

EV 206

71332

**DOMESTIC WATER SUPPLY DEVELOPMENT  
IN MAURITIUS**

**BY**

**J. WHITE**

197:

**MINISTRY OF OVERSEAS DEVELOPMENT  
ELAND HOUSE  
STAG PLACE  
VICTORIA  
LONDON SW1**

03/05

## PREFACE

Each year the Overseas Development Administration (ODA) commissions a number of ex-post evaluation studies with two aims in mind; firstly, to assess the effectiveness of its aid activities and secondly, to learn lessons for improving the effectiveness of future aid activities.

This evaluation is one such study.

Evaluation studies are undertaken by individuals or by teams especially recruited for their particular knowledge with regard to the subject under study. Sometimes these teams will include personnel from ODA (increasingly teams are a mix of ODA and external personnel).

In all cases the reports and conclusions are attributable to the authors, who are finally responsible for their contents, and not to ODA.

Evaluation Unit  
Manpower and Evaluation Department

Domestic Water Supply Development in (Mauritius Box)

A. Introduction

This paper attempts to evaluate the water development programme undertaken in Mauritius over the period 1960/61 - 1969/70. It covers mainly the development of domestic water supplies, including sewerage, but it also mentions the growth of demand for water for industrial and irrigation purposes. In order to put the developments in the years 1960/61 - 1969/70 into perspective, the history of the water development programme over the last 100 years is traced briefly, touching on the major capital works which were carried out over the period. Then an outline of the present structure of the three domestic water supply systems is given, showing which areas they serve, the capacity of each system and the demands made upon it and finally the water rates charged. The development of the two major sewerage schemes in Mauritius, the Port Louis and the Plaines Wilhems sewerage schemes are summarized. In order to complete the picture of the present water supply situation in Mauritius the involvement of the Ministry of Works in irrigation schemes, the associated expenditures and revenues of supplying irrigation water up to the point of sale to the cultivator, is considered.

At the next stage a closer look is taken at developments in the water programme over the period 1960/61 to 1969/70, the latter being the latest year for which figures are available. The capital and recurrent costs and the annual revenues of the Ministry of Works Water Supply Division and the Municipality of Port Louis, (which supplies water to households and to industrial consumers in Port Louis and also to ships) are studied to see what capital investment outlays actually consisted of and what proportion of total public sector capital investment it comprised; annual recurrent costs of each system are then compared with annual revenues over the period. Finally there is the problem of evaluating the benefits of a domestic water supply and sewerage scheme, with which this paper is primarily concerned, in order to evaluate the impact of the programme over the last decade on the development and social well-being of the economy of Mauritius.

The reason for choosing the development of domestic water supply system and the sewerage system over the last ten years as a

subject for an evaluation study is twofold. Firstly, it is an area of investment where the U.K has concentrated a sizeable proportion of its <sup>aid</sup> and allocation to Mauritius in recent years, as summarized in Table I below:

Table I

	<u>£</u> <u>Value of Loan</u>	<u>Aid Allocation</u> <u>to Water Supply</u> <u>Projects</u>	<u>Aid Allocation</u> <u>to Sewerage</u> <u>Projects</u>	<u>Aid Allocation</u> <u>to Water &amp; Sewerage</u> <u>Projects</u>
Loan Number 1	600,000	-	-	-
Loan Number 2	1,400,000	173,000	288,000	461,000
Loan Number 3	1,000,000	345,000	196,000	541,000
Total	3,000,000	518,000	484,000	1,002,000

In addition a further £ 320,000 was allocated to water supply projects and £ 404,000 to sewerage project under CD and W schemes, prior to independence. Since 1968 , i.e. since Independence, as Table I very clearly illustrates one third of aid under loans 1,2 and 3 has been allocated to water and sewerage projects. Out of the total amount of £ 1.0 million which constitutes the sum allocated to the water and sewerage programme only £ 117,000 went to irrigation projects.

Table II gives the breakdown of this figure by individual item for both water and sewerage projects.

