. change in water level.

3. The curves are still very approximate and their accuracy will only improve after more X-Sectional runs can be done and thus more Pts for the curves obtained and plotted.

# REPORT ON FLOW RECORDINGS: ENSENGENI

## OBSERVATIONS

20/1/71, 6/1/71, 7/1/71.

1. At the forks the water flow prefers to go via the Western undredged. (At present being dredged) shallow side along the shoreline rather than through Potters Channel.

## SUGGESTIONS

1. A better means of telecommunications.

2. A better means of transport on the lake when time is important, i.e. an outboard takes ± 1 hour to travel as far as a Jet Boat in approximately 16 minutes.