

An impression by A. C. Mossman of the Grootvlei power station under construction, showing part of the steelwork for the coal, boiler and turbine bays. The first set in this station came into operation at the end of June 1969.

MEMBERS OF THE MANAGEMENT COMMITTEE

H. J. DE VILLIERS	General Manager
JAN H. SMITH.	Assistant General Manager
N. T. VAN DER WALT	Chief Engineer (<i>Mechanical</i>)
F. W. STUTTERHEIM	Chief Engineer (<i>Operations and Maintenance</i>)
DR. N. TROOST	Chief Engineer (<i>Electrical</i>)
H. M. TORR	Commercial Manager
J. A. BOTHMA	Financial Manager
P. J. T. OOSTHUIZEN	Secretary

MANAGERS OF THE COMMISSION'S UNDERTAKINGS

Rand and Orange Free State	A. W. TOMLIN
Eastern Transvaal	J. VAN VELDEN
Natal	H. P. ALEXANDER
Cape Western	G. D. G. DAVIDSON
Border	F. O. PEARCE
Cape Eastern	F. O. PEARCE (<i>Acting</i>)
Cape Northern	C. R. BURTON
Orange River	J. L. ROTHMAN

MEMBERS OF THE

ELECTRICITY SUPPLY COMMISSION

DR. R. L. STRASZACKER
(Chairman)

W. H. ANDRAG

T. P. STRATTEN
(retired 11/4/69)

A. J. DU TOIT

DR. C. V. VON ABO
(retired 25/5/69)

DR. THE HON. E. H. LOUW
(died 24/6/68)

G. R. D. HARDING

D. J. MALAN
(appointed 28/11/68)

E. PAVITT
(appointed 1/4/69)

H. H. L. ABRAHAMSE
(appointed 25/5/69)

CONTENTS

	Page
INTRODUCTION	8
Sales of Electricity	9
Output and Sales	10
New Areas of Supply	11
Development of Escom's New Power Stations	12
Development of Escom's High Voltage Transmission System	14
Plant Capacity	16
Water Supplies	17
FINANCIAL	18
Loan Capital	18
Capital Expenditure	18
Investments	19
Costs and Revenue	19
Redemption Fund	19
Reserve Fund	19
Assets and Liabilities	19
Statistical Summary	21
ESCOM'S UNDERTAKINGS	22-57
Auditors' Report and Accounts	63-94
Statistical and other Statements	96-111

ELECTRICITY SUPPLY COMMISSION

To the Honourable
THE MINISTER OF ECONOMIC AFFAIRS
HOUSE OF PARLIAMENT
CAPE TOWN

5th June, 1969

Sir,

As required by Section 19 of the Electricity Act, 1958, the Commission has the honour to present its forty-sixth Annual Report and Accounts covering its work for the financial year ended 31st December, 1968.

Brief comments upon subsequent developments in connection with the more important matters are included in the Report.

ERRATA

CAPE NORTHERN UNDERTAKING

Sales of Electricity p. 27

“ 90 million ” should read “ 190 million ”.

Financial p. 29

“ Accumulated deficit ” should read “ accumulated surplus ”.

The figure of 1,011,810 in the table on p. 31 should appear as a surplus and not as a deficit.

INTRODUCTION

To meet the growing demand for power in South Africa, Escom has been called upon to expand its generating capacity by approximately 500 MW per annum up to 1970 rising to 800 MW per annum by 1975, and at the rate of 1,000 MW per annum up to the year 1980.

An expansion programme of this magnitude will involve capital expenditure on power stations alone, of the order of R70 million per year, rising to R90 million per year in 1975 and to R100 million each year by 1980.

In addition, with the magnitude of the loads to be met by Escom's Undertakings, the stage has been reached when it is economical to transmit electricity by means of high voltage transmission line, rather than to transport coal by rail to distant power stations.

It is therefore Escom's policy to construct on the coalfields of the Eastern Transvaal large, thermal power stations, with generating units of a size selected to result in minimum generation costs and to construct a nation-wide transmission system to transmit the power generated in these stations to all parts of the Republic. The establishment of this transmission system involves capital expenditure of an abnormally high magnitude, particularly in the initial years.

The existence of this transmission network is also an important factor when the introduction of Nuclear Power Stations at the coast is considered. It will also open the way to co-operation with states in South Africa beyond the borders of the Republic.

The most notable scheme in this latter connection is the Cabora Bassa hydro-electric scheme, to be constructed on the Zambesi River in Mozambique. Escom has taken part in discussions at Government level between the Republic and Portugal on proposals to establish a large hydro-electric scheme at Cabora Bassa and has discussed the technical aspects of such a scheme directly with the Portuguese authorities.

Escom has offered to purchase a supply from the Cabora Bassa scheme at a price comparable, over the period of a long-term contract, with the cost that it would incur in generating power in the Republic. Negotiations have not as yet been finalized.

Escom has also participated in discussions between the Governments of the Republic and Lesotho in connection with the Ox Bow Hydro Project, and with the Government of Swaziland on the proposal to build a coal fired power station on a potential coal field in Swaziland.

By co-operating in these schemes, not only are the countries outside the Republic's borders assisted, but Escom's capital requirements are reduced, and the Republic's coal and water reserves will be conserved.

Following on the amendment to the Electricity Act in 1964, which empowered the Commission to supply electricity at points on the borders of the Republic for use in adjoining territories, assistance has been provided to neighbouring states by an initial supply to the Government of Lesotho, which commenced during April, 1968.

Escom's terms have been accepted for a supply to Ressano Garcia in Mozambique, and negotiations are in progress in connection with a supply to Lourenço Marques. Negotiations are also in progress to supply Swaziland at the border at Havelock and Oshoek.

Escom is assisting the South West Africa Water and Electricity Corporation (Pty.) Ltd., as their official consultant and agent, with the establishment of an electricity supply undertaking in South West Africa. The development of this undertaking will take place in two stages. The first, which has already started, consists of the building of a steam power station near Windhoek. This power station will consist of two or possibly three 30 MW turbo-generators, the first two having been ordered.

The sets will use an indirect dry cooling system and completion of the first two sets is planned for 1972. By this time an extensive distribution network will have been built from Windhoek, north to Tsumeb and westwards to Walvis Bay.

The second stage will commence about 1975, with the introduction of hydro-electric power from a power station to be built near the Ruacana Falls on the Kunene River, on the border of Angola.

SALES OF ELECTRICITY

Total sales of electricity by Escom during 1968 amounted to 28,885 million units reflecting an increase of 8.4 per cent for the year. This is slightly lower than the growth rate of 8.7 per cent for 1967. The growth rate during the last two years has been higher than the average experienced over the previous ten-year period.

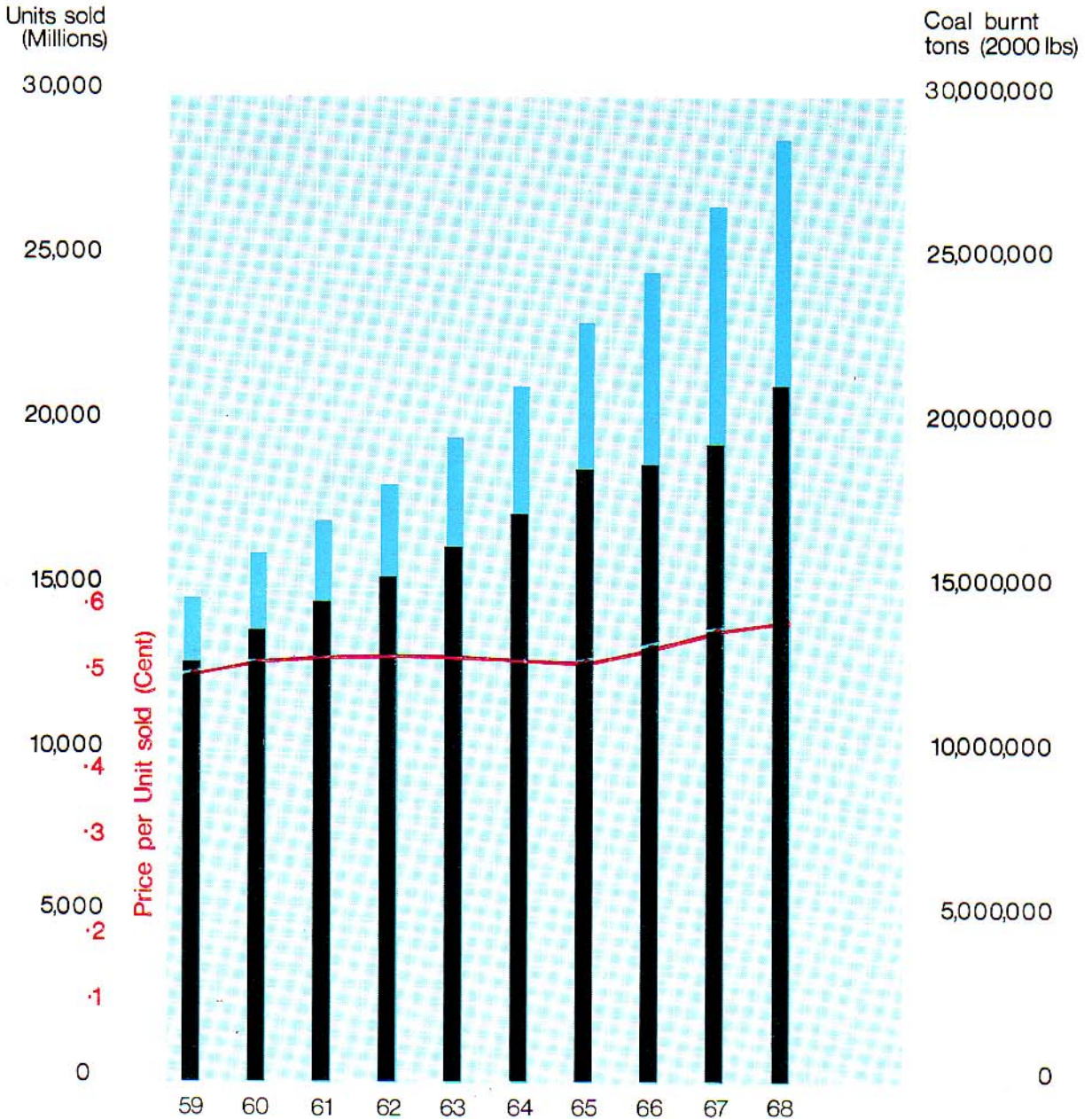
The increase in the number of units sold during 1968 was distributed almost equally over the three main categories of consumer, namely, mining, industrial consumers and bulk supplies to municipalities. It should be remembered that a fair proportion of the bulk supplies to municipalities is used by industrial consumers in the municipal areas.

Mining continued to be the largest consumer purchasing 41.5 per cent of all units sold.

Units Generated and Sold

The total units generated in all Escom's Undertakings during the year 1968 amounted to 33,016 million units which represents an increase of 8.7 per cent over the corresponding figure for 1967. Purchases from outside sources were reduced to 7.9 million units as compared with 69.6 million units last year.

The growth of Escom's sales over the ten years 1959 to 1968 is depicted in the blue columns in the diagram below. The black columns represent the coal burnt while the red line indicates the average price per unit sold.



The average figure of 0·5550 cent per unit sold during 1968 represents an increase of 1·5 per cent above the corresponding figure of 0·5467 cent per unit sold during 1967.

The cost per unit sold increased from 0·5512 cent per unit in 1967 to 0·5608 cent per unit sold in 1968. This represents an increase of 1·7 per cent during 1968. The larger part of this increase is due to an increase of 1·9 per cent in the cost of coal burnt during 1968, while a contributing factor is the higher

interest rates being currently paid on raising new loans.

The figures represented in the above diagram are the average for all undertakings. The prices for each individual undertaking and for different classes of consumer in each undertaking are given in the section of this report relating to the Undertakings, commencing on page 22.

The figures of units generated, purchased and of units sold for all Undertakings were as follows:—

OUTPUT AND SALES

	1968	1967	Increase %	Annual Increase over 10 years %
Units generated	33,061,234,965	30,421,663,224	8·68	7·81
Units purchased	7,911,573	69,604,511	—	—
Units sold	28,885,008,545	26,657,111,958	8·36	7·82

SALES BY UNDERTAKINGS

responding figures for 1967, and the percentage increase for the year, and over the last ten years are given in the table below:—

The total sales by each Undertaking with the cor-

	Units 1968	Units 1967	Increase %	Average Annual Increase in 10 years %
Cape Western	1,666,222,419	1,533,071,894	8·68	7·27
Cape Northern	609,612,704	519,902,441	17·26	18·13
Cape Eastern	4,098,388	3,187,818	28·56	—
Border	310,497,578	294,192,276	5·54	7·34
Natal	4,121,451,847	3,720,612,366	10·77	9·13
Eastern Transvaal	3,191,367,930	2,829,622,299	12·78	18·45
Rand and Orange Free State	18,979,329,732	17,755,415,502	6·89	6·41
Orange River	2,427,947	1,107,362	119·26	—
Total	<u>28,885,008,545</u>	<u>27,657,111,958</u>	<u>8·36</u>	<u>7·82</u>

SALES TO MAIN CATEGORIES OF CONSUMERS

sponding figures for 1967, and the rate of increase in the year under review are shown in the following table. The final column reflects the average rate of growth over the ten years 1959 to 1968.

The total sales of electricity for the year 1968, in the main categories of supply, with the corre-

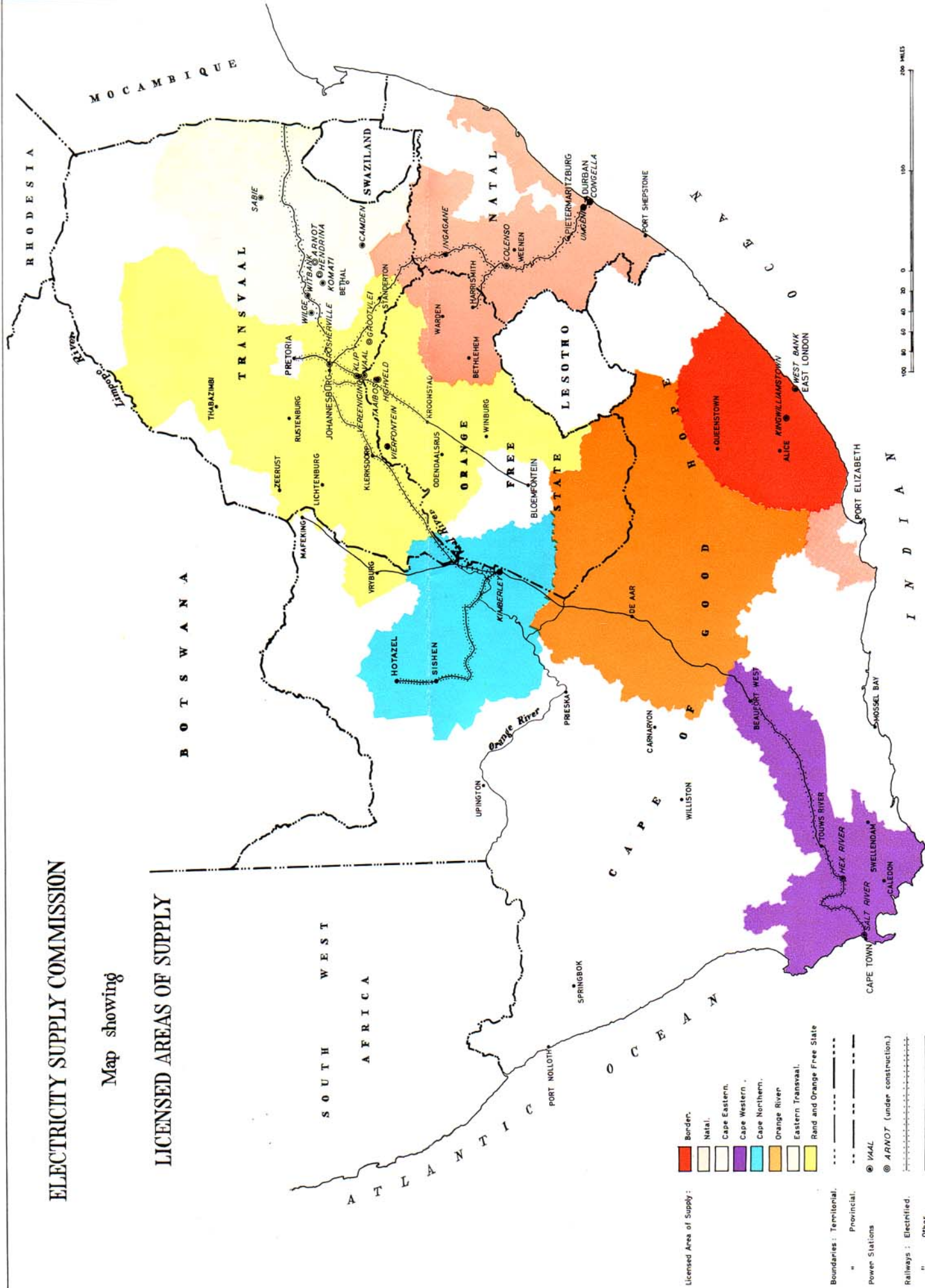
SALES

	Units 1968	Units 1967	Increase %	Average Annual Increase in 10 years %
<i>Bulk Supplies</i>				
Municipalities	6,628,142,539	5,965,702,255	11·10	8·00
<i>Direct Supplies</i>				
Traction	2,180,669,890	1,958,027,151	11·37	10·70
Mining	11,995,475,631	11,441,475,211	4·84	5·13
Industrial	7,438,860,906	6,729,072,097	10·55	11·57
Domestic	631,666,181	552,916,221	14·24	12·12
Street Lighting	10,193,398	9,919,023	2·77	8·20
Total	<u>28,885,008,545</u>	<u>26,657,111,958</u>	<u>8·36</u>	<u>7·82</u>

ELECTRICITY SUPPLY COMMISSION

Map showing

LICENSED AREAS OF SUPPLY



Growth of Industrial Activity

Industrial consumers increased their consumption by 10·6 per cent during 1968, comparing favourably with the 11·0 per cent for 1967. One of the largest industrial consumers is the Highveld Steel and Vanadium Corporation near Witbank. This company was given a supply on the 15th February, 1968, their demand for that month being 3·5 MVA. By December, 1968, this had increased to 83 MVA, the highest for the first three months of 1969 being 125 MVA.