Table II

British Aid Projects

£

(A) Water

CD and W Grants

Tapping of Underground Water at Holyrood	74,000
Piton du Milieu Water Supply	75,000
Mare aux Vacoas Water Supply	91,000
La Ferme Irrigation System	80,000

Loan No. 2

Water Meters	21,000
--------------	--------

Machinery and Plant for Water Projects	114,000
Northern Plains and Midlands Nicoliere Irrigation	29,000
Treatment Works	9,000

Loan No. 3

Irrigation Machinery	8,000
Water Meters	23,000
Piton du Milieu (Trunk & Service Mains)	160,000
Mare aux Vaccas (Trunk and Service Mains)	108,000
Underground Water Research	13,000
Underground Water Research, Piton du Milieu	15,000
Underground Water Research, Mare aux Vaccas	17,000

Loan No. 4

Water Meters	24,000	
Plant and Machinery	15,000	
Mare aux Vaccas (Trunk and Service Mains)	}	144,000
Piton du Milieu (Trunk and Service Mains)		

Total

1,016,000

(B) Sewerage

CD and W Grants

Port Louis Sewerage Scheme (Northern outfall)	404,000
---	---------

Loan No. 2

Plaines Wilhems Sewerage	288,000
--------------------------	---------

Loan No. 3

Port Louis Southern Outfall	44,000
Plaines Wilhems Sewerage	30,000
Plaines Wilhems Sewerage (continued)	122,000

Total

888,000

Source BFC,  
Port Louis,  
MAURITIUS.

Loan No. 4 which is the current loan has been excluded from the calculations of the proportion of total U.K. aid which was allocated to water and sewerage projects since only a fraction of the loan to date has been committed to particular projects, and also since it falls outside the period under consideration i.e. 1960/61 - 1969. However, water projects which have been approved for U.K. financing under loan No. 4 have been included in Table II, for interests sake.

### History of the Water Development Programme

#### (A) Reservoir Construction Phase

Mauritius is a well-watered island, receiving over 200 inches of rainfall per annum in the Central Uplands and approximately 35-40 inches along the West Coast, which represent the two extremes of rainfall on the Island. In the past, the provision of water for any purpose was simple and inexpensive, usually requiring no more than the construction of a channel from the source (either a stream or spring) to the point of demand in the town, village, factory or field. In this way, most sources were rapidly developed up to the limit of their base flow. However, by the late nineteenth century the demand for water exceeded the supply of water available from unregulated sources. Fortunately, in the heavy rainfall areas of the central uplands there were suitable sites for the storage of water and in 1885 the original Mare aux Vacoas reservoir was constructed with a capacity of 9 million cubic feet. Seven years later this was increased to 126 million cubic feet, and four subsequent increases, the last in 1960, have now given the reservoir a total capacity of 975 million cubic feet, making it the largest in Mauritius. Since 1926 it has been a multi purpose dam and it now supplies water for domestic, hydro electric and irrigation purposes. Currently the average annual despatch from the reservoir is 1350 million cubic feet: of this quantity 900 million cubic feet goes to domestic and industrial users and the remainder passes through Tamarin Falls and Magenta hydro-electric generating stations, before use in irrigation.

The next reservoirs constructed were La Ferme, which has a capacity of 416 million cubic feet, completed in 1918 and La Nicoliere, which has a capacity of 204 million cubic feet and which

was constructed in 1928, both for irrigation supply to the drier areas of the west and north respectively. Work was also started on the proposed Midlands reservoir about this time but was abandoned in 1929 for financial reasons and only recently restarted.

After the War, demand for water had once again outstripped supplies and in 1946 work started on the Mare Longue reservoir, with a capacity of 220 million cubic feet, followed immediately by Tamarin Falls reservoir, constructed in 1947 and with a capacity of 72 million cubic feet. These two reservoirs augment the irrigation supply from Mare aux Vacoas, the water first being used to generate energy at Tamarin Falls and Magenta stations.

The most recent reservoirs to be constructed were the Piton du Milieu, with a capacity of 112 million cubic feet, completed in 1954 and the Eau Bleue, with a capacity of 216 million cubic feet in 1960. Piton du Milieu is used exclusively for domestic water supply in the north and east of the Island, and the second is intended primarily for power generation, although giving some small irrigation benefit by regulating river flows. Small private reservoirs have also been constructed at Valetta and La Dagotiere, with a capacity of 69 and 8 million cubic feet respectively.

