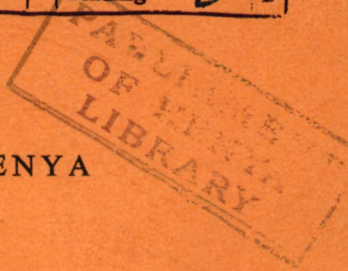


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REPUBLIC OF KENYA



Mombasa Pipeline Board

*Report and Accounts
for
Financial Year Ending
30th June 1970*

KENYA NATIONAL ASSEMBLY
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Mombasa Pipeline Board

Report and Accounts
for
Financial Year Ending
30th June 1970

MOMBASA PIPELINE BOARD

REPORT AND ACCOUNTS FOR THE FINANCIAL YEAR ENDED 30th JUNE 1970

Constitution of the Board

During the year under review, the Board was constituted as follows:—

Chairman

V. G. Matthews, Esq., C.M.G., O.B.E., B.Sc.

Vice-Chairman

Johnson Mweru, Esq.

Members

Rockie Mchinga, Esq.

Councillor Abdallah Ndovu Mwidau, Esq. (Mombasa Municipal Council).

The Deputy Director (Agriculture), Ministry of Agriculture, Government of Kenya.

Chief Ports Manager (Harbours Corporation).

P. Mwangola, Esq., Railway Corporation H.Q., Nairobi.

The Permanent Secretary Ministry of Agriculture, Government of Kenya.

The Permanent Secretary, Ministry of Works, Government of Uganda.

Secretary

O. S. Cege, B.E. (Civil), D.I.C., Director of Water Development, Government of Kenya.

Systems Operated

The Board's bulk supplies are delivered by two major pipe-lines connected with their respective sources of supply. These are:—

1. The Mzima/Mombasa Pipeline, and
2. The Mrere/Mombasa Pipeline.

The Mzima/Mombasa Pipeline a 24 inch pre-stressed concrete pipe laid through the arid country north-west of Mombasa delivers water from the Mzima Springs in Tsavo West National Park to the Reservoirs at Mazeras 130 miles to the south-east. The reservoirs are three pre-stressed concrete tanks each with a capacity of six million gallons making a total of 18 million gallons. From the Mazeras Reservoirs this Mzima water is conducted by twin 21 inch pre-stressed concrete pipelines which convey the water in the first instance to the service Reservoirs at Changamwe prior to discharge into the Mombasa reticulation system. These reservoirs have a capacity of some 6.5 million gallons.

The Mrere Pipeline is a cement lined steel pipeline which takes its supply from the Mrere Springs in the Shimba Hills 20 miles to the south of Mombasa. The water is conducted to the Service Reservoirs at Changamwe where it mixes with the incoming Mzima water. From Changamwe where the Board sells the water in bulk to the Ministry of Agriculture as the Water Undertaker, the water so mixed is reticulated into the Mombasa Water Supply.

There are a number of subsidiary lines to various parts of the north and south coastal regions which derive their supply from the above two major systems.

(a) The North Mainland Supply which delivers water to the Mainland north of Mombasa including Nyali, Bamburi, Kisauni and Shimo-la-Tewa is comprised of a 10 inch main drawing Mzima water from the Mazeras Reservoirs and capable of delivering 775,000 gallons a day to twin reservoirs at Nguu Tatu 12 miles to the north-east. From here the water is reticulated to the several areas under the régime as referred to above. The reservoirs have a combined capacity of 1 million gallons.

In order to reduce to a minimum the difficulties caused by the not infrequent rupture of this pipeline resulting from soil movement in the unstable terrain through which the line is laid, a six inch pipeline has now been carried over the Nyali Bridge which links Mombasa Island with the North Mainland. This pipeline derives its supply from the Mombasa Mains and was originally installed to feed water into the North Mainland reticulation system only when that supply suffered interruption. It is possible however that with increasing demand on the North Mainland this line, the flow through which is boosted by pump, will be part of the continuous supply to that area.

(b) A further pipeline originates at the Mazeras Reservoirs, viz. the Mazeras/Kilifi Pipeline delivering water as far north as Kilifi. This six inch asbestos cement pipe can deliver 350,000 gallons per diem and is regulated by three tank reservoirs of 100,000 gallons each at Ribe, Kaloleni and Mikirani. This is of course also Mzima water. If the economics of such an extension prove acceptable, it is possible that this line may be extended as far as Sokoke.

(c) On the South Mainland there are two subsidiary supplies taken from a single connexion to the Mrere Pipeline near Kaya Bombo. A connecting pipe to the main pipeline conducts water to a 250,000 gallons tank reservoir on the Kaya Bombo Hill and from thence one branch pipeline supplies water northwards as far as Likoni and another conducts it southwards as far as Diani. The connecting pipeline is capable of delivering 450,000 gallons per diem to the two systems.