Although Escom's figures for industrial supplies do not represent a complete picture, since they do not distinguish supplies of electricity furnished to industrial consumers by municipalities, and they do not include supplies generated by industrial undertakings themselves, a broad picture of industrial development in the Republic during the past five years can be seen in the following sales (millions of units) to the main categories of industry:—

Building and Cement (including Quarrying)	. . . . .
Chemical (including Pharmaceutical)	. . . . .
Engineering (including the Motor Industry)	. . . . .
Foodstuffs, Consumer Goods and Commercial	. . . . .
Iron, Steel and Base Metals	. . . . .
Paper and Paper Products	. . . . .

Expansion of Mining Activity

Sales of electricity to all classes of mining consumers reflected an increase of 4·8 per cent during the year under review.

Sales to platinum mines in the Rustenburg area again showed substantial increases necessitating considerable reinforcement in the reticulation. Sales to gold mines increased by 3·9 per cent as compared with 4·8 per cent for 1967. The increase was confined mainly to the new gold mining areas. The increase in units sold to the main categories of mining consumers during the last three years is shown in the following figures:—

	Units Sold (millions)		
	1966	1967	1968
Gold Mining (including Uranium)	9,490	9,946	10,339
Coal Mines	412	453	480
Diamond, Platinum and other Mines	910	1,042	1,176

NEW AREAS OF SUPPLY IN ESCOM'S UNDERTAKINGS

The licensed areas of supply of Escom's Undertakings including areas which have been applied for are shown in colour on the map which appears opposite this page.

Rand and Orange Free State Undertaking

The application made on the 11th November, 1965, for extension to the Greater Rand Extension and Orange Free State Licence to incorporate a large area in the Northern Transvaal, including Warmbad, Potgietersrus and Pietersburg, was granted by the Electricity Control Board on the 4th March, 1968.

Orange River Undertaking

The application for a licence for the Orange River Undertaking, made to the Electricity Control Board

on the 15th December, 1966, was granted on the 3rd June, 1968.

Electrification of the Railways

Supplies purchased by the South African Railways for traction purposes increased by 11.4 per cent to 2,181 million units in 1968.

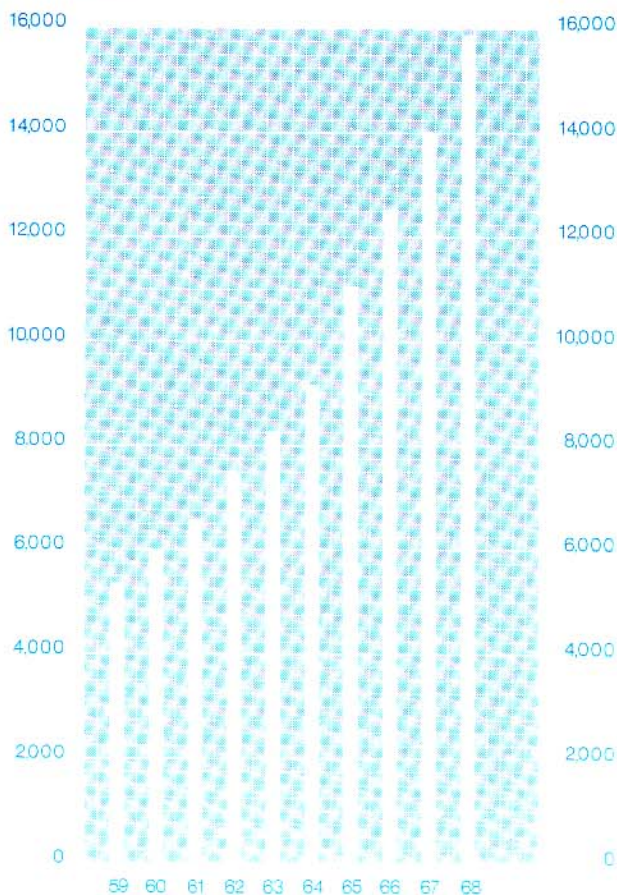
The greatest percentage increase in supplies took place in the Northern Cape with electrification of the section of railway line between Postmasburg and Hotazel. The entire line from Kimberley to Hotazel is now electrified and open to traffic.

A number of traction substations on the North and South Coasts of Natal, and in the Natal Midlands were also supplied. It is planned to supply a number of additional substations in these areas as well as in the Harrismith-Arlington area of the Orange Free State during the coming year.

	Units Sold (millions)				
	1964	1965	1966	1967	1968
.	447	508	530	562	646
.	868	1,023	1,098	1,214	1,241
.	357	393	415	544	562
.	624	751	935	1,022	1,111
.	1,991	2,326	2,435	2,680	2,967
.	212	267	416	469	493

Supplies to farmers

The steady expansion of Excom's rural networks year by year is shown in the diagram below, which depicts the total number of farms supplied at the year end:



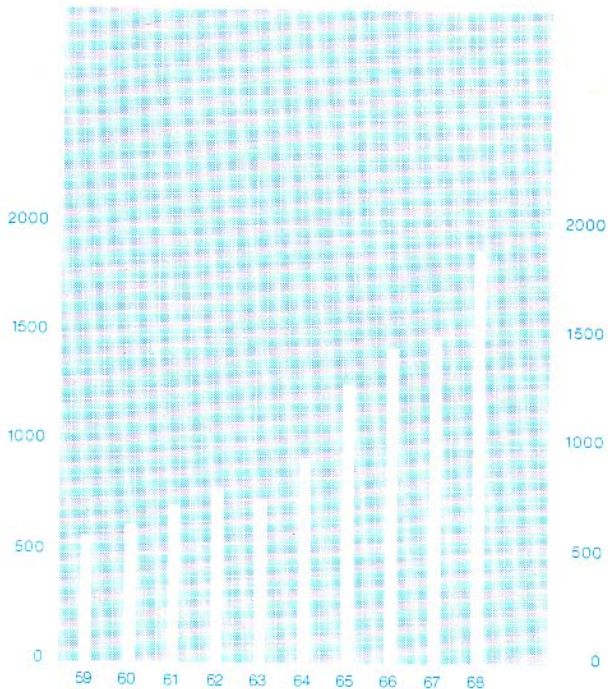
A record number of farms were given a supply during the year. As a result of strenuous efforts by all Undertakings, nearly 1,900 new farming supplies were made available during 1968. This represents an increase of 7 per cent above the 1967 figure. A number of farmers who were already consumers were provided with a second supply point (mainly for pumping). Due to increases in the cost of labour and equipment as well as the increasing length of transmission lines to serve the more remote areas, where farms are larger and further apart, Escom is experiencing increasing difficulty in keeping the tariffs at present levels. Farmers should make the maximum possible use of electricity on their farms and so assist Escom in reducing the cost of the units supplied to them.

The diagram opposite records the total number of new rural connections made during the year.




DEVELOPMENT OF ESCOM'S NEW POWER STATIONS

Considerable progress was made during the year with the construction of Escom's new power stations. Four large power stations are under construction in the Transvaal. The total installed capacity of these four power stations three of which are in the Eastern Transvaal, will be 6,900 MW when complete. In addition an enquiry was issued early in 1969 to coal producers for a coalfield to serve a future power station of either 2,000 MW or 3,000 MW.

At the present rate of growth Escom will have to commission new generating plant, annually, of 500 MW up to 1970, 800 MW after 1975, and 1,000 MW each year after 1980.



PLANNED EXPANSION OVER THE NEXT FIVE YEARS

			1969	1970	1971	1972	1973
	GENERATING PLANT (MEGAWATTS)		920	600	1460	550	750
	TRANSMISSION LINES (MILES)	400 kV	171	972.6	346	499	119
		275 kV	75.1	452.5	376	155	41
	TRANSMISSION LINES (MILES)	132 kV	199.1	348.34	55	50	—

Camden Power Station

Camden near Ermelo is at the present time Escom's largest power station in operation. Two 200 MW sets were commissioned during 1968, bringing the installed capacity up to 1,200 MW. The seventh 200 MW generator was brought up to full load for the first time in March, 1969, while it is expected that the final set will be completed later in 1969. By early 1970 Camden should be operating at its full designed capacity of eight 200 MW turbo-generators giving a total of 1,600 MW.

Grootvlei Power Station

This power station, being built between Balfour and Villiers, has been designed for six 200 MW sets, the first two of which will be in operation by the end of 1969.

Grootvlei will replace the older power stations in the area and will draw its cooling water from the Vaal Dam. The amount of water used will, however, be considerably less than that used by the power stations that it will replace because of more efficient means of water usage and because it has been designed for two

dry-cooling installations, one of which is at present under construction. This set should be in commission by the middle of 1971, and will be the largest "dry" cooling set in the world.

Hendrina Power Station

This power station near Hendrina has been planned for ten 200 MW sets, the first two of which should come into operation during 1970. The first chimney and cooling tower have been completed and a start

provided for by means of 220 kV lines to connect with the 400 kV transmission system.

It is expected that supply will be available to the Border Undertaking by means of a transmission line built from De Aar by 1973.

Hydro-Electric Power Stations

Contracts have been placed for the two 80 MW



HENDRINA POWER STATION

This station has been planned for ten 200 MW sets the first two of which should come into operation during next year.

has been made with the foundations for the circulating water pumphouse. The main water pipeline is being built. This will supply 32 million gallons of water a day when the power station is in full operation.

Ingagane Power Station

The fifth and final 100 MW set at the Ingagane Power Station in Natal is complete, and the set was commissioned during January, 1969. This station now consists of five 100 MW turbo-generators.

West Bank Power Station

Installation of a second 20 MW set in the West Bank No. 2 Power Station at East London was completed during March, 1969. The present intention is to avoid installing additional generating capacity in the Border Undertaking, further growth being

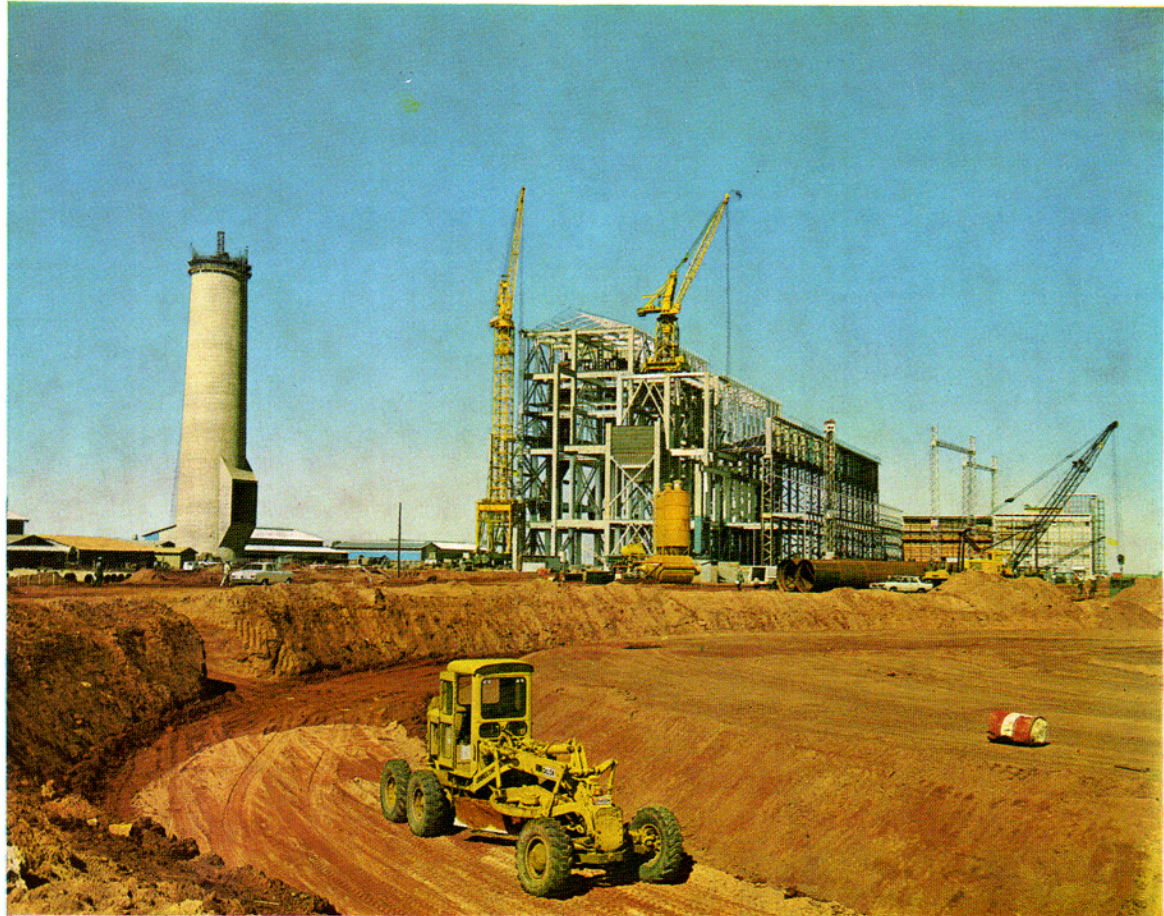
turbines and generators to be installed at the Hendrik Verwoerd Power Station.

These are being supplied by Japanese firms. Both sets are to be in operation by 1971. The hydro station will be operated as part of the pooled generation system of the Rand and Orange Free State Undertaking. The possibility of installing one or two additional sets at the Hendrik Verwoerd Power Station is being examined and investigations have been carried out into the possibility of building a hydro-electric station at the P. K. le Roux Dam.

The power generated at this station as well as the output of the Hendrik Verwoerd Power Station will be fed into the 400 kV transmission system at De Aar. The possibility of power generation at the outlet of the Orange-Fish Tunnel and at Elizarand dam is being investigated.

Arnot Power Station

The Arnot Power Station is being built about 12 miles from Wonderfontein railway station. This power station has been designed for six reheat turbo-generators and associated boilers each with a capacity of 350 MW. Site preparation is in progress, and the structural steelwork for the first turbo-generator has started. Erection of this set should commence during 1969, and two 350 MW generators are to be in operation by 1971. The remaining four sets will follow at yearly intervals.



ARNOT POWER STATION

Arnot has been designed for six 350 MW reheat turbo-generators and boilers, two of which are to be in operation by 1971.

Nuclear Power Stations

Present forecasts indicate Escom's first atomic power station should be in operation by about 1978.

A condition precedent to the introduction of atomic power stations at the coast where sea water can be used for cooling purposes, is the completion of a nation-wide transmission network. This network will co-ordinate the flow of power between Undertakings and eventually allow for the flow of power generated at the coast to the interior. Such a network is at present being built to provide in the first instance for the future load growth in Natal, and the Western Cape. This network will enable electricity to flow from the large power stations on the Eastern Transvaal coalfields to the coast, and reduce the necessity

for the transport of large quantities of coal over long distances. It has been estimated that by 1978 the transmission lines to the Western Cape will be operating at their maximum safe capacity; and on the basis of present costs it appears that the establishment of an atomic power station in the Western Cape will be an economic proposition at that time. A site for this atomic power station has therefore been purchased on the farm Duynefontein near Melkbosstrand on the Western Cape Coast. Other sites along the South African Coast are being investigated.

DEVELOPMENT OF ESCOM'S HIGH VOLTAGE TRANSMISSION SYSTEM

The focal point of Escom's high voltage transmission system is at present the Atlas Distribution Station near Vereeniging. This distribution station was planned for three 720 MVA 400/275 kV transformers. One of these transformers was installed in 1967, but due to a design fault could not be operated at its full rating. The remaining two transformers have now been installed after modification by the manufacturers and it is anticipated that the original transformer at present being modified will be back in service by May, 1969. This distribution station which will handle a considerable part of the power generated at the Camden and Grootvlei Power Stations, is the starting point

for the 400 kV transmission system to the Western Cape. One 400 kV transmission line is complete between Atlas and the Perseus Distribution Station near Dealesville in the Orange Free State, and Perseus is expected to be in operation by June, 1969. A second transmission line to Perseus will be built from the Grootvlei Power Station, and will be ready by 1970.