This reservoir construction phase, lasting over 70 years has provided some 2300 million cubic feet of storage capacity and permitted the expansion of water development for all purposes. Although more expensive than the earlier run of the river schemes, project costs for this second stage were not excessively high as the storage sites were generally very suitable, and the high run-off meant full utilization of both storage and conveyance facilities.

Map I, attached as Appendix I to this paper, shows the location of the reservoirs mentioned in the text which have been constructed by the Ministry of Works.

(B) The Domestic Water Supply Systems

The present supply of treated water for domestic and industrial use in Mauritius is 5,830,000 cubic feet per i.e. 2120 million cubic feet per year. The present consumption per head is approximately 30 gallons per day in the rural areas, as compared with 15 gallons in 1946 and in the urban areas consumption per head is 45 gallons per day, having risen from 27 gallons per head per day in 1946. The major reason for the increased consumption of water by households over this period was the expansion of the main sewerage system, and per capita increases in domestic water consumption in the next few years will only be slight.

There are three distribution systems in Mauritius which supply water to households, the Mare aux Vacoas system, the Piton du Milieu and others system and the Port Louis system: the two former distribution systems are run by the Ministry of Works and the latter system by the Municipality of Port Louis. Table III below shows the volume of water supplied per day by each system in 1970

Table III

	<u>Water Supplied in 1970</u>	
	mft <sup>3</sup> /per day	mgd
Port Louis	1.94	12.10
Mare aux Vacoas	2.90	18.03
Piton du Milieu and others	1.31	8.14
<u>Port Louis</u>	<u>6.15</u>	<u>38.27</u>

The Municipality of Port Louis has been responsible for water supplies in the greater part of the city throughout its history. A weir across Grand Riviere Nord Ouest, seven kilometres south east of Port Louis allows water to be supplied by gravity through three pipelines with a combined capacity of 2120 million cubic feet per day to Port Louis. In addition, there are four service reservoirs, with a total capacity of ~~270~~ 15,000 cubic feet situated on the slopes commanding the town.

There are 8,000 metered connections, plus 1,000 "prise" connections, intended to give a constant daily quantity controlled by orifice, and free connections for fountains for public use and Government buildings.

### Mare aux Vacoas

The Mare aux Vacoas system supplies mostly the urban areas in the western half of Mauritius e.g. Plaines Wilhems, Vacoas, Moka and the upper areas of Grand Port and Savanne, as illustrated in Map 2. in the Appendix. It also supplies some 180,000 cubic feet a day to the Port Louis area.

Mare aux Vacoas is a multi purpose reservoir; roughly two thirds of its water supply is drawn off for domestic purposes and the remaining one third goes to irrigation and for hydro electric power purposes. The catchment area of the reservoir has a mean annual yield of 1412 million cubic feet. In a year of average rainfall the reservoir can be expected to yield about 3.5 million cubic feet per day.

Water from the reservoir is purified at La Marie treatment works (slow sand filtration and gas chlorination) which has a capacity of 2120 cubic feet per day while 780,000 cubic feet of groundwater are pumped into the distribution system.

The Mare aux Vacoas system supplies 20,000 metered and over 9,000 unmetered connections.

### Piton du Milieu

The Piton du Milieu system, supplies mostly the rural areas in the North, East, and South of the Island, the main source of supply is the Piton du Milieu reservoir, at present supplying 600,000 cubic feet per day ( 3.74 mgd) to Flacq in the East, Grand Port in the South east and parts of the Pamplémousses and Riviere du Rempart in the North. Treatment is by coagulation, rapid sand filtration and chlorination. The remaining areas of Pamplémousses are supplied with treated water drawn from the Riviere du Rempart and filtered at La Nicoliere ( 180,000 cu ft. per day) and with chlorinated water from the Ruisseau Jamban ( 72,000 per day).