As with all water pipelines, operation in practice is often different from operation in theory. The North Mainland pipeline, as already indicated, has proved troublesome in the past due to not infrequent ruptures from soil movement. This pipeline which is some 12 miles long passes through very unstable country, through ravines and across both creeks and water courses. The danger of rupture is particularly acute in times of heavy rain. The new pipeline across the Nyali Bridge which (as stated above) is designed to minimize the difficulties caused by the rupture of the main pipeline has proved very difficult to install. The bridge rises and falls with the tide and the special joints linking the various sections of the pipe have not proved successful in absorbing this movement. At the time of writing further experiments are being made by the Operating Agents to find a solution to this problem. In the meantime, it is regrettable to have to report that consumers on the North Mainland, including in particular the two major tourist hotels, the Nyali Beach Hotel and the Mombasa Beach Hotel have occasionally suffered a shortage. This occurred in spite of every effort made by the Operating Agents and the Board to avoid such a contingency. The Board is very conscious that the development of their supplies in the North Mainland has

encouraged both residential and tourist development and is particularly anxious that such development should not be embarrassed by water shortage. It intends to take every practical step to safeguard these supplies and render them satisfactory.

The Mombasa/Mzima Pipeline which at 130 miles is the longest gravity pipeline in the world is also very vulnerable. It is exposed both to the action of aggressive soils and of seismic tremor. In addition because of its length and the material of its construction, it is particularly liable to damage by water hammer. The pipeline which is 24 inches in diameter is designed to carry up to eight million gallons per diem and a burst of the pipe is a very serious matter. Although experience has produced considerable expertise in the process of repairing a rupture, refilling the pipeline after a break is a long process and the danger of shortage in the supply is always there.

During the year under report there were three such bursts each following the other at intervals so short that there was no time for the Mazeras Reservoirs to refill. Nevertheless although shortage was experienced by consumers between Mazeras and Chagamwe the Mombasa water supply continuously served over the period by two million gallons per diem from the Mrere Pipeline and partially insulated from trouble by the storage capacity of 6.5 million gallons at the Chagamwe Service Reservoirs suffered little inconvenience. Nevertheless the occurrence high-lights the danger and demonstrates the urgency of installing the automatic valve linkage control referred to in the last Annual Report.

The difficulties experienced with the North Mainland Pipeline and the Nyali Bridge Pipeline link have already been referred to. The South Mainland supply and the new Mazeras/Kilifi Pipeline however operated smoothly throughout the year.

The Mombasa Pipeline Board administers the projects herein described under the authority of the Mombasa Pipeline Board Act (No. 19 of 1957), which makes the Board responsible in the discharge of its functions to the Minister for the time being in charge of water. During the year under report this continued to be the Minister for Agriculture.

The actual operation and the maintenance of the systems is undertaken by the Directorate of the Water Development Division, Ministry of Agriculture, Government of Kenya acting as the Board's specifically appointed Agents. The fees for these services are calculated in accordance with an agreed formula.

The plan at Appendix I shows the layout of the systems operated by the Board.

Finance

(a) Capital Account

The capital at charge on the 1st of July 1969, was K£5.285 million made up as follows:—

(i) Mzima System—K£4.706 million.

(ii) Mrere System—K£44,394.

(iii) North Mainland System—K£173,738.

(iv) The South Mainland and the Mazeras/Kilifi System—K£360,970.

The capital is wholly borrowed or loan capital, the creditors being the Government of Kenya for projects (i) (ii) and (iii) and the East African Railways and

Harbours Corporation, Barclays Bank D.C.O., the National and Grindlays Bank and the Standard Bank in respect of project (i) only. The three banks loaned as a consortium a total of K£1,350,000, the repayment of which is guaranteed by the Government of Kenya. This loan is covered by an issue of Registered Bonds. The loans and guarantee by the Government of Kenya are secured by a debenture issued to the Government by the Board. The new South Mainland project and the Mazaras/ Kilifi project referred to under (iv) have been financed partly by a loan made by the Israeli Government to the Kenya Government and relented to the Board, partly by a loan from the British Government and partly from the Board's own resources. The terms of the Israeli loan are interest at 6 per cent and a period of seven years. In recognition of the fact that seven years is an impossibly short life in respect of projects of this kind, the Government of Kenya in relending extended the period to 25 years. Even 25 years is a short period in relation to such projects and this has inevitably had its effect on the charges which have necessarily had to be made to the consumers for the water from these new supplies. Of the 25 year term, two years were taken up in construction. The Board was not permitted to capitalize the interest during this construction period and the need to find funds to pay interest during a period of no revenue also had its effect upon the water tariff. The loan is to be repaid over the remaining 23 years in equated instalments at 6 per cent. The same terms apply to the British Government loan.

The Mrere project and the North Mainland project were financed by loans from the Government of Kenya. These are being repaid by equated instalments of interest and capital, the details of which can be seen in the Accounts. Repayment in respect of the Mrere project commenced in 1958 and in 1962 in respect of the North Mainland project.