Perseus (near Dealesville) will be the supply point for the Cape Northern Undertaking and for Bloemfontein. One 400 kV transmission line has been completed between Perseus and the Hydra Distribution Station near De Aar. Hydra Distribution Station should be commissioned in July, 1969. This will be the supply point to the Orange River Undertaking, and the power generated at the Hendrik Verwoerd and P. K. le Roux hydro power stations will be fed into the 400 kV transmission system at Hydra.

Plans are being made for building two 400 kV transmission lines from De Aar to Cookhouse from which point transmission lines will be built to East London, and a distribution station near Port Elizabeth. The 400 kV transmission system will reach the Western Cape during July, 1969, with the completion of the section of transmission line between Hydra and the Droërivier Distribution Station at Beaufort West. From this date it will be possible to feed power generated at the power stations on the coalfields of the Eastern Transvaal into the Cape Western system. At first this power will be limited by the capacity of the 132 kV transmission system from Beaufort West towards Cape Town, but by 1970 the 400 kV system will have been extended to Muldersvlei and by 1972 duplicate 400 kV transmission lines will be in service between the pooled power stations of the Rand and Orange Free State and the Western Cape. These transmission lines will provide for the load growth of the Western Cape until 1978 when it is planned that the first atomic power station will be in operation.

Work has started on the construction of a large distribution station called Apollo. This will be near Irene. Apollo will be the receiving point for power generated at Hendrina and Arnot Power Stations as well as that from Cabora-Bassa in Mozambique. This distribution station will be able to supply the Johannesburg Municipality via Jupiter Distribution Station (which replaces the existing Rosherville switching station) and will also supply Pretoria.

It is intended to connect Jupiter into the existing 275 kV system at Snowdon Distribution Station (near Meyerton) by 1971. In planning this nation-wide 400 kV transmission system, provision has also been made for Natal. Two 400 kV transmission lines are being built from Camden Power Station to Chivelston Distribution Station (adjacent to Ingagane Power Station). From this point one 400 kV line will be built to Mersey Distribution Station between Greytown and Pietermaritzburg. This latter section is to be completed first and will operate at 275 kV for the time being.

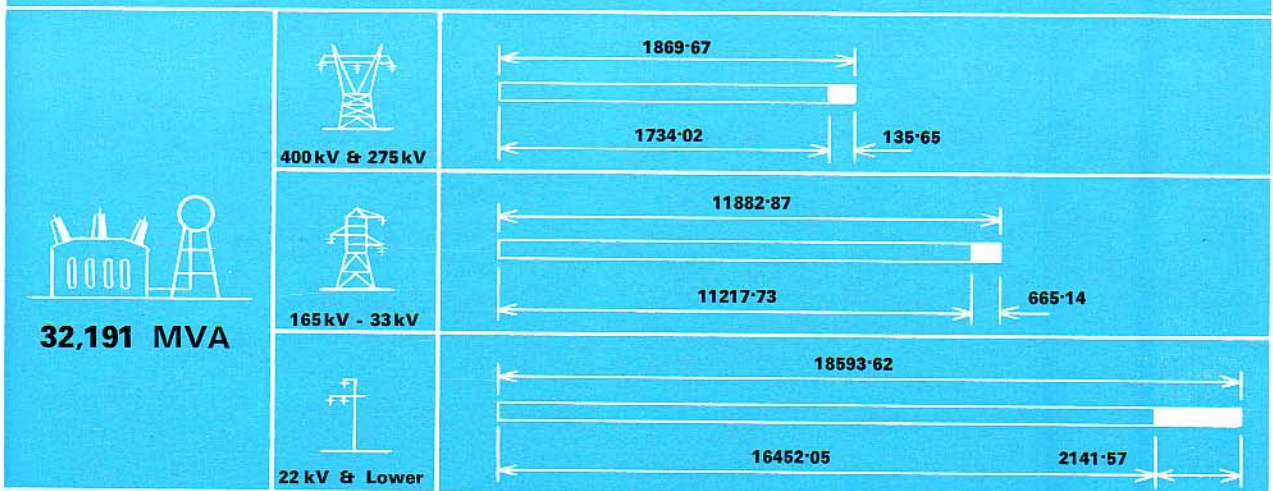
The section from Camden to Chivelston is to be complete by April, 1971, when it will be required to meet the requirements of the aluminium smelter at present being built at Richards Bay.

A future possibility is a 400 kV transmission line from Camden Power Station to Impala Distribution Station near Richards Bay. The proposed thermal power station at Big Bend in Swaziland could feed into this line at Louwsburg.

Discussions have been held with the Department of Water Affairs regarding a scheme to pump water from Spioenkop Dam on the Tugela River to Bloemhoek Storage dam near Van Reenen. The construction of a 25-mile long 275 kV transmission line from Colenso in Natal to a new substation in the vicinity of the Spioenkop Dam is being considered.

The following diagram shows the transmission lines and transformers in service at the end of 1968, and brought into service during the year:—

TRANSFORMERS AND TRANSMISSION LINES IN SERVICE



LINES IN SERVICE AND TAKEN INTO SERVICE DURING 1968

- LENGTH IN SERVICE AT THE BEGINNING OF THE YEAR (IN MILES)
- LENGTH PLACED IN SERVICE DURING THE YEAR (IN MILES)

During the year 1968 a total of 3,063 route miles of transmission lines and cables were added to Escom's networks. A summary of the route miles of lines and cables constructed and laid in 1968, with similar figures for the years 1964 to 1967 is shown in the table below in three groups.

- (i) High voltage transmission lines of 400 kV and 275 kV.
- (ii) Transmission lines of intermediate voltages 165 kV/33kV.
- (iii) Distribution lines and cables of lower voltages 22 kV/380 volts.

Route Miles of Transmission Lines and Cables taken into Service: Years 1964-1968

Year	400/275 kV	165/33 kV	22 kV and Lower	Total (Miles)
1964	384.67	577.98	1 490.73	2 453.38
1965	349.00	613.99	1 451.88	2 414.87
1966	82.66	493.75	1 476.23	2 052.64
1967	370.92	427.08	1 911.63	2 908.63
1968	135.65	673.10	2 254.64	3 063.39

Generation in Escom's Power Stations

The installed generating capacity in Escom's Undertakings at the end of 1968 was as follows:—

Pooled power stations of the Rand and O.F.S. Undertaking	4,781 MW
Natal Undertaking	1,013
Cape Western Undertaking	450
Border Undertaking	100
TOTAL	6,344 MW

The corresponding figure for 1967 was 5,845 MW, additions during the year being one 100 MW set at the Ingagane Power Station in Natal, and two 200 MW sets at Camden Power Station in the Eastern Transvaal.

In terms of the licences granted by the Electricity Control Board, the power stations of the Rand and

Orange Free State Undertaking, together with the Witbank and Komati Power Stations of the Eastern Transvaal, operate as a single system of pooled stations. This pooled system is by far the largest generating system owned by Escom, constituting 75 per cent of Escom's generating capacity. The total units generated in Escom's power stations amounted to 80.7 per cent of the total units generated in the Republic.

The principal equipment installed in Escom's power stations as well as the coal burnt and other operating details are given on the statistical section at the end of this report.

The commissioning of larger and more efficient power stations together with the shutting down of some of the older power stations resulted in a continued improvement in the average thermal efficiency. This trend is expected to continue.

PLANT CAPACITY

Major items of power station equipment taken into service during 1968, and under construction or on

order, as at the 31st December, 1968, are given in the following table:—

	Plant taken into service in 1968		Plant under construction or on order	
	Boilers lb/hr	Generators MW	Boilers lb/hr	Generators MW
Natal Undertaking				
Ingagane Power Station	1,800,000	100	Nil	100
Border Undertaking				
West Bank No. 2 Power Station			210,000	20
Rand and O.F.S. Undertaking				
Camden Power Station	3,600,000	400	3,600,000	400
Grootvlei Power Station			7,110,000	800
Hendrina Power Station			680,000	800
Arnot Power Station			7,932,000	1,050
Orange River Undertaking				
Hendrik Verwoerd Power Station				160
	5,400,000	500	19,532,000	3,330

WATER SUPPLIES

The quantities of water (omitting sea water) used

by the Commission's Undertakings are shown in the following table:—

(Millions of Gallons)

Undertakings	Potable Water		Crude River Water		Water from other Sources Including Boreholes, Dams and Sewage		Sea Water Circulated (Estimated)	
	1968	1967	1968	1967	1968	1967	1968	1967
Border	28.0	32.0	Nil	Nil	Nil	Nil	19,300	18,300
Cape Western	383	478	Nil	Nil	Nil	Nil	69,000	55,000
Natal Undertaking	886	927	2,159	1,690	Nil	Nil	54,000	50,142
Rand (including Komati and Witbank Power Stations)	208	189	22,361	20,696	11	5	Nil	Nil
Eastern Transvaal	Nil	Nil	Nil	Nil	1.80	1.80	Nil	Nil

The increase in loading on the pooled stations of the Rand and Orange Free State Undertaking was met entirely by those stations that do not draw their water from the Vaal River. These stations increased their output by 22 per cent to 14,218 million units during 1968.

It is expected that the percentage of water drawn from rivers in the Eastern Transvaal will increase as

the large stations not dependent on Vaal River water are brought into operation.

The quantity of water drawn from the Vaal River remained at the same level as for 1967, at 34 million gallons per day.

A broad picture of water used in the Republic for power production is given in the following table:—

	Water drawn from Rivers	Other Sources	Sea Water (circulated)
	(millions of gallons)		
<i>Cape Western Undertaking</i>			
Cape Town Municipality	76		
Worcester Municipality	307		
Sea Water (estimated)			69,000
	<u>383</u>		<u>69,000</u>
<i>Border Undertaking</i>			
East London Municipality	28		
Sea Water (estimated)			19,300
	<u>28</u>		<u>19,300</u>
<i>Natal Undertaking</i>			
Durban Municipality	886		
Sea Water (estimated)			54,000
Tugela	645		
Ngagane	1,514		
	<u>3,045</u>		<u>54,000</u>
<i>Rand and O.F.S. Undertaking and Eastern Transvaal Undertaking</i>			
Vaal River	12,485		
Olifants River	806		
Bronkhorstspuit	1,414		
Komati	4,377		
Usutu complex	3,487		
Other		11	
	<u>22,569</u>	11	
TOTAL ALL UNDERTAKINGS	<u>26,025</u>	<u>11</u>	<u>142,300</u>

FINANCIAL

Loan Capital

During 1968 four local loans totalling R150,000,000 were raised as follows:—

Date Raised	Amount
29th March	R10,000,000
29th March	70,000,000
14th October	22,000,000
14th October	48,000,000
	<hr/>
	R150,000,000
	<hr/> <hr/>

These loans were fully subscribed, but at the year end the amount received on account of the two loans issued on the 14th October, 1968, was R58,708,000. The balance of R11,292,000 payable not later than 28th February, 1969, in terms of the prospectus, has since been received. At the year end the loans raised locally as Local Registered Stock totalled R1,021,000,000. Two local loans Nos. 21 and 25 for R10,000,000 and R7,000,000 respectively were redeemed during the year.

In addition four overseas loans were raised during 1968. These included a bond issue of 15,000,000 Units of Account bearing interest at 7 per cent per annum, and repayable in 10 annual instalments, and a German loan of DM. 100,000,000 (R18,034,125) issued at

97.75 per cent with an interest rate of $6\frac{1}{2}$ per cent. Two direct placements included a loan of Swiss Francs 45,000,000 from a consortium of Swiss Banks,

Interest Rate	Issue Price	Redeemable
$6\frac{1}{2}\%$	91.40%	31.3.1993
$6\frac{7}{8}\%$	95.70%	31.3.1993
$6\frac{1}{2}\%$	91.95%	31.10.1993
$6\frac{7}{8}\%$	96.25%	31.10.1993

and a loan of £5,000,000 from Barclays Bank D.C.O. The Swiss loan bears interest at 7 per cent per annum, and is repayable in four annual instalments during the period between 1970 and 1973, and the Barclays Bank loan is for a period of 5 years at $6\frac{1}{2}$ per cent per annum.

Capital Expenditure

Expenditure on Capital Account during the year amounted to R163,527,000 which increased the total capital expenditure at the 31st December, 1968, to R1,114,390,000.

On completion of all the works for which borrowing powers to raise loans have been granted, expenditure on Capital Account will amount to approximately R1,665,600,000.

ANNUAL CAPITAL EXPENDITURE

Year	Expenditure	Totals to Date	Year	Expenditure	Totals to Date
	<i>Rand</i>	<i>Rand</i>		<i>Rand</i>	<i>Rand</i>
1923	34,000	34,000	1946	2,940,000	52,853,000
1924	75,000	109,000	1947	4,797,000	57,650,000
1925	1,770,000	1,879,000	1948	30,362,000	88,012,000
1926	2,394,000	4,273,000	1949	9,408,000	97,420,000
1927	8,937,000	13,210,000	1950	14,821,000	112,241,000
1928	1,637,000	14,847,000	1951	21,592,000	133,833,000
1929	764,000	15,611,000	1952	36,612,000	170,445,000
1930	556,000	16,167,000	1953	42,701,000	213,146,000
1931	424,000	16,591,000	1954	50,683,000	263,829,000
1932	232,000	16,823,000	1955	40,513,000	304,342,000
1933	453,000	17,276,000	1956	37,726,000	342,068,000
1934	1,510,000	18,786,000	1957	35,197,000	377,265,000
1935	4,195,000	22,981,000	1958	40,436,000	417,701,000
1936	4,122,000	27,103,000	1959	35,429,000	453,130,000
1937	3,460,000	30,563,000	1960	38,341,000	491,471,000
1938	3,734,000	34,297,000	1961	38,094,000	529,565,000
1939	2,348,000	36,645,000	1962	52,014,000	581,579,000
1940	2,017,000	38,662,000	1963	55,497,000	637,076,000
1941	2,146,000	40,808,000	1964	42,117,000	679,193,000
1942	2,955,000	43,763,000	1965	61,916,000	741,109,000
1943	2,811,000	46,574,000	1966	99,673,000	840,782,000
1944	1,462,000	48,036,000	1967	110,081,000	950,863,000
1945	1,877,000	49,913,000	1968	163,527,000	1,114,390,000

(Assets Sold Excluded)

Investments

On the 1st January, 1968, all investments held on behalf of the Redemption and Reserve Funds were written down to market value, and will be written back to nominal value proportionately at the end of each year until maturity of each investment. The amounts written down were R19,825,000 for the Redemption Fund and R6,475,000 for the Reserve Fund, a total of R26,300,000.

The book value of securities, representing investment in stocks of Electricity Supply Commission, Republic of South Africa and Municipalities held by the Commission on behalf of the Redemption and Reserve funds at 31st December, 1968, was R294,000,000, the nominal value being R321,815,000. The market value of these investments at that date was R288,105,000.

Costs and Revenue

Total costs at R161,993,000 represent a cost per unit sold of 0.5608 cent, and includes an amount of R730,000 on research expenses, mainly as a contribution towards the Atomic Energy Board.

The total revenue from the sales of electricity and sundry revenue amounted to R161,475,000, an increase of R14,692,000, over the total revenue for 1967.

The more important components of Escom's cost structure are shown in the diagram, on page 20, depicting the production costs for the year 1968.

Redemption Fund

The amount in the Redemption Fund at the 31st December, 1968, totalled R203,489,000 which exceeded the amounts required for the redemption of the loans in accordance with the provisions of the Act.

The amount in the Redemption Fund includes the proceeds from the sales of assets and profits on realization of investments.

Reserve Fund

The amount in the Reserve Fund at the 31st December, 1968, was R90,035,000.

Assets and Liabilities

The Commission's total assets at the 31st December, 1968, amounted to R1,483,563,000, and its total liabilities to R1,073,440,000, the difference being R410,123,000, which is represented by the amounts in the Redemption and Reserve Funds, loans repaid and balance on revenue accounts.