(C) Irrigation Water Supplies

The supply of irrigation water supplies lies almost exclusively in the hands of private schemes and only 15-20 per cent of the total area irrigated is supplied by Government systems run by the Ministry of Works. Some 2475 million cubic feet of irrigation water a year are supplied by the Ministry of Works to irrigate approximately 6,000 acres as compared with some 6255 million cubic feet per annum supplied by private schemes to irrigate some 30,000 acres per year.

(D) The Sewerage System

The first region in Mauritius to have a main sewerage system was Port Louis, and it was based on the recommendation of the first report relating to sanitation published in the Island in 1892. The report recommended that the disposal of slop water (or sullage as it is termed today) containing kitchen waste in solution could be "more safely and satisfactorily effected through a system of enclosed underground conduits" rather than ejected into the street gutters as was done at that time. The report further advised that the system should be of adequate capacity to receive at a later date, sewerage, when the population of Port Louis could be persuaded to exchange their buckets for water closets.

The system proposed by this report was implemented and by the beginning of the twentieth century work was got underway and by 1920 the reticulation system had extended almost everywhere to the Municipal boundary, as it existed at that time. A continuous programme of expansion and modernization of the sewerage system of Port Louis has been carried out from the 1920's up to the present day as the town grew and extended its earlier boundaries. However, even as early as the 1930's the problem of containing the sewerage in the pipes was becoming serious, and since the mid 1930's it has become an increasingly major problem. Compromise has been reached in numerous places where sewerage could conveniently be allowed to discharge into surface water courses. A comprehensive report of the Port Louis sewerage system carried out in 1964 stated that the situation in respect to the degree of overloading of the reticulation system was "very little better than in the 1920's" (A Gibb and Partners).

The only other region in Mauritius which enjoys a main sewerage system is the Plaines Wilhems area, where work started in the late 1950's on a 20 year programme designed eventually to connect all households in the urban areas to a main system while leaving the rural areas on the septic tank system. Over the whole period it is estimated that 25,000-30,000 households will be connected to the main sewerage system. The design of the two main sewers which serve the system has been based on the load carrying capacity which will be required of them by 1980, and the Plaines Wilhems scheme therefore has never been faced with the problems which have continually beset the Port Louis sewerage scheme i.e. problems caused basically by an overloaded system of which certain parts are quite old, and on which insufficient capital expenditure was expended, at least until very recently. to meet growing demands made on the system.

EVALUATION OF THE PROGRAMME FOR EXPANDING OWS AND  
THE SEWERAGE SYSTEM, OVER THE PERIOD 1960-1970

DOMESTIC WATER SUPPLIES AND THE SEWERAGE SYSTEM

Over the ten year period 1960/61 to 1969/70 capital investment outlays by the Ministry of Works on the development of domestic water supplies and the sewerage system in Mauritius came to Rs 28 million and Rs 42 million respectively giving a total of Rs 70 million. In addition a further Rs 900,000 of capital investment was undertaken by the Municipality of Port Louis in expanding the domestic water supply reticulation system in Port Louis. A sum of Rs 10 million was expended on increasing supplies of irrigation water. Therefore out of a total capital investment programme of Rs 540 million undertaken by the public sector during the 1960's, approximately 12 percent of this was devoted to improving and expanding the domestic water supply system and the sewerage system. Table IA in the appendix gives a breakdown of capital expenditures by the Ministry of Works and the Municipality of Port Louis by year.

10-

Evaluation of the Programme for developing Domestic  
Water Supplies & the Main Sewerage System 1960-1970

(a) Sewerage System

In trying to evaluate the economic impact of any capital project or capital investment programme the first step is to decide which costs and benefits can be quantified and which are not capable of quantification. As far as the evaluation of a sewerage system is concerned, the major economic and social justification for any such scheme is the prevention of disease caused by insanitary conditions, which cannot be discussed in purely quantitative terms. And the technical justification for any scheme is how efficiently the system can cope with disposal of sewerage and other waste matters