The loan of K£500,000 made to the Mzima/Mombasa project by the then Railways and Harbours Administration (now the separate Railways Corporation and the Haroburs Corporation) was under negotiation for renewal when the last Annual Report was being compiled. In the event the two Corporations jointly agreed to renew the loan until the 31st of December 1970, at 8 per cent. Even although this level of interest cannot be regarded as unusual in present financial circumstances, it nevertheless represents an increase of 2 per cent on the immediately preceding rate and of 4 per cent on the original lending rate. Further reference to the implications of these ever increasing servicing pressures on the Board's resources is made below.

Loans totalling K£2,170,000 made by the Government of Kenya in respect of the Mzima/Mombasa project fell due for repayment, partly on the 31st of December 1968, and partly on the 1st January 1969. The negotiations for extension referred to in the Annual Report for the Financial Year ending the 30th June 1969, were successful. In the result the loans were extended in the first instance to the 31st of December 1974, although the loan carrying 4 per cent was converted into a loan at 5 per cent. The question of extending these loans beyond the 31st December 1974 and the Railways and Harbours Corporation's loan beyond the 31st December 1970 is at present being examined.

It is perhaps appropriate here to refer to the extraordinary financial difficulties under which the Board has had to operate since its inception in 1958. In the case of major water supply projects, it is normal, if the capital is to be loan capital, to negotiate a loan period bearing relation to the expected life of the asset to be created. Normally too the interest rate would be a fixed one for the period in question. Consequently therefore the administrators of such a project would be well aware of their likely commitment on the purely financial side for a very long period ahead. This of course enables stable planning both with regard to tariff structure and extensions of the project.

It has not been the good fortune of the Mombasa Pipeline Board to enjoy this state of affairs in relation to its major capital liability. Owing to the Government's severe financial stringency at the time in 1956 when increasing pressure on the then Mombasa Water Supply compelled urgent construction of the Mzima Pipeline, funds were obtained wherever they could be found. Much of the original borrowing was very short terms, it being the intention that renewal of the loans would be negotiated as and when necessary or new loans raised. At the time the project was under initiation the general borrowing rate was 4 per cent. As might have been expected it has been impossible for the Board to repay the initial borrowings at the early maturation originally set down. Consequently, it has been necessary to renew these loans from time to time sometimes more than once in the case of the same loan. The renewals have always resulted in an increase in the rate of interest the Board has been required to pay and indeed the latest renewal, that of the Railways and Harbours Corporations, has involved a rate of interest of 8 per cent. Apart from the highly complicating effect this has had upon forward planning, it has probably meant the Board carrying a much higher capital burden in the earlier years than would otherwise have been contemplated. The Mombasa/Mzima Pipeline was designed in 1956 to carry eight million gallons per day. This involved a very high margin over the consumption level then in existence and expected for many years to come. Indeed the total consumption from the pipeline has not yet reached eight million gallons. This means that the Board has had to carry the capital cost of this surplus capacity during all the years of its existence without a corresponding revenue. It may be fairly assumed that the design in 1956 would not have involved such a surplus had rates of interest at that time been the rates of interest the Board now has to carry on the capital at charge. In addition, the design engineers looked well ahead. In anticipation of the time when a second pipeline would be required the original design provided for the duplication of many of the ancillary installations. This was a wise precaution but the capital burden of these assets created in a period of low interest rates has to be carried by the Board at the high rates of interest subsequently prevailing. The difficulty the Board has experienced in remaining financially viable and yet avoiding oppressive water tariffs can be appreciated. Such a situation could well have discouraged any Board from pursuing anything but a highly cautious and probably static policy. Nobody will therefore grudge credit to the Board for its courageous forward policy of pushing its installations out to wherever the water could be advantageously piped. This policy has had a profound influence on development in the coastal areas. When the Board assumed control in 1958 the supply was virtually confined to Mombasa Island. Now, only 12 years later, the Board's régime stretches from Kilifi 30 miles north of Mombasa Island to Diani 20 miles south.

(i) Capital repayments during the year were as follows:—

- (a) Mzima System—K£119,625.
- (b) Mrere System—K£2,955.
- (c) North Mainland System—K£6,576.
- (d) Mazaras/Kilifi and South Mainland Installations—K£ Nil.

(ii) The Capital remaining at charge at the end of the year on the 30th June 1970, was K£5.195 million made up as follows:—

- (a) Mzima—K£4.586 million.
- (b) Mrere—K£41,439.
- (c) North Mainland—K£167,162.
- (d) Mazaras/Kilifi and South Mainland Installations—K£400,193.

(b) *Revenue*

The year under review represented the first full twelve months of the increased charges referred to in the corresponding section of the Board's Report for the Financial Year ending the 30th June 1969.

Below are set out the comparative figures of consumption and revenue for the year ending 30th June 1969, and for that ending the 30th June 1970. These figures are given in respect of the Board's principal régimes.