ASSETS AND LIABILITIES

31st December	Loans Outstanding R	Total Liabilities including Loan Capital R	Total Assets R	Excess of Assets over Liabilities R
1923	30,000	30,000	30,000	—
1925	779,000	1,905,000	1,905,000	—
1930	16,000,000	16,224,000	17,109,000	885,000
1935	24,500,000	25,540,000	28,876,000	3,336,000
1940	38,968,000	40,339,000	49,480,000	9,141,000
1945	48,500,000	51,793,000	68,887,000	17,094,000
1948	90,500,000	98,003,000	123,680,000	25,677,000
1950	118,266,000	126,432,000	158,610,000	32,178,000
1951	133,936,000	150,097,000	186,249,000	36,152,000
1952	168,131,000	191,344,000	231,684,000	40,340,000
1953	210,872,000	234,986,000	276,845,000	41,859,000
1954	266,345,000	284,865,000	335,241,000	50,376,000
1955	305,146,000	326,311,000	387,537,000	61,226,000
1956	335,132,000	362,164,000	436,271,000	74,107,000
1957	380,824,000	400,919,000	489,342,000	88,423,000
1958	419,549,000	440,148,000	547,754,000	107,606,000
1959	462,114,000	480,337,000	608,626,000	128,289,000
1960	489,607,000	511,571,000	663,357,000	151,786,000
1961	518,373,000	547,279,000	725,886,000	178,607,000
1962	560,056,000	594,342,000	800,784,000	206,442,000
1963	612,475,000	640,719,000	878,314,000	237,595,000
1964	640,201,000	670,018,000	941,339,000	271,321,000
1965	702,790,000	736,630,000	1,044,043,000	307,413,000
1966	749,619,000	813,958,000	1,158,168,000	344,210,000
1967	834,295,000	918,655,000	1,302,685,000	384,030,000
1968	1,005,316,000	1,073,440,000	1,483,563,000	410,123,000

Tariffs

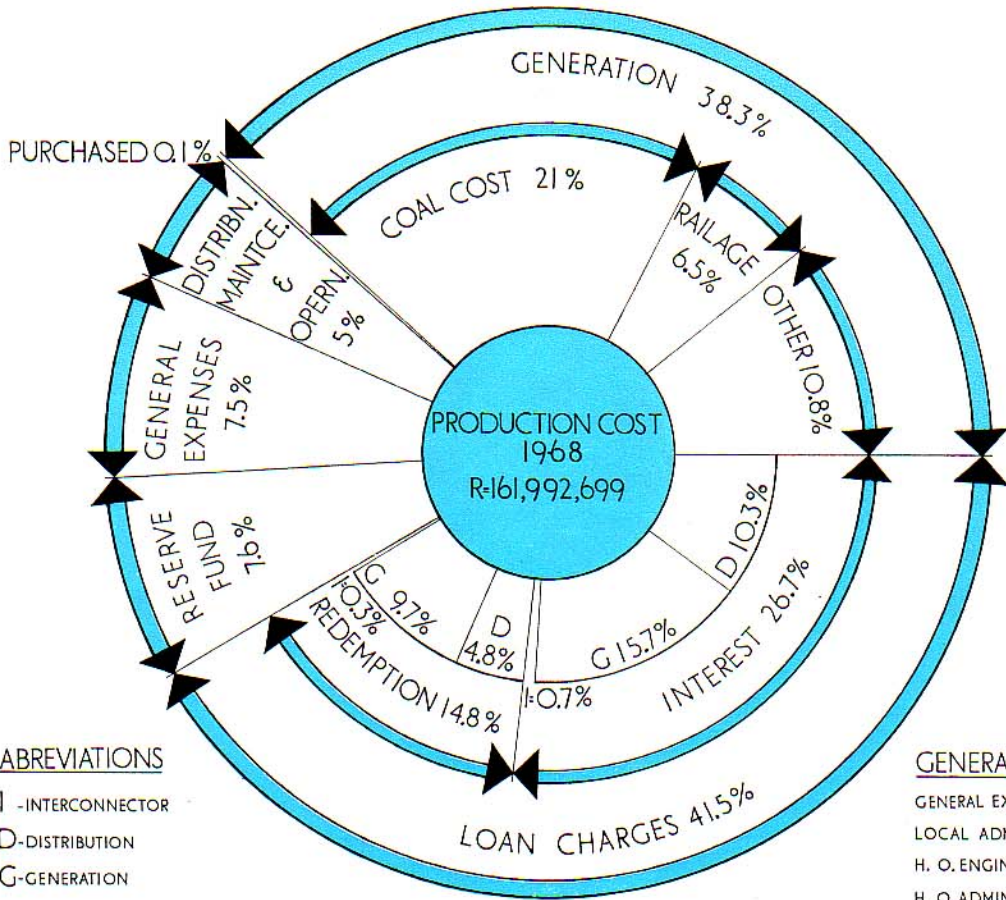
During the year the following changes were made to tariffs:—

Border Undertaking

Due to rising costs and additional capital charges it was necessary to increase tariffs on the Border Undertaking by 5 per cent with effect from January, 1968.

Cape Eastern Undertaking

An adjustment of tariffs by the surcharge of 10 per cent was introduced on this Undertaking from the beginning of January, 1968.



ABREVIATIONS

- I - INTERCONNECTOR
- D-DISTRIBUTION
- G-GENERATION

GENERAL EXPENSES

- GENERAL EXPENSES 3.3%
- LOCAL ADMINISTRATION 2.7%
- H. O. ENGINEERING 0.6%
- H. O. ADMINISTRATION 0.9%
- RESEARCH EXPENSES 0.5%

STAFF

Home Ownership Scheme

The balance at 31st December, 1968, on loans granted to employees to enable them to acquire homes under the Commission's Home Ownership Scheme in terms of the Electricity Act, was R5,536,000.

Personnel

The staff employed by the Commission at the 31st December, 1968, numbered 20,893 employees, made up as follows:—

	1967	1968	Increase
Whites	6,946	7,322	376
Coloured and Bantu	12,871	13,571	700
	<u>19,817</u>	<u>20,893</u>	<u>1,076</u>

The Commission desires to record its appreciation of the loyalty and conscientious service of its employees.

STATISTICAL SUMMARY

Revenue, costs, output and sales, and other figures relating to the operation of the Commission's Undertakings during the years 1964 to 1968 are as follows:—

	1964	1965	1966	1967	1968	Increase 1968 over 1967
TOTAL REVENUE.....	108 861 000	117 959 000	129 517 000	146 783 000	161 475 000	10·009%
TOTAL COSTS.....	108 751 000	118 673 000	130 500 000	146 928 000	161 993 000	10·253%
Difference between Revenue and Costs.....	110 000	714 000	983 000	145 000	518 000	373 000
Sales of Electricity, Air and Steam.....	108 382 000	117 481 000	129 009 000	146 135 000	160 757 000	10·006%
Net Costs (less Sundry Revenue).....	108 272 000	118 195 000	129 992 000	146 280 000	161 275 000	10·251%
Average Price per Unit Sold.....	0·5101c	0·5076c	0·4254c	0·5467c	0·5550c	1·518%
Average cost per Unit Sold.....	0·5118c	0·5128c	0·5315c	0·5512c	0·5608c	1·742%
Average Net Cost per Unit Sold.....	0·5096c	0·5107c	0·5294c	0·5488c	0·5583c	1·731%
Cost of Coal Consumed (including railage).....	32 367 000	34 986 000	37 901 000	42 053 000	44 604 000	6·066%
Railage on Coal Consumed.....	8 504 000	8 856 000	9 524 000	10 462 000	10 571 000	1·042%
Coal Consumed (in tons of 2,000 lb).....	17 256 296	18 438 075	18 720 084	20 180 802	21 091 542	4·513%
Units Generated.....	24 355 417 029	26 440 445 395	27 395 479 555	30 421 691 463	33 061 223 315	8·676%
Units Sent Out.....	22 695 417 029	24 634 982 969	25 528 081 820	28 370 890 385	30 843 450 285	7·745%
Units Purchased.....	40 950 587	126 642 689	629 876 210	69 604 511	7 911 573	—
Units Sold.....	21 247 542 296	23 143 311 124	24 554 347 088	26 657 111 958	28 885 008 545	8·358%

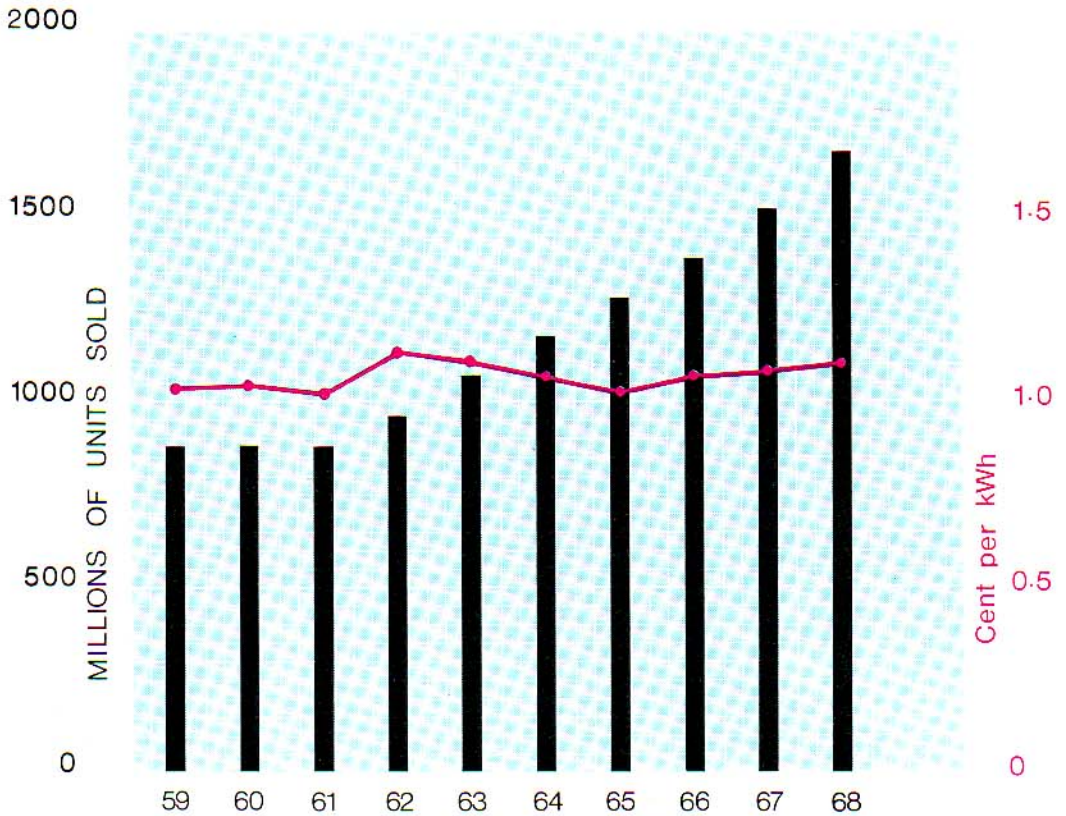
ESCOM'S UNDERTAKINGS

The development and operation of Escom's separate Undertakings are reviewed in detail in the following pages.

General Note:

“ Working Costs ” include interest charges and Redemption Fund contributions on loan capital and amounts set aside to Reserve Fund.

CAPE WESTERN UNDERTAKING



The Licensed area of supply of the Cape Western Undertaking is shown on the map on page 24.

With the installation of two 60 MW hydrogen-cooled generators at Salt Rivier No. 2 Power Station during 1967, both Salt River and Hex River stations are now complete. Further development of the Undertaking will be provided for by means of the 400 kV transmission system from the Eastern Transvaal. The first transmission line will reach Beaufort West by July, 1969, and Muldersvlei by 1970.

Sales of Electricity

The following graph indicates the increase in sales of electricity over the period 1958 to 1968, the red line being the average price per unit sold.

Units generated in the Undertaking's power stations increased from 1,700 million units in 1967 to 1,899 million units in 1968. The generated maximum demand for the year was 319 Megawatts. Sales increased by 8.6 per cent to 1,666 million units in 1968.

Industrial users were responsible for the largest increase in sales which rose by 12.3 per cent since 1967 to 5,796 million units. In general, the pattern of development in the Undertaking was similar to previous years.

Financial

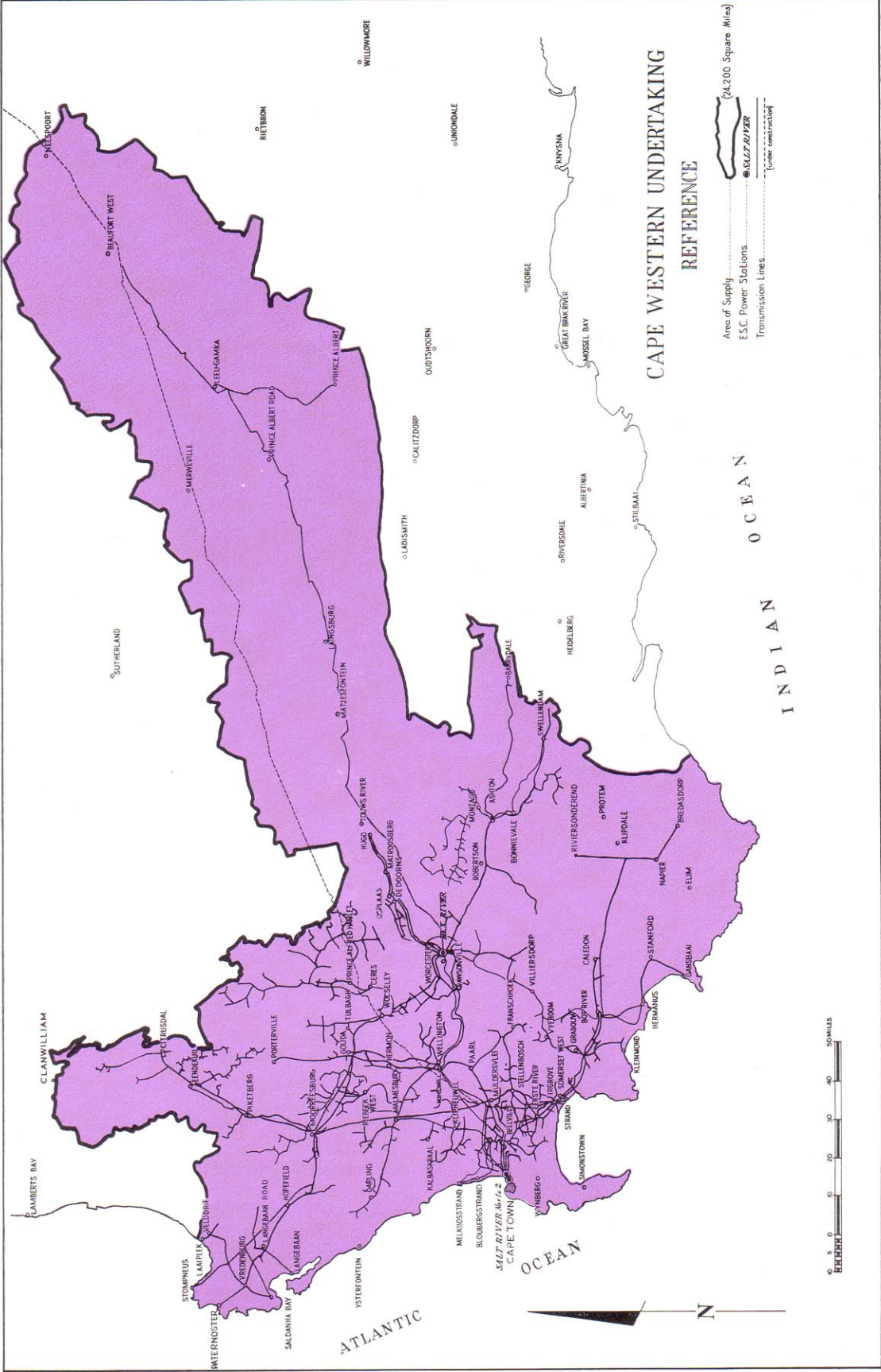
The average price per unit sold is shown by the red line on the graph. This increased since 1967 by 1.3 per cent to 1.1052 cents.

Total revenue for the year amounted to R18,473,000 as against working costs of R18,612,000 resulting in a deficit of R319,000. The accumulated deficit is now R664,000.

Development of the Undertaking

Development of the Western Cape during the year centred around the new distribution stations being constructed at Beaufort West and Muldersvlei. The distribution station near Beaufort West (called Droërivier) should be complete by July, 1969, by which time the first 400 kV transmission line from the Eastern Transvaal will be complete to this point. It is planned to complete the section of line between Beaufort West and Muldersvlei by March 1970, and duplicate 400 kV transmission lines should be in service between the pooled power stations of the Rand and Orange Free State Undertaking and the Western Cape by mid 1972.

A 132 kV transmission line was completed during March of this year between Muldersvlei and Moorreesburg. This is being used to reinforce the existing system in the West Coast area. A future supply to Malmesbury will be provided by means of a distribution station being built on this line. A double circuit 132 kV transmission line is to be built from Muldersvlei to Stikland in order to provide for the rapidly increasing load in the Cape Flats area. Most of the equipment has been ordered, and it is expected that



the distribution station will be in operation by June, 1970.

A new substation called Montague Gardens is being built by the Cape Town City Council a short distance from Acacia Distribution Station. Work on the transmission lines between Acacia and Montague Gardens should be complete by April, 1969.

A number of 66 kV substations were completed during the year, including one to replace the existing 11 kV supply to Paarl, and five to supply farmers.

In order to meet the increase in demand at Saldanha Bay, a line has been built teed off the Koperfontein Fisheries Line. This will be ready for service when the new distribution station at Saldanha Bay is complete.