With the rapid growth in population in Mauritius from the 1950's onwards, following the eradication of malaria after the War, it became imperative that the more densely populated areas in Mauritius be provided with a main sewerage system. Port Louis was already on a main sewerage system, <sup>albeit</sup> all but one that was feeling the strain of the demands being made upon it, while the Plaines Wilhems area, which is the main region in Mauritius outside Port Louis where urbanization has concentrated, had no such system. During the period under consideration, 1960-1970, approximately seven-eighths of all capital expenditure on sewerage works fell under the Plaines Wilhems sewerage scheme. The work undertaken during the period 1960-1970 is part of a continuing programme which was begun in 1958 and which is concerned to provide all the urban areas of the Plaines Wilhems district with a main sewerage system, while leaving the rural areas on the septic tank system, which is adequate where population densities are lower. The design of the main sewerage system in the Plaines Wilhems district is based on the recommendations of the Hamlin report which was submitted in the mid 1950's; the contract documents were drawn up by A Gibb and Partners and work has been carried out by the Ministry of Works. The whole system has been designed to meet the load carrying capacity which will be required by 1980. There will eventually be two main sewers serving the whole of the urban areas in Plaines Wilhems. During the years 1960-1970 the first main sewer was laid and work begun on connecting households to the main sewer.

In contrast to the Port Louis main sewerage system where the reticulation system has been over-loaded since the 1930's because

of lack of capital funds to expand the system at a fast enough rate to match the expansion of the town and where the situation has been aggravated by a low standard of maintenance - maintenance has come to mean "unblocking" the system and the more important work of inspection so as to take preventive action at an early stage has been largely non-existent mainly due to staff problems - the Plaines Wilhems sewerage works to date has been able to cope efficiently with the sewerage flow and technical difficulties have been minimal. Further in Port Louis, the Ministry of Health considers that public health is "directly menaced" by insanitary conditions. Sewage flows continuously down the main streams which drain through the town: since the pipes cannot contain the sewage, overflow pipes have been build into the manholes to allow sewage to be fed into the streams as and when necessary. This state of affairs has never been reached in the Plaines Wilhems area, where the general level of sanitation is far better. (The situation in Port Louis is presently being rectified under proposals to expand and improve the sewerage system contained in the Development Plan). Given that only so much money is available to spend on improving sewerage systems over any given period, the first order of priority in the late 1950's was undoubtedly to begin work on the Plaines Wilhems area where no main sewerage system existed. Although it is not possible to quantify the benefits of the development of the main sewerage system in the Plaines Wilhems area over the years 1960-1970 it is safe to say that the relatively low incidence of disease attributable to bad sanitation which prevailed during this period was largely a result of the development of the sewerage system.

(b) Water

Domestic Supplies

Looking firstly at the financial balance sheet of the costs and revenues of the domestic water supply system in Mauritius it is immediately apparent that the system has been running at a large loss over the period under consideration is 1960/61 to 1969/70. Taking only recurrent costs and comparing these with recurrent revenues attributable to the domestic water supply system it can be seen that there is a very big deficit between costs and revenues. Total annual recurrent revenues of the Ministry of Works and the Municipality of Port Louis amounted to Rs 23 million over the ten year period 1960/61 to 1969/70 - while total recurrent costs over the same period came to some Rs 65 million. Table A2 gives the itemized breakdown of costs. Over ten years that was equivalent to an annual operating loss of approximately Rs 4.2 million. On top of this must be considered the further expenditure of Rs 29 million by the two domestic water authorities on capital works over the period under review, on which a negative rate of return was earned, since not even operating costs on the total scheme could be covered.

The return to the economy of the development of the domestic water supply system cannot be measured however in purely financial terms. The Government has been loth in the past to raise the water tariff because they feel that the population would not be prepared to pay a higher water tariff than that then ruling. Water rates for domestic use in Mauritius are 11 cents a cubic metre below and 16 cents at points above filter beds. For comparison, comparable rates charged in Mbabane, Swaziland are 50 cents and in Mombasa, Kenya are 80 cents. This has been a delicate political issue for a long time and one that is therefore hard to come to a firm conclusion on one way or the other. I would argue however that the population would probably agree to some raising of the water tariff, even if not up to levels which would ensure that capital invested in the domestic water supply, and that they are enjoying a considerable consumer surplus at the present time, and that they would even indirectly benefit from the raising of the water rate.