YEAR ENDED 30th JUNE 1969

<i>Mombasa and District</i>		<i>North Mainland</i>		<i>Mazeras/Kilifi</i>		<i>South Mainland</i>	
Consumption million gallons	Revenue K£	Consumption million gallons	Revenue K£	Consumption gallon	Revenue K£	Consumption gallons	Revenue K£
2,153	479,147	217	44,206	4,907,100	1,840	20,221,000	7,583

YEAR ENDED 30th JUNE 1970

<i>Mombasa and District</i>		<i>North Mainland</i>		<i>Mazeras/Kilifi</i>		<i>South Mainland</i>	
Consumption million gallons	Revenue K£	Consumption million gallons	Revenue K£	Consumption gallon	Revenue K£	Consumption gallons	Revenue K£
2,321	532,335	251	49,391	26,000,000	9,647	56,000,000	21,134

Thus all these major installations showed significant increases both consumption and revenue-wise. The biggest relative increase was in the Mazeras/Kilifi section where the delay in supplying adequate reticulation referred to last year has been partially rectified. The increase of some 14 per cent disclosed by the consumption figures of the North Mainland supply would doubtless have been bigger but for the unfortunate interruptions referred to elsewhere.

(c) *Expenditure*

The Boards outgoings fell under four headings—

- (i) The service charges on and repayments of the outstanding capital loans.
- (ii) Fees paid to the Directorate of Water Development in respect of the operation and maintenance of the Board's installations.
- (iii) Expenditure on new work and improvements, special maintenance, etc.
- (iv) The cost of the Board and its staff.

These for the year under review were as follows:—

- (i) K£424,094.
- (ii) K£65,938.
- (iii) K£53,600.
- (iv) K£4,107.

Item (iv) represents less than 0.8 of one per cent of the total.

(d) *Financial Results for the Year*

The Board's overall revenue comprising the income from sale of water and certain minor sources such as house and meter rents totalled K£628,506-1-65. With a total outgoing of K£547,739 the year's working disclosed an operating

surplus of K£80,767. This is the amount therefore available from the year's working to be conveyed to the Reserve Fund and brings the total of the Fund to K£396,930 as at 1st July 1970. With all the possible commitments to which it might be exposed the Board would have liked to have seen this at a substantially higher level but with the severe drain on the Board's resources represented not only by substantial capital repayments but also actual new capital expenditure, a more rapid build up can hardly be expected.

(e) *Operation of the Systems*

(i) *The Mzima Pipeline.*—As indicated elsewhere in this Report this is the major of two pipelines serving Mombasa and originates at the source at the Mzima Springs in Tsavo National Park. The water is conducted by gravity along the 130 mile length of pre-stressed concrete pipeline to reservoirs at Mazeras. Hydrostatic pressure is controlled within the pipeline by the provision of 10 Break Pressure Tanks along its length. This Break Pressure Tank system has proved inefficient in practice in relation to the working capacity of the line and steps are in process of being taken to establish the more efficient system of valve linkages. This in turn will involve the stopping of the overflow at Break Pressure Tanks which has hitherto occurred. This stoppage is likely to involve complication quite unconnected with the Board's functions. As the pipeline runs for most of its course through semi-desert country, the fairly copious overflow from the Break Pressure Tanks has attracted small concentrations of people together with their cattle. In some places the fortuitous overflow has even been employed for irrigation. Mindful of the future, the Board in close collaboration with the local administration has made it quite clear over a period of years to the people concerned that one day this fortuitous water supply would disappear. Nevertheless the fact of the establishment of these centres of population cannot simply be ignored and while it is no function of the Board to provide water in these cases, it would be impolitic not to say inhuman simply to cut off the water without making alternative provision. To avoid hardship therefore the Board has agreed to establish regular watering points at suitable places to replace the supply from break pressure tanks now to be stopped. The question of which authority pays for these watering points or the cost of any subsidy on the normal bulk charge is under consideration, but although it would appear no part of the Board's responsibility to provide these funds the Board has decided that to avoid hardship it will meet the cost in the first instance.

Not a great deal of progress was made in the examination of the Pemba River as a possible supplementing source to the Board's present water resources (Vide page 7 of the Annual Report for 1969/70.) In the location of a suitable dam site, aerial survey is essential. Unfortunately, on the only occasions when aerial survey facilities were available, cloud conditions locally prevented operations. Attempts to complete the survey are continuing.

(ii) *North Mainland Pipeline.*—This pipeline conveys Mzima Water from the Reservoirs at Mazeras to the Mainland North of Mombasa, the régime covering Nyali, Bamburi, Kisauni and Shimo-la-Tewa. The pipeline leaves the Mazeras Reservoirs in a north-easterly direction to storage reservoirs on the hillside at Nguu Tatu 12 miles from Mazeras. From the Reservoirs the water is reticulated to the various areas referred to above.

As stated earlier in this Report and as will be perceived from a perusal of previous Annual Reports, this pipeline is a source of anxiety to the Board. It traverses a hilly country with unstable soils and crosses a number of water courses. In times of heavy rain, fractures of the pipeline by soil movement or water inundation are frequent. The Board last year decided therefore to safeguard the supply to the North Mainland as far as possible by installing an

emergency pipeline over Nyali Bridge. This pipeline together with the ancillary pumping system was completed during the year and put into operation. It is regrettable to have to report that all has not gone well. The specially imported coupling joints for pipe-sections have not stood up well to the movement the pipe sustains from water level variations in the creek and further consideration as to the type of joint desirable has had to be given. At the time of writing this Report these investigations are still proceeding. In the meantime the line is being operated whenever possible, its function now being more of a continuous supplement to the main supply line than an emergency source in time of breakdown. There is no doubt that with consumption rapidly rising the Board will need to give urgent consideration to further measures that may be necessary to maintain supply at a satisfactory level in this area.