The demand in the urban areas of Goodwood, Parow and Bellville increased from 71.8 MW during 1967, to 80.6 MW this year. This was met by the distribution stations at Elsie's River, Oakdale and Bellville South. A new distribution station in the Parow South area (Tiervlei) has been partially commissioned to meet the growth in this area, but one of the 12.5 MVA transformers intended for this distribution station was used to provide the South African Railways with an urgent supply to "E" Berth at the Duncan Dock.

With the completion of this distribution station, 78 distribution stations will be serving urban areas. The total transformer capacity serving urban areas including pole mounted transformers increased by 12.3 MVA making the total installed capacity 141.4 MVA.

Extensions to Rural Supplies

Extensions to the rural network consisted of 358 miles of HV (22 kV, 11 kV and 6.6 kV), reticulation as well as 17 miles of low voltage, and two miles of street lighting mains.

During 1968, 179 new farms were connected, and additional points of supply were given to 254 existing rural consumers. Thirty-one connections were made to other rural consumers (not farmers).

The abovementioned extensions included two rural schemes completed during the year. Forty-two farmers were supplied by means of 52 miles of transmission line built between Eendekuil and Porterville. A scheme south of Citrusdal was built to supply 24 farms, other schemes being planned between the towns of Riviersonderend and Villiersdorp, and between Hermanus and Caledon.

During 1968, 800 requests were received from farmers for supplies of electricity, including requests for additional points from 303 farmers already being supplied.

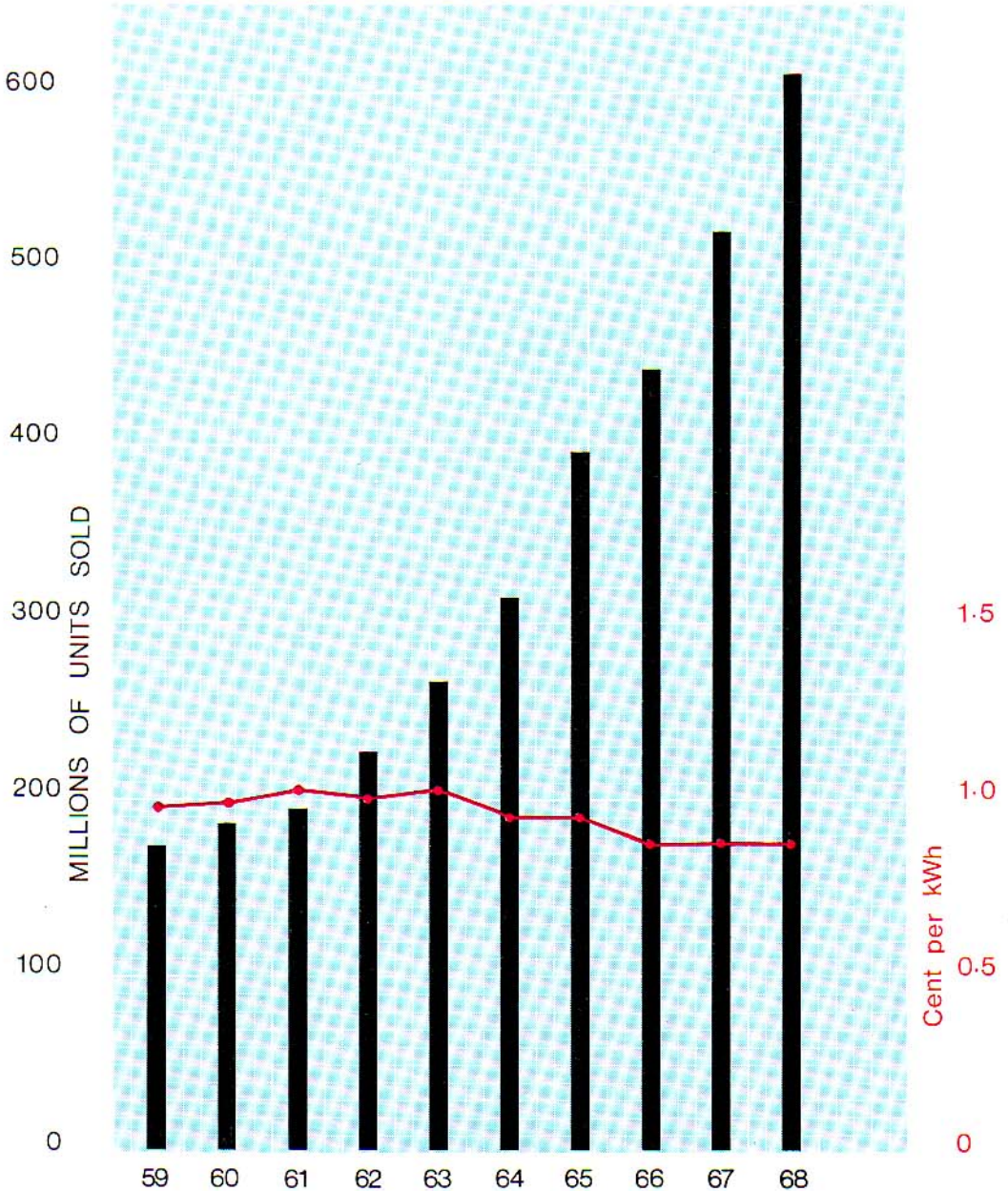
Power Stations Operation

Units generated in the power stations of the Cape Western Undertaking amounted to 1,889 million during 1968. With the installation of new generators 5 and 6 at Salt River No. 2 Power Station during 1967, and the recommissioning of No. 1 generator with a new rotor, the original having been lost at sea after being repaired overseas, it was possible during 1968 to increase the generation at Salt River No. 2 Power Station by about 33 per cent. Seventy-five per cent of all units used in this Undertaking during the year were generated at this station with a consequent increase in thermal efficiency and improvement in generation costs. It is anticipated that generating costs will be further reduced as more use is made of the two new 60 MW hydrogen-cooled generators. Because of the improved plant availability at Salt River No. 2 Power Station, generation at Salt River No. 1 Power Station and the Hex River Power Stations was reduced considerably during the year.

CAPE WESTERN UNDERTAKING

CONSUMER		SALES			REVENUE FROM SALES		AVERAGE PRICE/ U.S.		
Class	Number		Units	% Change	R	R	c	c	
	1968	1967			1968	1967	1968	1967	
Traction	7	7	368 452 295	+ 6.206	4 100 000	3 911 000	1.0478	1.0616	
Bulk	34	33	334 333 722	+ 8.726	3 281 000	3 016 000	0.9203	0.9021	
Mining	6 104	4 992	602 466 782	+ 11.594	7 293 000	6 410 000	1.0848	1.0640	
Industrial	40 905	41 207	221 305 253	+ 8.044	3 584 000	3 253 000	1.4988	1.4698	
Domestic	41	40	7 021 835	+ 7.799	157 000	142 000	2.2386	2.1797	
Street Lighting									
Total	47 091	46 279	1 533 071 894	+ 8.685	18 415 000	16 732 000	1.1052	1.0914	
					Accumulated to 31/12/68				
Total Revenue					1968		1967	R	
Working Costs					R		R		
Surplus					18 472 668		16 805 000		
Deficit					18 612 620		17 329 000		
Capital Expenditure					139 952		524 000		669 491
					12 252 868		6 019 000		106 830 362
		Salt River No. 1			Salt River No. 2		Hex River		
		1968	1967	1968	1967	1968	1967	1968	
Electricity Units Sent Out		29 085 990	82 235 380	1 352 322 400	1 014 446 000	415 833 380	520 020 380		
Maximum Demand kW.S.O. } Half Hour } 2 Minute }		55 100	65 200	226 700	190 600	115 200	115 300		
Load Factor %		6.0	70 000	67.9	210 000	41.1	121 000		
Thermal Efficiency % S.O.		15.4	14.4	27.4	60.8	24.1	51.5		
			16.13		26.93		25.1		
FUEL:									
Coal Consumed—Tons		20 404	35 442	735 933	588 718	257 223	312 948		
Average Per Unit Sent Out—lb.		1.92	1.82	1.08	1.09	1.24	1.20		
Calorific Value B.Th.U./lb		11 560	11 626	11 560	11 626	11 430	11 320		
Total Cost—Rand		4 449 702	3 713 000	Included under Salt River No. 1	Station	1 449 681	1 812 000		
Cost Per Ton—Rand		5.88	5.95			5.64	5.79		

CAPE NORTHERN UNDERTAKING



The licensed area of supply of the Cape Northern Undertaking is shown on the map on page 28.

This Undertaking purchases its requirements of electricity from the pooled power stations of the Rand and Orange Free State Undertaking. There are at present two points of supply, one by means of a 165 kV line from Grootkop to Kimberley while a 275 kV line is in operation between Everest Distribution Station (near Kroonstad) and Kimberley.

This 275 kV transmission line was turned into Perseus Distribution Station (near Dealesville) on the 20th April, 1969, and a second 275 kV line should be completed between Perseus and Kimberley by September, 1970. Use of the 165 kV line from Grootkop will then be discontinued.

A total of 655.3 million units were purchased from the pooled power stations of the Rand and Orange

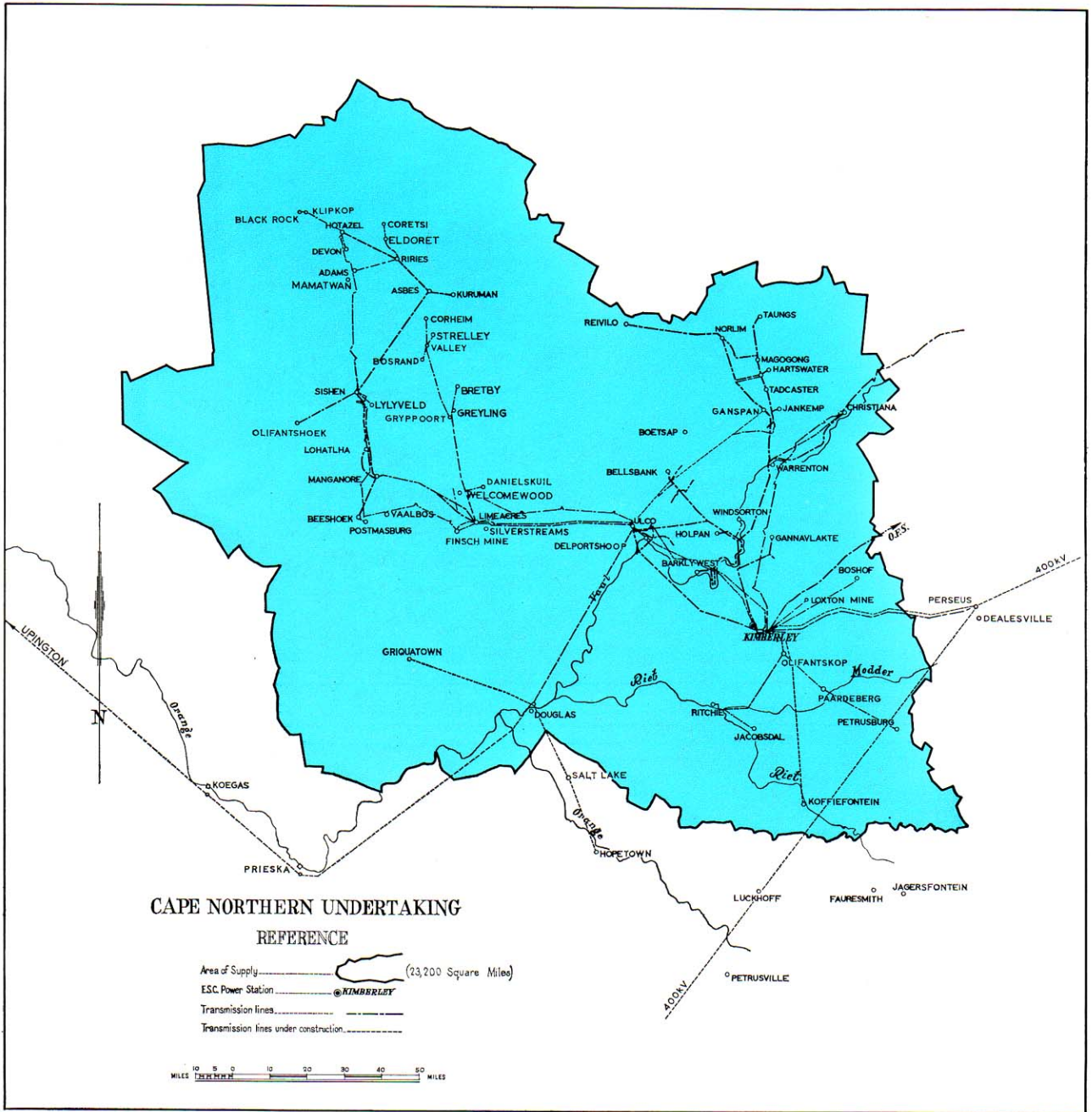
Free State Undertaking during 1968 at a maximum demand of 117 MW.

Sales of Electricity

The following graph indicates the increase in sales of electricity over the period 1959 to 1968, the red line being the price per unit sold.

Sales of electricity have almost doubled over the last four years, the increase during 1968 being 17.3 per cent to 609.6 million units sold.

The South African Railways purchased 161.8 million units for traction purposes during the year, and it is expected that this may increase to almost 90 million units during 1969. This increase in rail traffic is due to the development of the Vanderbijlpark steelworks as well as increased building and industrial activity imposing additional iron ore, lime and cement traffic



on the Northern Cape Railway systems.

Sales to the Kimberley City Council increased by 8.8 per cent to 110.2 million units. This increase is partially due to the expansion in the use of air conditioning units for domestic and industrial purposes.

The consumption at the De Beers Company's Finsch Mine increased by 4.1 million units to 18.5 million units. This company has decided to re-open the old Koffiefontein Mine at the earliest possible date.

Small diamond mines in the Barkly West, Smith Mine and Bellsbank areas increased consumption by

18.3 per cent to 11.3 million units during the year. It is expected that this expansion will continue for several years.

The energy consumed by the iron ore mining companies in the Postmasburg-Sishen area increased by 10.9 per cent to 36.6 million units, while sales to the manganese mines in the Postmasburg-Hotazel and Black Rock areas increased by 7.5 per cent to 10 million units for the year.

The following table shows the breakdown of energy used for mining, quarrying and cement manufacture:—

	Million units		% Increase of units during year	% of total units sold
	1967	1968	1968	1968
Diamonds	109.8	117.7	7.2	19.3
Lime and Cement	70.6	72.2	3.0	11.8
Blue Asbestos	40.2	39.9	-0.7	6.5
Iron Ore	33.0	36.6	10.9	6.0
Manganese	9.3	10.0	7.5	1.6
Gypsum	3.0	2.6	-13.3	0.4
	<u>265.9</u>	<u>279.5</u>	<u>5.11</u>	<u>45.6</u>

Sales to the smaller municipalities increased by 2.66 million to 23.39 million units or by an average of 12.8 per cent.

Sales to towns and the main reticulation areas in the Undertaking are as follows:—

Town	Units sold	% Increase
	1968 million	
Barkly West	2.49	15.5
Boshof	1.15	7.4
Warrenton	4.01	6.2
Christiana	1.97	15.4
Delpportshope	0.37	7.6
Postmasburg	6.29	17.9
Kuruman	6.23	9.3
Olifantshoek	0.48	21.3
Petrusburg	0.33	20.7

The development of the Commission's main reticulated areas is as follows:—

Town	Units sold	% Increase
	(million)	
Jan Kempdorp	3.40	24.2
Hartswater	3.25	22.5
Windsorton	0.34	28.8
Danielskuil	0.71	32.7
Finsch Village	1.33	8.3
Total	<u>9.03</u>	<u>21.8</u>

The 1,100 plottolders in the Vaalharts scheme consumed 5.58 million units. During the last three years the average consumption of these plottolders has increased by 101 units per month to the present average monthly consumption of 423 units.

The Taung area, mainly in the Bantu Reserve, continued to develop and showed a gain of 19.6 per

cent to the present consumption of 1.51 million units per annum.

Riparian pumping farmers on the Vaal and Harts Rivers consumed 5.8 million units for pumping purposes. This total includes an estimated one million units consumed for spray irrigation. Due to the limited amount of water now available increased use is being made of spray irrigation, which, although using the water much more economically, requires considerably more electrical energy per gallon extracted from the rivers than does flood irrigation.

Financial

There was no change in tariffs during the year, the twenty per cent discount remaining in force.

Total revenue for the year amounted to R5,360,000 as against working costs of R5,464,000, the deficit being R103,940 on the year's working. The accumulated deficit on Revenue Account is now R1,011,810.

Development of the Undertaking

The entire railway line from Kimberley to Hotazel has now been electrified and is open to traffic. This completes the present programme of railway electrification in the Northern Cape. The sections between Postmasburg and Sishen and Sishen to Hotazel were completed during this year.

Work is now complete on the 55 mile 132 kV transmission line between Ulco and Herbert distribution station (near Douglas), and the Undertaking construction staff is now busy on the 76 mile continuation of this line to Burchell distribution station near Prieska.