/At

At the present time there is a terrific wastage of domestic water - it is common knowledge that taps are frequently left running, because the consumers are so used to considering water as a free good (or virtually free good). And this situation is combined with the absurd consequence whereby many areas are left without water for long periods of the day during certain months. If the water tariff were raised to a more economic level, it would discourage the indiscriminate wastage of water, such as occurs at the moment, and this would help to alleviate the widespread problem of water shortage. Further, because the domestic water supply system has been operating at a financial loss, since records have been kept, the standard of maintenance of the system has been well below that necessary and this has therefore militated against operating efficiency. In the Development Plan, it is proposed to spend Rs 49 million on expanding domestic water supplies over the Plan period, which is 13 percent of all capital expenditure planned by the Ministries over the period 1970/71 to 1974/75. If this investment is to provide the maximum return to the economy, then the price charged for water must be set at a level which encourages a more rational use of water in relation to the cost of providing it.

A major secondary benefit often claimed for domestic water schemes is that they improve the standard of health of the population, by reducing the incidence of water borne diseases. In a densely populated country like Mauritius, the provision of treated water to 95 percent of the population must obviously be counted as a positive factor to be attributed to the domestic water supply system.

#### Irrigation Water

A similar picture emerges when one examines the history of Government irrigation schemes. The tradition of charging very low water tariffs has encouraged the wasteful use of water. This difference is highlighted when a comparison is made of the number of arpents irrigated per unit of water between Government and privately run irrigation water schemes in 1969/70. The price of irrigation water at La Nicoliers, a private scheme, is double that at La Ferme and Magenta, two Government schemes, and this is reflected in a far more sparing use being made of water.

/Irrigation

<u>Irrigation System</u>	<u>Irrigation Water at point of silo (m<sup>3</sup> pa)</u>	<u>Number of Argents Irrigated</u>
Mare aux Vacoas	35	2,500
La Ferme	20	1,500
La Nicoliere	15	2,200

Although I wasn't able to obtain figures on net returns per acre on these three areas, there cannot be any doubt that wastage of water occurs on the Government scheme, simply by comparing the figures in the above table. In fact as far back as the 1920's the various Government irrigation schemes were operating at a loss, in most case revenues from sales of water were failing to cover expenditure on operation and maintenance of the supply system. The investment of new capital was undertaken with no anticipation of recovery of capital or even interest payments being made on the capital. Table A-3 and A-4 which show the total capital and recurrent expenditure by the Ministry of Works over the period 1960/61 - 1969/70 and the recurrent revenues, demonstrate clearly that over this period recurrent expenditure on the Government irrigation schemes consistently exceeded revenues from such schemes.

In Summary

The main conclusion which can be drawn from this paper is I think the detrimental effect on the benefits to be derived from a water supply system, when there is a long tradition in an economy by the population of considering water as a free good. It is extremely hard to estimate the return to capital investment in a domestic water supply system when the price of water is deliberately kept both well below the economic cost of providing such water, and also I suspect below what people would in fact be prepared to pay, since it is extremely difficult to know what value to put on that water. However it is obvious that the economic return on investment in the domestic water supply system far exceeds the financial return and that both could be improved by raising the water tariff.

Table A-I

ACTUAL CAPITAL EXPENDITURE ON THE WATER SUPPLY SYSTEM 1960-1970

(Rs '000)

MINISTRY OF WORKS					Municipality of Port Louis
Year	Domestic Water Supplies	Irrigation Works	Sewerage*	Total	Domestic Water Supplies
1960-61	3,540	306	1,044	7,890	n.a.
1961-62	813	1,418	4,091	6,322	163 (half yr)
1962-63	2,019	179	4,509	6,707	385
1963-64	2,344	574	6,410	9,328	46
1964-65	2,631	3,385	3,068	9,084	179
1965-66	3,713	439	2,197	6,349	95
1966-67	3,002	903	2,651	6,556	32
1967-68	4,186	728	3,284	8,198	14
1968-69	2,985	760	5,939	9,684	11
1969-70	2,802	946	5,338	9,086	NIL
<b>TOTAL</b>	<b>28,035</b>	<b>9,638</b>	<b>41,531</b>	<b>79,204</b>	<b>925</b>