(iii) *Mrere Pipeline.*—The headworks of this pipeline at Mrere are in the Shimba Hills, the water from a number of springs being collected and conducted by the pipeline to Changamwe where some two million gallons a day are delivered. The pipeline which is 27 miles long is undergoing a programme of section by section checking to eliminate corroded parts. The importance of this system as a supplementary supply to Mombasa and the sole supply source for the South Mainland from Likoni to Diani cannot be over emphasized and the Board's policy is to maintain the Mrere installations to the highest possible level of efficiency.

(iv) *The Mazeras Kilifi Pipeline and the Kaya Bomba South Mainland System.*—The Mazeras Kilifi System operated satisfactorily throughout the year although the actual consumption of water was well below what it should have been. This was partially due to the slowness in installing reticulation systems to serve consumers along the pipeline. (See in this connexion pp. 2 and 6 of the Annual Report for the year ending 30th June 1969.) Such installation is not a function or responsibility of the Board but is a matter for the Water Undertakers. This slowness in developing the supply not only impinges adversely upon the financial viability of the project but operates to deny a considerable population a proper water supply although the water is available. Additional reticulation systems are now in process of being installed and it is hoped that next year's Report will record a more favourable result.

The Kenya Bombo South Mainland Installation presented a more satisfactory picture. Not only has the system operated without incident but the actual average consumption of 200,000 gallons per day is well above the predicted figure of 147,000 gallons. The design capacity of this system is 450,000 gallons per day so that the system can be regarded as having an adequate margin certainly for the immediate future. Needless to say however, the rate of development which the installation of this system has catalysed will be carefully watched by the Board so that any need for augmentation will be adequately anticipated. Similar remarks apply of course to the Mazeras Kilifi Installation.

(v) *The Mazeras Reservoirs.*—These comprise three pre-stressed concrete tanks each with a capacity of six million gallons. They are fed by water from the Mzima Springs 130 miles away to the north-west by the Mombasa/Mzima Pipeline. They in turn deliver water to the service reservoirs at Changamwe by twin 21 inch pipelines. They also deliver water direct to the pipelines serving the North Mainland and the Mazeras/Kilifi System. The reservoirs of course represent the first line of defence against a shortage of water in Mombasa in the event of a break in the major pipeline between Mzima and Mazeras.

(vi) *The Changamwe Reservoirs.*—There are six pre-stressed concrete reservoirs at Changamwe having a total capacity of 6.5 million gallons. Although the prime functions of these reservoirs is to serve the Mombasa Water Supply, the 6.5

million gallons capacity provides a further safeguard against interruption of the water supply to Mombasa following any failure in the conducting system. In the reservoir system at Changanwe the Mzima Water is mixed with the incoming Mrere Water before reticulation to the Mombasa Water Supply. It is at this point that the Board sells the water in bulk to the Mombasa Water Undertaker, the Ministry of Agriculture—charges being made in accordance with the readings on a special Sparling meter.

(vii) *Secondary Water Supplies.*—These secondary water supplies are set out in the “Statement of Water Supplied” in the Accounts forming part of this Report. They operated successfully throughout the year.

V. G. MATTHEWS,
Chairman Mombasa Pipeline Board.

**CERTIFICATE OF THE CONTROLLER AND AUDITOR-GENERAL,
KENYA, ON THE ACCOUNTS OF THE MOMBASA PIPELINE
BOARD FOR THE YEAR ENDED 30th JUNE 1970**

Revenue Account—Statement No. 1.

Net Revenue Account—Statement No. 2.

Net Revenue Appropriation Account—Statement No. 3.

Capital Account—Statement No. 4.

Balance Sheet—Statement No.5.

Statement of Water Supplied—Statement No. 6.

The attached accounts have been examined in accordance with section 13 of the Mombasa Pipeline Board Ordinance (Cap. 373). I have obtained all the information and explanations I have required and as a result of my audit, I certify that in my opinion, the accounts are correct.

The investment with the Crown Agents of £65,538-3-08 shown in the Balance Sheet are, however, expressed in pre-devaluation figures.

D. G. NJOROGE,
Controller and Auditor-General.

Nairobi,
8th February 1971.