The section between Ulco and the Herbert distribution station was temporarily energized at 22 kV during the year, and a 22 kV line was built between Herbert distribution station and the town of Douglas. This enabled a supply to be given to this town five months before the Herbert 132/22 kV transformers

are due to arrive, and enabled the municipality to accept the load of the new winery.

The Griquatown Municipality was supplied from Herbert distribution station at the end of March, 1969.

A branch from the Kimberley Paardeberg 22 kV line was erected during the year to reticulate the rural areas and village of Modder River, Ritchie and Jacobsdal. A number of consumers in the Ritchie area were supplied, and a scheme is proceeding to serve riparian farmers near Paardeberg, and later some hundred Riet River plotters.

Negotiations to supply Hopetown Municipality from Herbert distribution station were concluded at the year end, and progress has been made so that some 2,000 HP of river pumping farmers load will be connected from a 50-mile 22 kV reticulation scheme around Douglas where the Vaal-Riet and Vaal-Orange Rivers meet.

Other 132 kV transmission systems planned are from Kimberley to Koffiefontein, and from Ulco to Ganspan, the latter to strengthen the supply to the Vaalharts area. These lines are to be completed by

March, 1970. A 132 kV line will also be built from Douglas to Upington via Prieska, and a 66 kV line from Kimberley to Bosplaat will supply the new diamond mines in this area and improve the supply to the Boshof Municipality.

Development of Rural Supplies

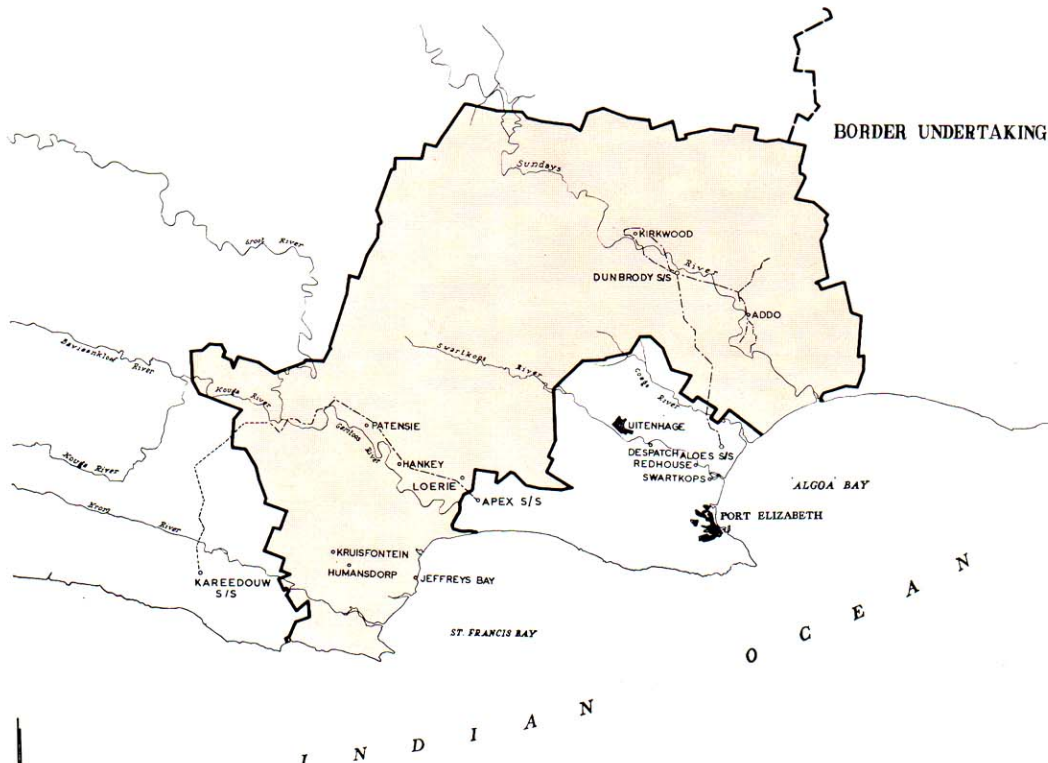
Considerable development has taken place with the development of rural supplies in the Undertaking. Sixteen miles of transmission line were erected during the year to supply sixty-five farmers. Thirty-five of these are plotters in the Vaalharts area.

A scheme is under construction in the area at the confluence of the Modder and Riet Rivers. This scheme will consist of some 35 miles of 22 kV transmission line, and in addition to being used by riparian farmers for pumping purposes, will also supply the towns of Jacobsdal and Ritchie. Thirteen farmers were connected during the year.






Water is to be pumped electrically from the Vaal and Riet Rivers for irrigation purposes. This scheme started in April, 1969, and will supply over 2,000 HP of pumping plant.

CAPE NORTHERN UNDERTAKING

CONSUMER Class	Number		Units		% Change		REVENUE FROM SALES		AVERAGE PRICE/U.S.			
	1968	1967	1968	1967	68/67	67/66	R	R	c	c		
							1968	1967	1968	1967		
Traction	3	3	161 825 684	104 586 562	+ 54.729	+ 117.973	1 460 830	998 000	0.9027	0.9545		
Bulk	11	10	133 564 061	122 019 250	+ 9.461	+ 7.524	957 734	851 000	0.7171	0.6975		
Mining	67	62	228 216 436	215 715 163	+ 5.795	+ 6.256	2 095 830	1 953 000	0.9184	0.9051		
Industrial	319	290	71 521 452	65 175 334	+ 9.737	- 2.379	600 619	542 000	0.8398	0.8307		
Domestic	2 226	2 131	14 300 559	12 227 290	+ 16.956	+ 11.229	230 740	206 000	1.6135	1.6891		
Street Lighting	7	6	184 512	178 842	+ 3.170	+ 15.872	3 819	4 000	1.0698	2.0017		
Total	2 633	2 502	609 612 704	519 902 441	+ 17.255	+ 17.522	5 349 572	4 554 000	0.8775	0.8758		
							1968		1967		Accumulated to 31/12/68	
							R		R		R	
Total Revenue							5 360 558		4 563 000			
Working Costs							5 464 498		4 583 000			
Surplus							103 940		20 000		1 011 810	
Deficit							1 464 999		- 1 270 000		19 369 441	
Capital Expenditure												

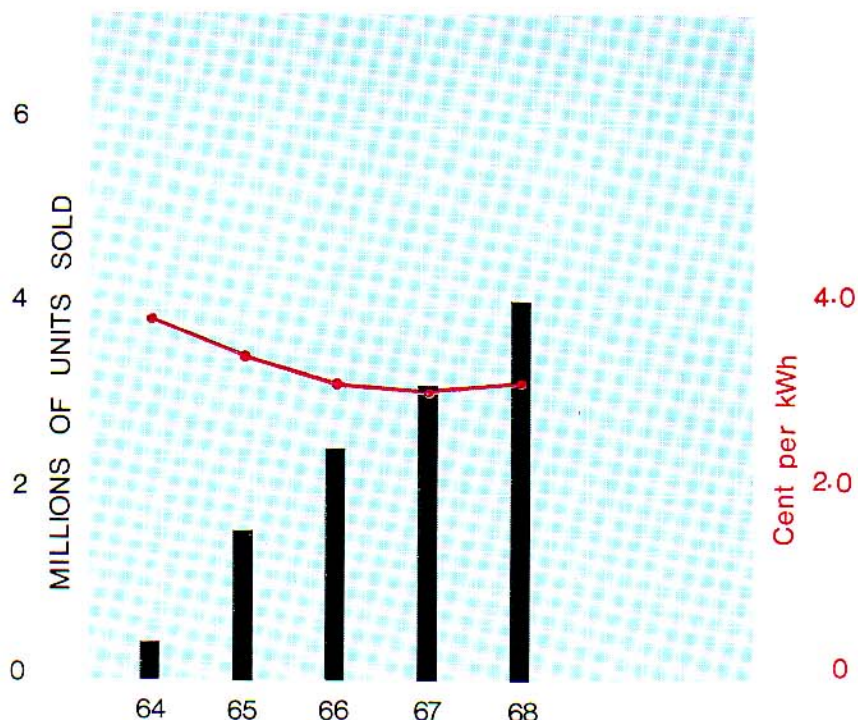


CAPE EASTERN UNDERTAKING
REFERENCE

- Area of Supply (3,100 Square Miles)..... 
- Border Undertaking..... 
- Transmission Lines..... 
- Transmission Lines Under Construction..... 
- Substation Site..... 



CAPE EASTERN UNDERTAKING



The licensed area of the Cape Eastern Undertaking is shown on the map on page 32.

This Undertaking has no generating plant, all electricity used being purchased from the Port Elizabeth Municipality at Aloes and Loerie.

The Department of Water Affairs is establishing a hydro-electric power station at the Paul Sauer Dam for its own use for pumping purposes. This power station will have an installed capacity of 4.5 MW, which is more than the requirements of the Department. Escom is to operate this power station on behalf of the Department, and during the second half of 1969 it should be possible to utilize the surplus capacity to supply consumers in the Gamtoos Valley. Electricity for these consumers is at present being purchased from the Municipality of Port Elizabeth at Loerie.

Sales of Electricity

The following graph indicates the increase in sales of electricity in the Undertaking since it came into operation in 1964.

The red line superimposed on the graph is the average price per unit sold.

Sales in the Undertaking have increased from 0.4 million units in 1964 to 4.1 million units in 1968.

There was a 28.6 per cent increase in sales to consumers, from 3.2 million units in 1967 to 4.1 million units in 1968.

Sales in the Sundays River Valley amounted to 3.4 million units and in the Gamtoos River Valley to 687,000 units. System maximum demands since 1967 increased in the Sundays River Valley by 3.4 per cent to 1,323 kVA, and in the Gamtoos River Valley by 59.4 per cent to 360 kVA.

The increase in supply to the Kirkwood Municipality amounted to 3.3 per cent, purchases being 1.1 million units.

Financial

The total revenue for the year amounted to R131,924 which represents an increase of 33 per cent over the revenue for 1967.

The year's working resulted in a deficit of R14,000, the accumulated deficit to date being R32,000. A surcharge of 10 per cent was applied to the standard tariffs from January, 1968.

DEVELOPMENT OF THE UNDERTAKING

Sundays River Valley

The development of the supply in the irrigation area continued at a lower rate than in 1967. Fourteen additional domestic and small power users were connected during the year, bringing the total number of consumers at the end of 1968 to 320.

Supplies will be made available to two radio navigation stations in the valley early in 1969.

Gamtoos River Valley

The erection of Apex distribution station is complete except for certain small items of equipment, and the last section of line from Loerie to Apex is complete.

It is hoped that power will be available from the hydro-electric station being erected at the Paul Sauer Dam during the second half of 1969.

The reticulation systems in Patensie and Hankey were further developed. With the addition of 44 new consumers during the year in Patensie, the total at the year end increased to 71, an addition of 17 new con-

sumers in Hankey making the total 37. Street lighting systems were erected in both Patensie and Hankey.

Three large users were connected during the year, one in Patensie and two in the rural system.

The total number of consumers in the Valley at the year end was 116, being an increase of 67 over the figure for 1967.

Agreements have been concluded with a number of

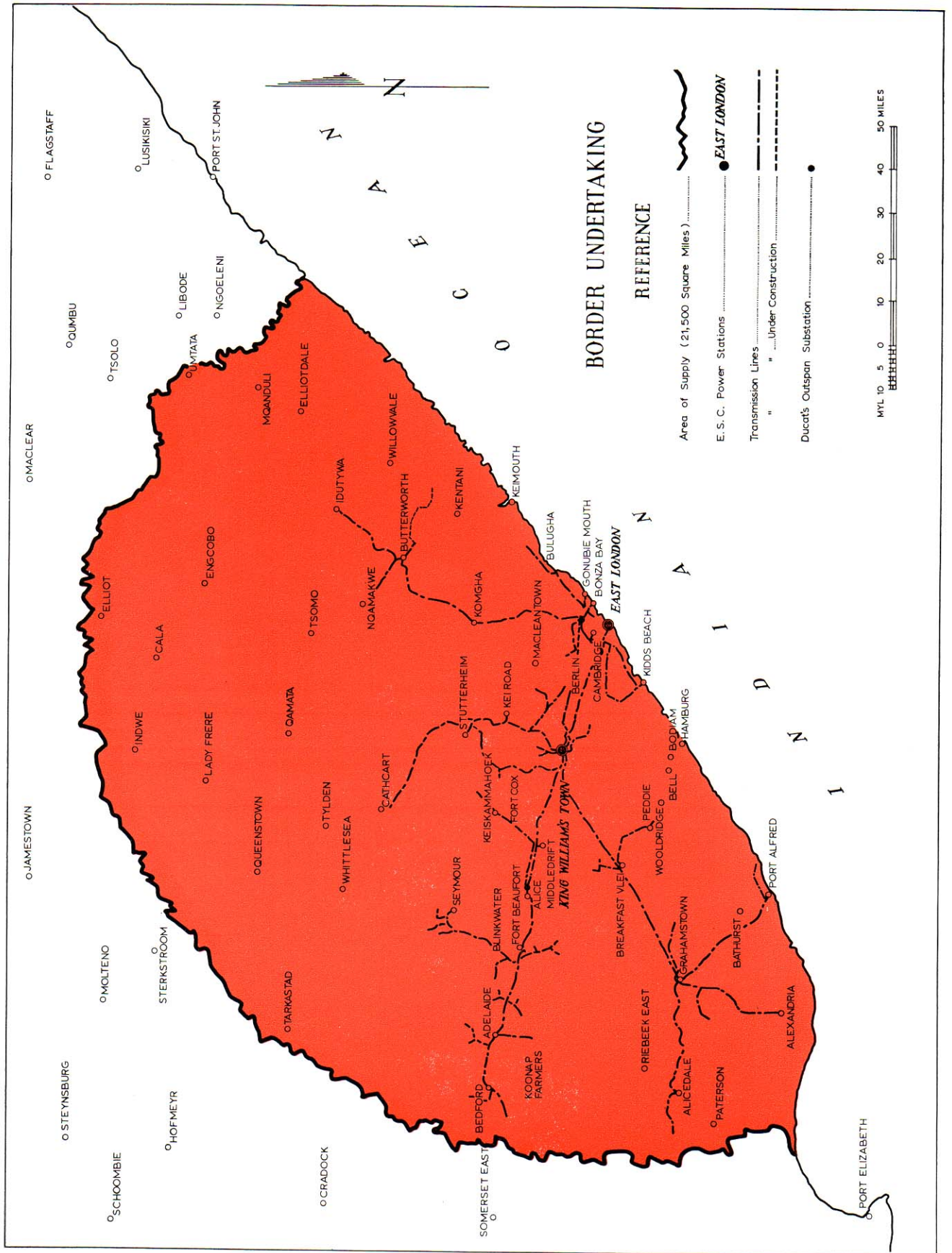
farmers and work on spur lines to supply them is in hand.

Arrangements are being made to supply the South African Broadcasting Corporation F.M. Station, and the General Post Office micro-wave station at Kareeduw. It is expected that the supply will be ready by the beginning of 1970.

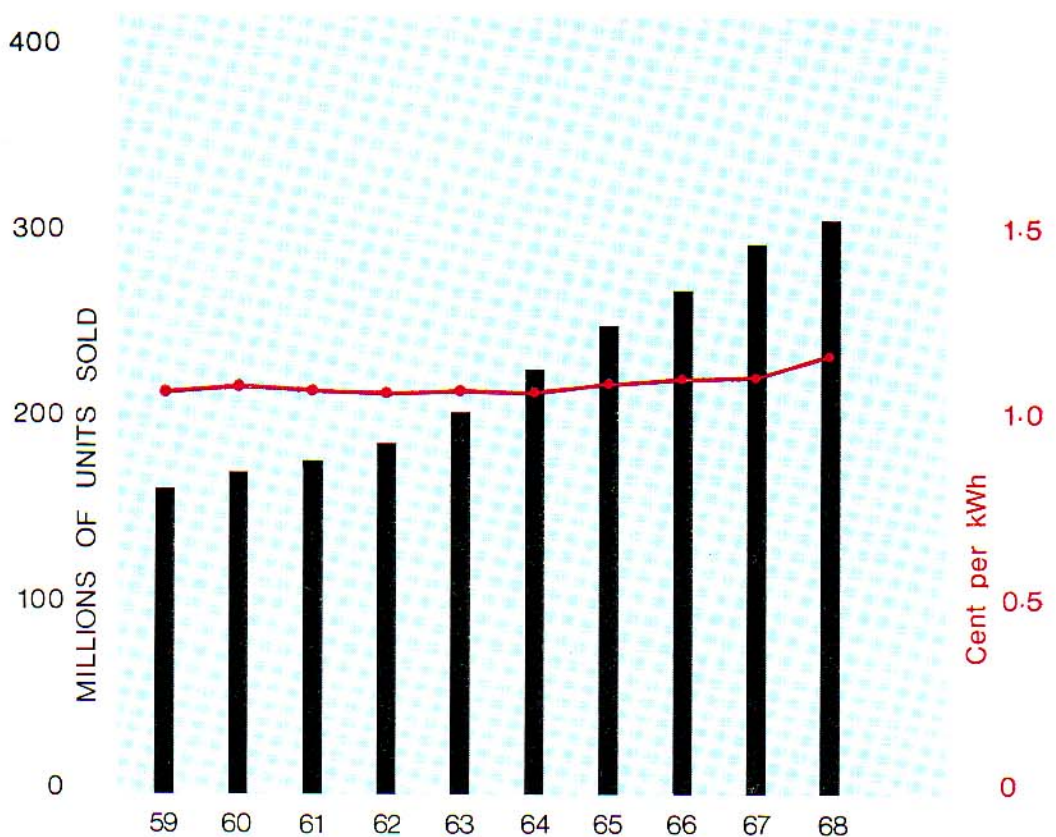
A depot is being erected in Patensie for the operating and maintenance staff. This will be completed during 1969.