\* of which approximately  $\frac{1}{3}$  refers to the Plaines Wilhems Sewerage Scheme

Table A-2

Balance Sheet of Costs and Revenues of Domestic Water Supply System in Mauritius

(Rs '000)									
Year	Actual Capital Expenditures, Ministry of Works	Actual Capital Expenditures, Municipality of Port Louis	Recurrent Expenditures Ministry of Works Excluding Enrolments	Overheads Attributable To Domestic Water Supplies M/Works	Recurrent Expenditures Municipality of Port Louis	Total Annual Costs	Annual Recurrent Revenues Ministry of Works	Annual Recurrent Revenues Municipality of Port Louis	Total Annual Recurrent Revenues
50/61	3,540	NA	1,816	NA	NA	5,356	870	NA	870
51/62	813	326*	1,639	553	766*	4,097	1,027	348*	1,375
52/63	2,019	385	1,604	682	693	5,383	1,150	329	1,479
53/64	2,344	46	1,821	663	735	5,609	1,253	386	1,639
54/65	2,631	179	2,060	1,116	722	6,708	1,238	400	1,638
55/66	3,713	95	1,879	1,415	705	7,807	2,253	380	2,633
56/67	3,002	32	2,089	1,728	790	7,641	2,454	385	2,839
57/68	4,186	14	2,136	1,269	779	8,384	2,524	455	2,979
58/69	2,985	10	2,086	1,390	757	7,228	2,650	634	3,284
59/70	2,802	-	2,217	1,404	639	7,062	2,722	1,020	3,742
<b>TOTAL</b>	<b>28,035</b>	<b>1,087</b>	<b>19,347</b>	<b>10,220</b>	<b>6,586</b>	<b>65,275</b>	<b>18,141</b>	<b>4,337</b>	<b>22,478</b>

Table A-3

ACTUAL CAPITAL EXPENDITURE - MINISTRY OF WORKS 1960-1970

(Rs 000)

Year	Domestic Water Supplies	Irrigation Works	Sewerage	Total
1960-61	3,540	306	4,044	7,890
1961-62	813	1,418	4,091	6,322
1962-63	2,019	179	4,509	6,707
1963-64	2,344	574	6,410	9,328
1964-65	2,631	3,385	3,068	9,084
1965-66	3,713	439	2,197	6,349
1966-67	3,002	903	2,651	6,556
1967-68	4,186	728	3,284	8,198
1968-69	2,985	760	5,939	9,684
1969-70	2,802	946	5,338	9,086
<b>TOTAL</b>	<b>28,035</b>	<b>9,638</b>	<b>41,531</b>	<b>79,204</b>

Table A-4  
 MINISTRY OF WORKS  
 RECURRENT EXPENDITURE AND REVENUES

Year	EXPENDITURE				REVENUES				
	Domestic Water Supplies	Irrigation	Sewerage	Hydrological Section	Total	District Domestic Water Supply	Mare-aux-Vaccas Domestic Water Supply	Irrigation Dues	Total
1960-61	1,816,081	383,331	146,118		2,345,530	294,440	575,297	129,079	998,816
1961-62	1,639,059	391,841	190,550		2,221,450	324,243	703,210	79,100	1,106,553
1962-63	1,603,984	365,660	164,922		2,134,566	395,457	754,043	134,513	1,284,013
1963-64	1,821,403	470,559	176,185		2,468,147	479,863	772,912	132,163	1,384,938
1964-65	2,060,466	462,597	135,737		2,658,800	486,583	752,371	166,872	1,405,826
1965-66	1,879,389	416,710	259,081		2,555,180	925,569	1,326,949	174,277	2,426,795
1966-67	2,088,853	415,583	175,439		2,679,875	941,962	1,512,042	139,585	2,593,589
1967-68	2,136,365	396,804	195,100	29,699	2,728,269	1,076,857	1,446,944	135,751	2,659,552
1968-69	2,085,810	399,146	322,563	9,722	2,807,519	1,050,000	1,600,000	165,000	2,815,000
1969-70	2,216,512	401,187	263,428	17,675	2,898,802	1,131,734	1,589,973	87,523	2,809,230