REVENUE ACCOUNT FOR THE YEAR ENDED 30th JUNE 1970

	EXPENDITURE		1968/69		INCOME	
	K£	s. cts.	K£	s. cts.	K£	s. cts.
	1968/69		1968/69			
	K£	s. cts.	K£	s. cts.	K£	s. cts.
EXPENDITURE						
TO PIPELINE BOARD—HEAD OFFICE:						
Chairman's Remuneration ..	2,687	9 80	2,499	19 80		
Cost of official Entertainment ..	194	2 05	60	11 80		
Incidental Expenses ..	224	1 85	148	18 60		
Staff ..	618	14 20	720	0 00		
Travelling Expenses and Allowances to Members ..	279	1 75	274	12 15		
Expenses of Audit ..	25	00 00	25	0 00		
Bank charges ..	45	1 65	158	11 30		
Maintenance and Running Expenses of Board's Transport...	183	1 00	218	17 15		
	4,256	12 30	4,106	10 80		
TO MAINTENANCE AND OPERATION OF PIPELINES:						
Reimbursement to the Ministry of Agriculture—						
(i) Main Pipelines ..			44,421	10 70		
(ii) North Mainland Scheme ..			6,019	9 40		
(iii) Mrele/Kaya Bombo Scheme ..	60,489	9 40	3,142	17 20		
(iv) Mazeras/Kilifi Scheme ..			2,684	13 45		
Extraordinary Maintenance and Renewals ..	9,390	18 45	17,627	1 90		
Hire charges of Vehicle ..	10,636	4 90	9,669	10 40		
	80,516	12 75	83,565	3 05		
To Balance carried to Net Revenue Account ..	449,453	17 10	526,817	13 90		
	K£534,227	2 15	K£	614,489	7 75	K£
			534,227	2 15	614,489	7 75
					614,489	7 75

NET REVENUE APPROPRIATION ACCOUNT FOR THE YEAR ENDED 30th JUNE 1970

1968/69		1968/69		INCOME	
K£	s. cts.	K£	s. cts.	K£	s. cts.
1,074,809	8 56	1,176,269	10 31	By Transfer from Net Revenue Account ...	
135,675	13 51	135,675	13 51	Balance as at 30th June 1970	
18,179	8 35				
		26,611	1 20		
		K£ 1,338,556	5 02	K£ 1,338,556	5 02
<p>EXPENDITURE</p> <p>To Balance as at 1st July 1969</p> <p>Balance brought from Net Revenue Account</p> <p>Financing the cost of rehabilitating the Mzima/Mrere and North Mainland Scheme installations and contribution towards construction of Mrere/Kaya Bombo and Mazeras/Kilifi Schemes</p>					

**LOAN REDEMPTION FUND
STATEMENT OF FUND FOR THE YEAR ENDED 30th JUNE 1970**

1968/69		1968/69		INCOME	
K£	s. cts.	K£	s. cts.	K£	s. cts.
1,492,432	8 61	1,628,108	2 12	Balance as at 1st July 1969	
				Transfer from Net Revenue Account	
		K£ 1,628,108	2 12	K£ 1,628,108	2 12
<p>EXPENDITURE</p> <p>Balance as at 30th June 1970</p>					

STATEMENT OF INVESTMENTS AS AT 30th JUNE 1970

Nature of Stock	Amount of Stock	Cost Price	Quotation (Middle Market Value)	Market Value as at 30th June 1970
	£ s. d.	£ s. d.	Per cent	£ s. d.
3 per cent Savings Bond 1960/70 ..	24,647	1 03	99½	24,523
4½ per cent Nyasaland 1971/78 ..	3,263	15 07	66	2,154
8½ per cent East African Railways and Harbours 1975	40,737	15 08	93	37,886
	£ 68,648	12 06		64,564
		3 08		1 01

BALANCE SHEET AS AT 30th JUNE 1970

LIABILITIES		ASSETS	
1968/69	K£ s. cts.	1968/69	K£ s. cts.
	K£ s. cts.	K£ s. cts.	K£ s. cts.
CAPITAL ACCOUNT:			
Loans:			
Outstanding ..	5,195,233 17 19	5,725,076 0 95	5,790,909 12 20
Redeemed—			
Kenya Loan, Mrere Supply ..	28,837 10 04		
Kenya Loan, North Mainland Scheme ..	42,838 1 10		
Bank Loans ..	433,560 8 67		
	5,700,469 17 00		
Capital Receipts ..	8,250 3 57		
Contribution from Net Revenue Appropriation Account ..	82,189 11 63		
	5,790,909 12 20	5,725,076 0 95	5,790,909 12 20
REVENUE ACCOUNT:			
Loan Redemption Fund as at 1st July 1969 ..	1,492,432 8 61	1,176,269 10 31	1,231,177 19 17
Add Provision for 1969/70 ..	135,675 13 51	65,538 3 68	K£ s. cts.
	1,628,108 2 12	—	Investments: Crown Agents* 65,538 3 68
Sundry Creditors ..	113,750 6 88		Less Provision for Loss on Devaluation of Pound Sterling .. 9,362 9 10
		55,801 14 60	Sundry Debtors 56,175 14 58
		190,000 0 00	Cash: 55,270 10 05
		164,892 17 25	On Deposit with Cereals and Sugar Finance Corporation .. 165,000 0 00
		7,377,578 6 79	At Bank 234,234 5 20
		K£ 7,532,768 1 20	K£ 7,532,768 1 20

*The Middle Market Value of these Investments on 30th June 1970 was £64,564-1s.-01d. (K.£55,340-15s.-15cts.)