CAPE EASTERN UNDERTAKING

CONSUMER Class	CONSUMER			SALES			REVENUE FROM SALES		AVERAGE PRICE/U.S.	
	Number		Units	% Change	R	R	c	c	1968	1967
	1968	1967								
Traction	—	—	—	—	—	—	—	—	—	—
Bulk	1	1	1 147 720	+ 3·327	1 110 760	23 264	21 446	2·0270	1·9307	—
Mining	—	—	—	—	—	—	—	—	—	—
Industrial	81	62	1 549 359	+47·359	1 051 421	55 252	38 008	3·5661	3·6150	—
Domestic	353	292	1 401 309	+36·628	1 025 637	52 229	38 834	3·7316	3·7860	—
Street Lighting	—	—	—	—	—	—	—	—	—	—
Total	436	355	4 098 388	+28·564	3 187 818	130 808	98 288	3·1917	3·0830	—
Accumulated to 31/12/68										
1968										
1967										
R										
Total Revenue					131 924	99 204			R	
Working Costs					146 329	110 348				
Surplus										
Deficit					14 405	11 144				
Capital Expenditure					139 448					
									32 051	
									956 223	



BORDER UNDERTAKING



The licensed area of supply of the Border Undertaking is shown on the map on page 36.

This Undertaking generates its own power at two steam power stations, one at West Bank in East London, while the King William's Town Power Station is at present only being used for standby purposes. With the commissioning of the second 20 MW generator at West Bank Power Station in March, 1969, this power station attained its final capacity of 115 MW.

It is intended that future growth of the Undertaking will be catered for by bringing in supplies from the 400 kV system.

The intention is to build a 400 kV line from De Aar to Cookhouse. From Cookhouse 220 kV lines will be built to Port Elizabeth and East London. It is possible that these will be completed by 1973.

The following graph indicates the increase in sales of electricity over the period 1958 to 1968, the red line being the average price per unit sold.

Increase in Sales of Electricity

Total sales of electricity increased from 152.9 million units in 1958 to 310.5 million units in 1968, an average annual increase of 7.34 per cent over this period, and an increase of 5.55 per cent over the sales figure for the previous year.

The system maximum demand increased from 58.9 MW in 1967 to 64.9 MW in 1968.

The greatest increase in the number of units sold was in bulk supplies to municipalities which increased by 5.5 per cent to 268.1 million units. East London purchased the greater portion of the units sold which amounted to 233.5 million units to this consumer.

The total number of consumers in the Undertaking is 4,316 the nett increase during the year being 220.

Financial

The average price per unit sold as depicted on the above graph was 1.181 cents, being an increase of 4.4 per cent over the 1967 figure. A general surcharge of 5 per cent was imposed on tariffs applicable in the Undertaking, with effect from January, 1968.

Development of the Undertaking

Work is almost complete with the installation of two additional 11 kV cables between the West Bank No. 2 Power Station, and the nearby Gately Outspan distribution station, where a third 12 MVA 11/66 kV step-up transformer is being installed. It is expected that this transformer will be in operation by March, 1969. Gately is connected to the Ducats distribution station (near East London) where an additional 5 MVA transformer is being installed. One 66 kV transmission line was installed between Ducats and King William's Town during June, 1967, the second at present being under construction. Additional transformer capacity has been ordered for King William's

Town for installation at the end of 1969. It has also been necessary to strengthen the distribution system in the King William's Town/Stutterheim area.

The section between King William's Town and Mount Kemp has been converted from 11 kV to 22 kV operation, and will be extended to Kubusie distribution station (near Stutterheim) by March, 1969, where it is to be connected into the existing 11 kV system. Work is complete with raising the system voltage around Grahamstown from 11 kV to 22 kV.

Conversion of the Alexandria Line was completed during 1967. A third 3 MVA transformer has been installed at the Grahamstown distribution station together with a 11/22 kV step-up transformer. The latter transformer enabled the section of line from Grahamstown to Port Alfred to be energized after being converted to 22 kV operation. With the erection of the Station Hill distribution station at Port Alfred, this section of work is now complete. The new Radio Navigation station in the Port Alfred area was supplied from this distribution station.

Supplies to the East London Municipality have been reinforced by means of two additional 11 kV feeders to the Nuffield Road distribution station.

Other projects receiving attention are, the alteration of the supply point to the Bedford Municipality, the erection of a permanent distribution station to supply Fort Hare University College, and a supply to the Thafofefe Hospital in the Kentani district.

Supplies to Rural Consumers

New supplies were made available to 48 farmers, and 13 other rural consumers during the year. Thirty-two miles of line were erected to supply these farmers with a further six miles planned to supply a further fifteen rural consumers during 1969.

Negotiations have been completed to supply 21 farmers in the Zuney Valley area west of Alexandria. This will require 22 miles of transmission line work which will commence during 1969.

Power Station Operation

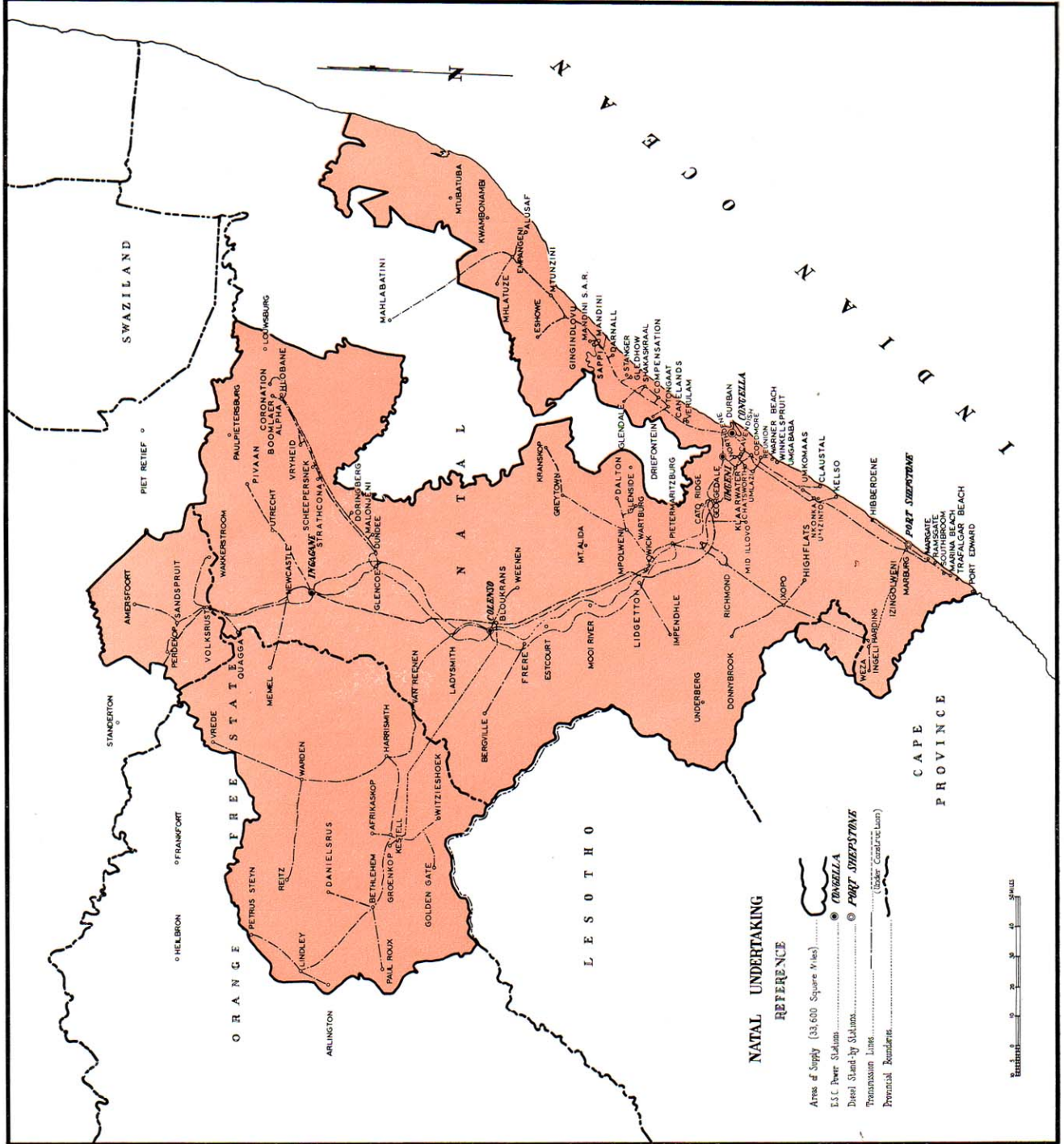
Units generated in the West Bank Power Station amounted 329.6 million during the year. This represents an increase of 6.7 per cent during 1968. It was not necessary to run the King William's Town Power Station which was kept as standby.

Work on the "E" extensions at West Bank proceeded satisfactorily and the 20 MW turbo generator with associated boiler was commissioned during March, 1969.

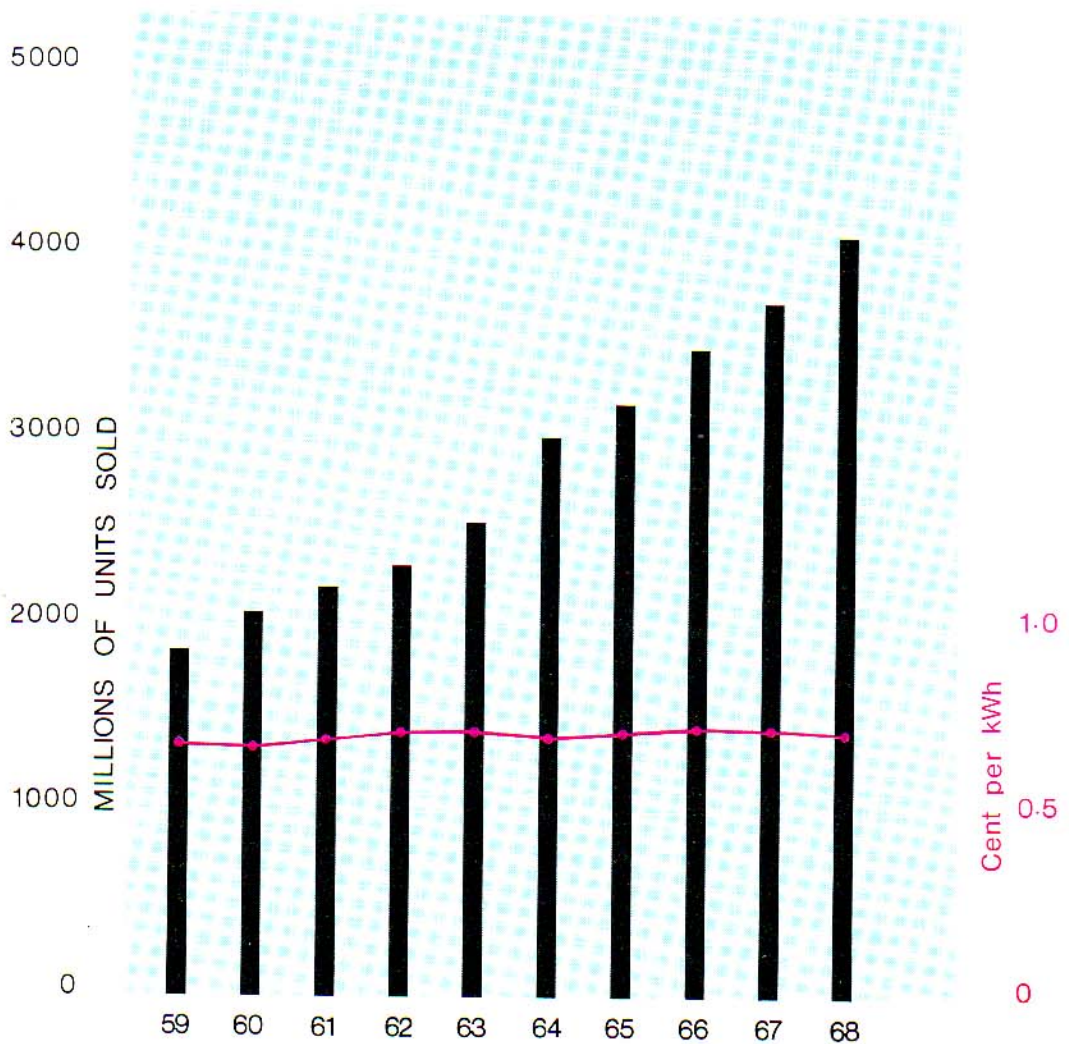
Both West Bank Nos. 1 and 2 Power Stations operated satisfactorily during the year, the combined efficiency improving from 21.6 per cent in 1967 to 22.1 per cent in 1968. This increase was mainly due to less use being made of the older plant in Power Station No. 1.

BORDER UNDERTAKING

CONSUMER		SALES		REVENUE FROM SALES		AVERAGE PRICE/U.S.			
Class	Number	Units	% Change	R	R	c	c		
	1968	1968	68/67	1968	1967	1968	1967		
Traction	14	268 160 954	5·418 +	2 54 379 076	7·173 +	2 827 391	2 556 393	1·0544	1·0050
Bulk	—	—	—	—	—	—	—	—	—
Mining	429	20 763 881	6·026 +	19 583 687	17·577 -	447 505	410 896	2·1552	2·0980
Industrial	3 655	20 971 148	6·734 +	19 648 117	10·289 +	385 687	343 837	1·8391	1·7500
Domestic	11	601 595	3·474 +	581 396	2·874 +	15 354	14 290	2·5522	2·4580
Street Lighting	—	—	—	—	—	—	—	—	—
Total	4 316	310 497 578	5·542 +	294 192 276	8·004 +	3 675 937	3 325 416	1·1839	1·1304
				1968		1967		Accumulated to 31/12/68	
				R		R		R	
Total Revenue				3 680 468		3 680 468		92 561	
Working Costs				3 802 320		3 802 320		19 798 269	
Surplus									
Deficit									
Capital Expenditure									
				King William's Town Power Station (Steam)		King William's Town Power Station (Oil)			
				1968		1967		1968	
				East London—West Bank Nos. 1 & 2 Power Station		King William's Town Power Station		King William's Town Power Station	
				1968		1967		1968	
Electricity Units Sent Out				313 217 480		293 689 660			
Maximum				66 880		59 770			
Demand kWS.O. } Half Hour				71 000		62 700			
Load Factor % } 2 Minute				55·0		56·6			
Thermal Efficiency % S.O.				22·1		21·6			
FUEL:				208 042		202 028		Not Operated	
Coal Consumed—Tons				1·328		1·376		Not Operated	
Average Per Unit Sent Out—lb.				11 640		11 470		Not Operated	
Calorific Value B.Th.U./lb.				1 101 943		1 073 000		Not Operated	
Total Cost—Rand				5·30		5·31		Not Operated	
Cost Per Ton—Rand								Not Operated	



NATAL UNDERTAKING



The licensed area of supply of the Natal Undertaking which combines the areas of supply of the Natal Central Licence and the Natal Southern Licence, is shown on the map on page 40.

This Undertaking has four power stations, Congella and Umgeni Power Stations near Durban, and Colenso and Ingagane Power Stations in the Natal Midlands.

All of these power stations have been developed to the full capacity for which they were designed, the final 100 MW generator at Ingagane being placed in service early in 1969. Considerable load growth is anticipated in Natal in the near future, particularly in the Richards Bay area. To provide for this, two 400 kV lines will be built from Camden to Ingagane Power station, and to Mersey near Pietermaritzburg. The section between Ingagane and Mersey is to be operated at 275 kV for some time.

Sales of Electricity

The following graph indicates the increase in sales of electricity over the period 1958 to 1968, the red line being the average price per unit sold.

Units generated in the pooled power stations of the Natal Undertaking increased from 4,166.4 million

units in 1967 to 4,606.6 million units during 1968, an increase of 11.1 per cent. In addition, 748,000 units were imported from the Rand and Orange Free State Undertaking through the 88 kV system at Platrand and 9,600 units were exported over the same system.

Total sales from the interconnected power stations of the Undertaking increased from 3,721 million units in 1967 to 4,122 million units during 1968. The increase for the year was 11.1 per cent, being higher than the average increase over the last ten years, and higher than the increase for 1967 (6.3 per cent).