I. G. MWANIKI,
Chief Accountant,
Mombasa Pipeline Board.

V. G. MATTHEWS,
Chairman,
Mombasa Pipeline Board.

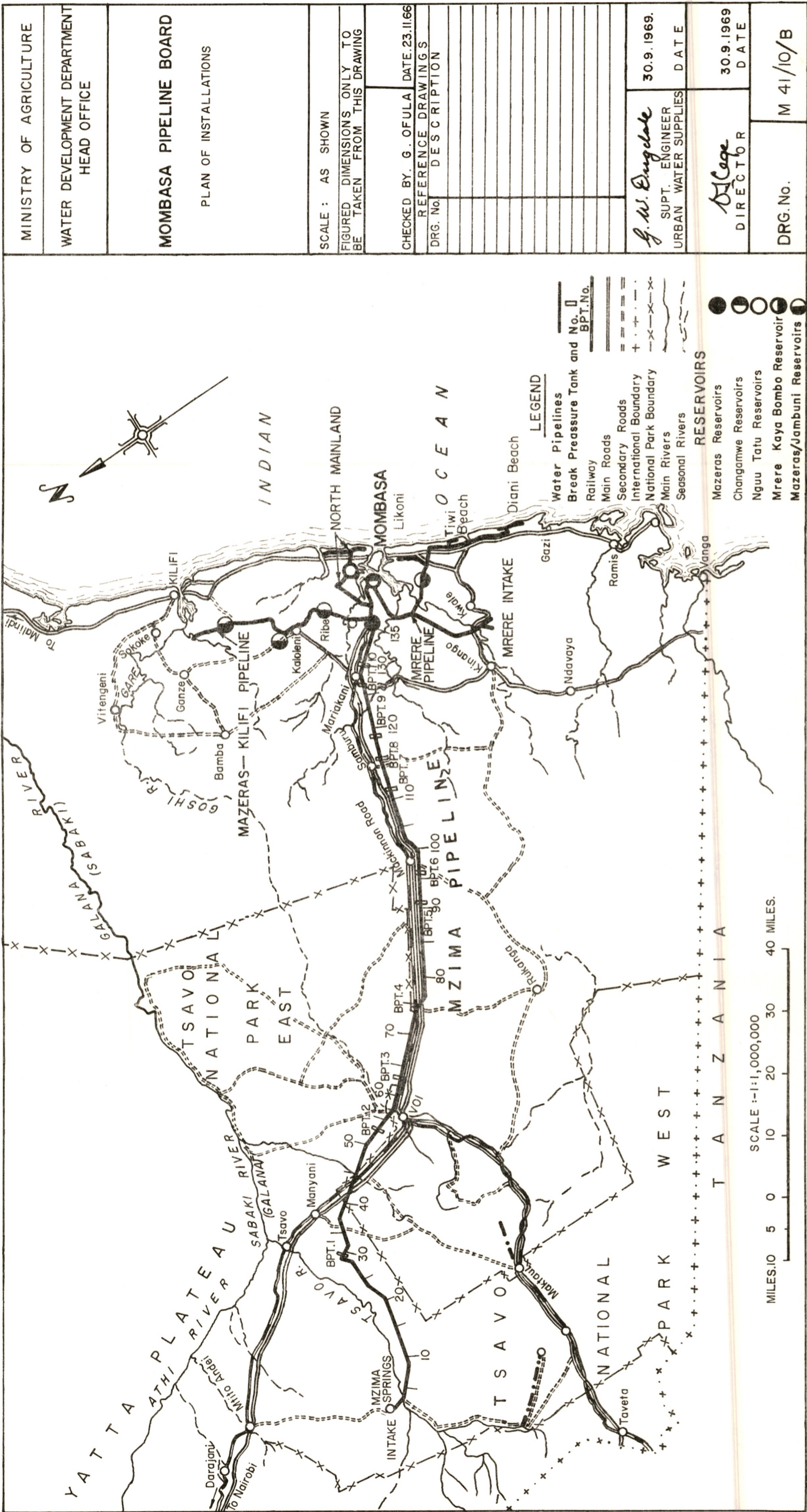
STATEMENT OF WATER SUPPLIED

Conn.	CONSUMER	Number of Gallons Supplied	Rate per 1,000 Gallons	Amount		Total Value of Water Supplied	
				K£	s. cts.	K£	s. cts.
	MINISTRY OF AGRICULTURE:						
MWS	Mombasa	2,054,677.500	4 60	472,575	16 45		
2.	Voi	29,968.600	4 10	6,143	11 35		
7.	Mariakani	17,448.000	4 10	3,576	16 75		
15.	Kwale	7,468.100	4 10	1,520	17 40		
17 and 75	Mazeras	5,329.500	4 10	1,092	10 95		
N.M.S.	North Mainland Water Supply	103,434.500	4 60	22,054	14 15		
41.	Kinango	3,675.300	4 10	753	12 45		
—	Mazeras/Jaribuni	10,118.800	7 50	3,794	11 00		
—	South Mainland	56,357.400	7 50	21,134	7 25		
—	Kilifi	15,608.300	7 50	5,853	4 50		
25.	Bachuma	1,206.100	2 00	120	12 20		
78.	Matuga Holding Ground	120,700	7 50	45	5 25		
						538,665	19 70
40.	MINISTRY OF WORKS:						
	Road Construction Unit—Mackinnon Road	242,300	4 60			55	14 65
	EAST AFRICAN RAILWAYS CORPORATION:						
3.	Mang'u	22,185,660	4 60	5,102	18 30		
4.	Mackinnon Road	17,898,700	4 60	4,116	14 05		
6.	Samburu	30,198,700	4 60	6,945	14 05		
35.	Manyani	406,000	4 60	93	12 60		
55-59	Landhies	1,367,400	4 60	314	12 25		
						16,573	11 25
1.	PRISONS DEPARTMENT:						
45.	Manyani Camp	35,450.900	4 60	8,144	12 85		
	Shimo-la-Tewa	24,521,000	4 60	5,639	16 55		
16.	COUNTY COUNCIL OF KWALE:						
19.	Samburu	703,900	2 00	70	7 80		
54.	Mwanda	154,300	2 00	15	8 60		
	Mwachi	9,500	4 60	2	8 10		
						13,784	9 40

STATEMENT OF WATER SUPPLIED—(Contd.)

Conn.	CONSUMER	Number of Gallons Supplied	Rate per 1,000 Gallons	Amount	Total Value of Water Supplied
			K. Sh. cts.	K£ s. cts.	K£ s. cts.
63.	Mwachinga	232,600	4 60	53 10 00	
64.	Mwalungani	6,700	4 60	1 10 90	
65.	Lutsangani	5,300	4 60	1 4 30	
18.	MRS. BETTY DANEU	999,500	4 60		144 9 70
24.	KENYA NATIONAL PARKS	5,850,100	4 60		229 17 75
26.	KANWAR STORE	262,100	6 00		1,345 10 50
29.	EAST AFRICAN OIL REFINERIES LIMITED	66,474,500	4 60		78 12 60
39.	TAITA RANCHING CO. LTD.	974,200	2 00		15,289 2 70
43.	BAMBURI PORTLAND CEMENT CO. LTD.	47,444,800	3 25		97 8 40
70 and 44	NYALI LTD.	74,127,700	3 75		7,709 15 60
42.	KISAUNI LTD.	992,800	3 75		13,800 12 50
21.	MR. J. N. MWABAKI		4 60		186 3 05
52.	MR. BURUSI TSUMA	129,100	4 60		29 13 90
53.	CHIEF MGALANI	66,300	4 60		15 5 00
61 and 67	KENYA MEAT COMMISSION	2,732,700	4 60		628 10 40
62 and 74	KENYA SAFARI LODGES AND HOTELS	12,735,300	4 60		2,929 6 90
69.	MR. RAYMOND SYDNEY MAYERS	1,904,750	4 60		438 1 85
5.	BALFOUR BEATTY AND CO. LTD.	874,600	6 00		262 7 60
23.	MR. SAMUEL CHIDZUGWE NGUMA	151,036	4 60		34 11 00
72.	MR. YUSUFALI MWATSABU	70,600	4 60		16 4 85
76.	MR. IKONGE MWAMGUNDA	245,900	4 60		55 2 10
79.	MR. PUT SARAJEVO	506,700	6 00		151 10 20
81.	MR. WILLIAM KOMBO	3,100	6 00		— 18 65
82.	MR. KAZUNGU NYANZE	3,400	6 00		1 0 40
80.	MRS. MNYAZI KOMBO	18,500	4 60		4 5 10
		2,655,363,446		K£	612,528 5 75

GPK 5101—300 Bks.—2/71



MINISTRY OF AGRICULTURE
 WATER DEVELOPMENT DEPARTMENT
 HEAD OFFICE

MOMBASA PIPELINE BOARD
 PLAN OF INSTALLATIONS

SCALE: AS SHOWN
 FIGURED DIMENSIONS ONLY TO
 BE TAKEN FROM THIS DRAWING

CHECKED BY: G. OFULA DATE: 23.11.66
 REFERENCE DRAWINGS
 DRG. No. DESCRIPTION

G. W. Engdale
 SUPT. ENGINEER
 URBAN WATER SUPPLIES
 30.9.1969.
 DATE

W. C. Cope
 DIRECTOR
 DRG. No. M 41/10/B

RESERVOIRS

- Mazeras Reservoirs
- Changamwe Reservoirs
- Nguu Tatu Reservoirs
- Mrere Kaya Bombo Reservoir
- Mazeras/Jambuni Reservoirs

LEGEND

- Water Pipelines
- Break Pressure Tank and No. BPT.No.
- Railway
- Main Roads
- Secondary Roads
- International Boundary
- National Park Boundary
- Main Rivers
- Seasonal Rivers

SCALE 1:1,000,000
 MILES 0 5 10 20 30 40 MILES.