All classes of consumer except mining, reflected higher rates of increase in consumption during 1968 than in 1967.

Bulk supplies to Municipalities showed an increase of 10.9 per cent to 2,680.2 million units purchased during 1968. The Durban Corporation purchased 79 per cent of these units, its consumption rising by 9 per cent over their 1967 figure to 2,118 million units. Pietermaritzburg's growth rate for the year was 11 per cent, their purchases being 277 million units.

Sales to the South African Railways for traction purposes rose by 11.4 per cent to 580.1 million units.

A number of new traction substations were taken into service on the North and South coasts of Natal as well as in the Natal Midlands and Bethlehem/Harrismith area.

The increase in industrial supplies during the year amounted to 11.4 per cent. Of the 655.1 million units sold to this class of consumer, Ferralloys Limited at Cato Ridge purchased 31.3 per cent, their consumption remaining static at 208 million units. South African Pulp and Paper Industries at Mandini increased by 26.2 per cent to 157.1 million while Union Glass Works at Talana increased consumption by 39.6 per cent to 28.2 million units purchased during 1968.

Financial

The price per unit sold as shown by the red line on the graph continued to decrease, the value in 1968 of 0.7050 cents being 2.8 per cent lower than the corresponding figure for 1967. Greater use was made during the year of the new and more efficient Ingagane Power Station, which station generated about 50 per cent of the units sold in the Undertaking. With the commissioning of the fifth and last 100 MW set early in 1969, the use of this power station will increase still further during the coming year.

Total revenue for the year amounted to R29,211,000 as against working costs of R30,044,000. This resulted in a deficit of R833,000 on Revenue Account, thus reducing the accumulated surplus to R1,231,000.

DEVELOPMENT OF THE UNDERTAKING

Considerable development is to take place in Natal in the near future, particularly in the Richards Bay area, where an aluminium smelter and harbour is to be built. A new distribution station called Mersey is being built between Pietermaritzburg and Greytown to provide for this development as well as for the future load growth in Central and Southern Natal. The 275 kV section of Mersey is to be complete by April, 1970, to receive the first of the 400 kV lines from Chivelston (near Ingagane), energized initially at 275 kV, and a single 275 kV line from Geogedale. This will complete the third link between Geogedale and Ingagane. The 132 kV supply from Mersey will be utilised for the urgently required additional supply to the Pietermaritzburg Corporation by means of transmission lines to the Corporation's Riverside substation.

The target date of April, 1970, is dependent on the Corporation being successful in obtaining servitude rights for the section of line between Bishopsstowe and Riverside.

A new distribution station called Pentrich (near Pietermaritzburg) was completed during the year. This distribution station provides a bulk supply to Pietermaritzburg, and replaces Masons Mill, which was sold to the Pietermaritzburg Corporation.

Following the Government decision to proceed with the aluminium smelter at Richards Bay planning work is proceeding rapidly in order to meet the target date for initial supplies of up to 90 MVA by mid 1971.

Transmission lines are to be built from Mersey to Impala distribution station near Richards Bay to provide this load and power for this consumer will be fed into the 275 kV system at Chivelston by means of two 400 kV transmission lines from Camden Power Station. These lines are to be ready by mid

1971. A temporary 2 MVA construction supply will be available at the construction site when required during 1969.

This supply has been provided by means of a 88 kV line from the Empangeni Distribution Station. Empangeni Distribution Station is being developed in anticipation of the completion of the 275 kV system between Mersey and Impala when it will be possible to strengthen supplies on the North Coast and in Zululand, by means of an 132 kV infeed from Impala. The transformer capacity at Empangeni has been increased by the installation of two 7.5 MVA transformers and nine miles of 88 kV line have been built to supply quarries at Mhlatuzi.

The South African Railways are to build a rail link from Vryheid in Northern Natal to Richards Bay. A new distribution station is being built near Bloedrivier in Northern Natal to provide for the electrification of this line. Two 88 kV transmission lines are to be built from Bloedrivier to Mahlabatini in Zululand, and finally to Empangeni to supply the traction substations along this route. A section of this transmission line is required in advance to provide supplies to crude oil pumping stations on the pipeline being constructed to the Witwatersrand. Two of these pumping stations are at Mahlabatini and Empangeni while two others are at Scheepersnek near Vryheid and Quagga between Newcastle and Volksrust. The transmission lines to these pumping stations were complete by the end of April, 1969.

The equipment at the new Klaarwater distribution station near Durban as well as the 275 kV transmission lines from the Geogedale distribution station were commissioned during 1968. Klaarwater is not yet in operation as the Durban Corporation is not yet ready to take a supply from this point. It is anticipated that the Durban Corporation section of Klaarwater, which is being installed by Escom on their behalf, will be placed in operation later in 1969.

The construction of the Nkonka distribution station on the South Coast of Natal, and the 132 kV transmission line from Coedmore distribution station were completed early in 1969. This system provides duplicate supplies to the South Coast traction substations. The 132 kV line is to be extended to Oribi near Port Shepstone as required to meet load requirements of the lower South Coast and rail electrification of that area.

Towards the end of the year work commenced on the construction of a 88 kV line between Marburg (near Port Shepstone), and Ingeli distribution station near Harding. This project will be commissioned during the second quarter of 1969. The line will then be continued to Kokstad, which it is anticipated will be supplied early in 1970.

A 132 kV transmission line is being built in Northern Natal from Bloukrans near Colenso to Groenkop in the Orange Free State. An endeavour is being made to commission this project by the winter of 1969 in order to strengthen the existing Orange Free State system, which is at present supplied over a single 88 kV line from Ladysmith. The supplies to the Harrismith and Arlington traction substations is dependent on the completion of this project.

The system is to be extended to Arlington later in 1969, and will eventually tie in with the 132 kV system at Kroonstad.

A number of points of supply were made available to the South African Railways for traction purposes during the year.

Six traction substations were supplied during the year on the South Coast, namely, Reunion, Umlazi, Chatsworth, Winkelspruit, Clansthal and Kelso. A firm request has been made for supplies to be made available to Turton and Southport situated between Nkonka and Port Shepstone, the target date being March, 1970.

On the North Coast, supplies were made available to Canelands, Compensation and Gledhow during February, 1969, while supplies to Darnel and Mandini are not required before mid 1970. It is planned to supply eight traction substations in the Harrismith-Arlington area, five being complete during 1969.

Rural Development

Development of the rural network took place over a wide area in Natal. A total of 294 new farm supplies were made available during the year. This involved the building of 160 miles of transmission line. No less than 134 of these new farm connections were supplied in the Ixopo/Pietermaritzburg/Greytown area, where 78 miles of line were built. The existing system in central Natal was extended to supply an additional 71 farmers, while in Northern Natal and the Bethlehem/Warden/Vrede area 34 miles of line were built to supply 33 farms. On the North Coast and Zululand 35 miles of line were completed to supply 36 farms, while an additional 18 farmers' supplies were given on the South Coast. The development in this area will enable Escom to supply the towns of Zinkwazi, Strand and Umzimkulu, and it is intended to construct 117 miles of transmission line to supply some 141 farms. Further development on the South Coast will enable a supply to be given to Port Edward early in 1969.

Schemes are being considered in Pongola area, as well as the Mtabatuba/Hluhluwe area of Zululand.

Terms have been quoted to farmers for a number of other schemes, 700 applications being outstanding. A total of 410 farmers accepted Escom's terms for a supply during the year.

Power Station Operation and Maintenance

The Natal Undertaking generated 4,606 million units in power stations during the year. Nearly half of these were generated at Ingagane Power Station in Northern Natal. Ingagane increased its output by 36.4 per cent during the year with resulting improvement of one per cent in thermal efficiency. The entire load growth of the Undertaking was met by this station. With the commissioning of the fifth 100 set early in 1969, it is expected that the output from Ingagane will increase still further in that year. The output of Colenso, Umgeni and Congella was slightly less than in 1967.

The maximum demand of 755 MW was met without difficulty except for the overloading of the Umgeni, Geordedale 132 kV lines during peak periods. This will be obviated when Klaarwater distribution station is in commission.

In last year's Report Nos. 1 and 2 steam receivers at Umgeni Power Station were reported to be out of commission due to serious cracks having been found. The receivers have now been replaced with new ones, and the machine returned to service early in the year.

A new mud drum has been obtained from a scrapped boiler at the Vereeniging Power Station and installed in No. 8 Boiler at the Colenso Power Station. This boiler was returned to service during March, 1968.

NATAL UNDERTAKING

CONSUMER		Number		Units		SALES		% Change		REVENUE FROM SALES		AVERAGE PRICE/U.S.	
		1968	1967	1968	1967	1968	1967	1968	1967	1968	1967	1968	1967
Traction	12	9	580 079 577	2 445 739 443	+ 13-821	+ 2-587	4 631 513	4 015 000	0-7984	0-7879			
Bulk	25	24	2 680 222 072	130 575 686	+ 9-587	+ 9-551	17 062 401	16 123 000	0-6366	0-6592			
Mining	29	27	1 204 460 138	575 852 579	+ 8-397	+ 12-140	1 019 993	989 000	0-7812	0-8207			
Industrial	2 939	2 469	655 100 218	66 971 012	+ 13-762	+ 3-935	5 141 112	4 716 000	0-7848	0-8190			
Domestic	12 722	13 616	73 787 577	1 946 492	+ 10-178	+ 10-929	1 174 178	1 088 000	1-5913	1-6237			
Street Lighting	61	111	1 686 717		- 13-346	- 0-244	32 497	35 000	1-9266	1-8100			
Total	15 788	16 256	4 121 451 847	3 720 612 366	+ 10-773	+ 6-349	29 061 694	26 966 000	0-7051	0-7248			
Total Revenue									1968	1967	Accumulated to 31/12/68		
Working Costs									R	R	R		
Surplus									29 210 987	27 100 000	1 230 779		
Deficit									30 044 131	26 881 000	219 000		
Capital Expenditure									833 144	13 429 000	161 681 220		
									11 959 243				
Colenso Power Station Nos. 1 and 2													
Congella Power Station Nos. 1 and 2													
Electricity Units Sent Out			1968	1967			1968	1967			1968	1967	
Maximum Demand kWS.O. } Half Hour			495 806 200	539 048 270			665 883 600	472 264 070					
Load Factor %			130 070	123 550			146 795	141 185					
Thermal Efficiency % S.O.			149 000	141 000			169 000	160 000					
FUEL:			43-4	49-4			51-6	53-9					
Coast Consumed—Tons			17-8	17-8			19-2	19-8					
Average Per Unit Sent Out—lb.			415 410	450 605			527 335	510 251					
Calorific Value B.Th.U./lb.			1-676	1-672			1-584	1-518					
Total Cost—Rand			1 480	1 460			1 210	1 370					
Cost Per Ton—Rand			1 581 459	1 755 000			2 006 380	1 859 000					
			3-81	3-90			3-80	3-64					

NATAL UNDERTAKING

	Umgenti Power Station		Ingagane Power Station	
	1968	1967	1968	1967
Electricity Units Sent Out				
Maximum..... } Half Hour	1 009 784 200	1 123 488 800	2 136 979 600	1 564 241 760
Demand kWS.O. } 2 Minute	228 800	222 800	372 400	266 800
Load Factor %.....	246 000	242 000	403 000	288 000
Thermal Efficiency % S.O.	50.2	57.1	65.3	66.4
	23.1	23.6	29.0	28.0
FUEL:				
Coal Consumed—Tons	630 220	683 634	1 135 563	866 726
Average Per Unit Sent Out—lb.	1.248	1.217	1.063	1.108
Calorific Value B.Th.U./lb.....	11 830	11 880	11 070	10 990
Total Cost—Rand.....	3 190 075	3 479 000	2 850 665	2 182 000
Cost Per Ton—Rand	5.06	5.09	2.51	2.52
Electricity Units Sent Out				
Maximum..... } Half Hour				
Demand kWS.O. } 2 Minute				
Load Factor %.....				
Thermal Efficiency % S.O.				
FUEL:				
Coal Consumed—Tons				
Average Per Unit Sent Out—lb.				
Calorific Value B.Th.U./lb.....				
Total Cost—Rand.....				
Cost Per Ton—Rand				
Fuel Oil Consumed—lb.....				
Fuel Oil Per Unit Sent Out—lb.....				
Port Shepstone Power Station (Oil)				
	1968		1967	
	18 053		10 620	
	1 932		1 610	
	2 000		1 780	
	11 314		7 181	
	0.627		0.676	

N



M O C H M B I O U E

S W A Z I L A N D

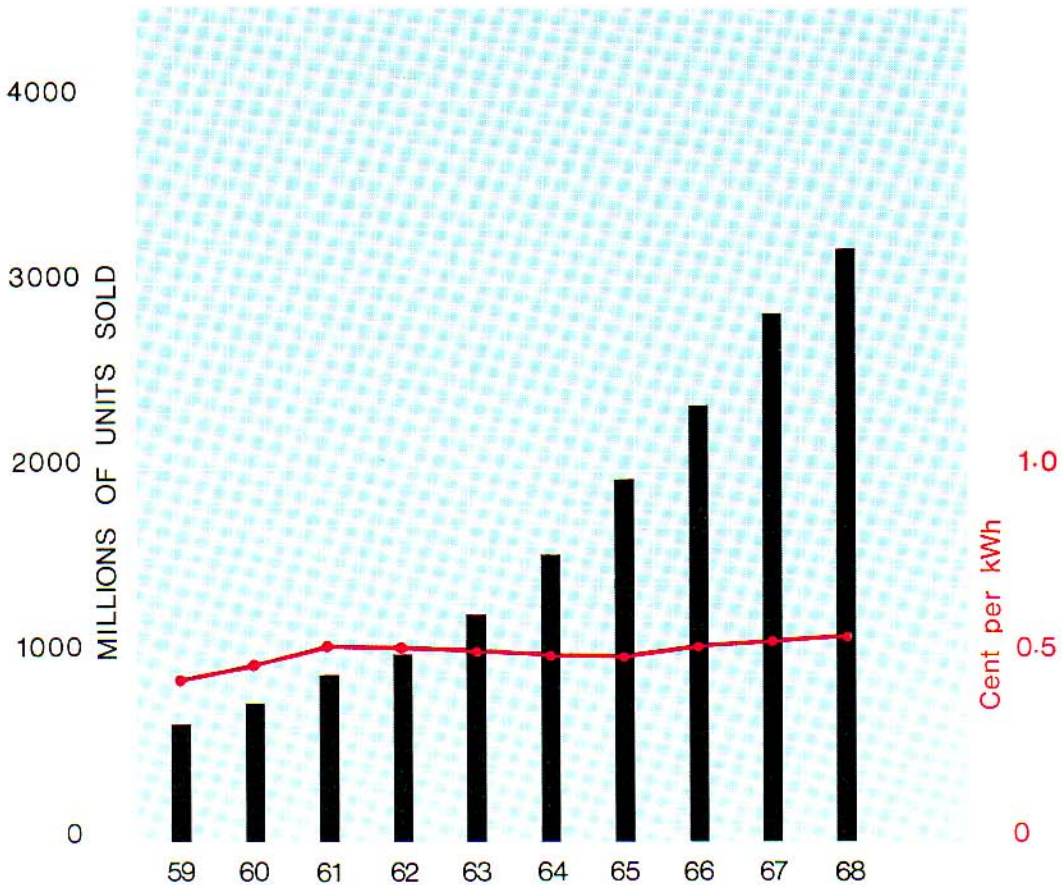
EASTERN TRANSVAAL UNDERTAKING

REFERENCE

- Area of Supply (35,700 Square Miles)
- E.S.C. Power Stations ● WILGE
- Transmission lines
- Transmission lines under construction



EASTERN TRANSVAAL UNDERTAKING



The licensed area of the Eastern Transvaal Undertaking is shown on the map on page 46.

In terms of the licence granted by the Electricity Control Board, the Witbank and Komati Power Stations of the Eastern Transvaal operate as a single system of pooled power stations together with the power stations of the Rand and Orange Free State Undertaking.

The Eastern Transvaal Undertaking draws its power wholly from this pooled system.

Sales of Electricity

The following graph indicates the increase in sales of electricity over the period 1958 to 1968, the red line being the average price per unit sold.

The Undertaking again experienced a high rate of expansion during the year. Total sales of electricity rose to 3,191 million units in 1968—an increase of 11.3 per cent over the previous year.

The greatest increase in the number of units sold during 1968 was to industrial consumers—sales increasing by 169 million units or 12.3 per cent to 1,539 million units by the end of the year.

The Highveld Steel and Vanadium Corporation was given a supply of 90 MVA during February, and purchased 266 million units during 1968. Their maximum demand increased from 3.5 MW during February, 1968, to a peak of 125 MVA during the first three months of 1969. The increase in mining activity resulted in an increase of 141 million units

sold, being an increase of 13.2 per cent over sales to this consumer during 1967. Palabora Mining Company Limited increased its consumption by 20 million units to 255.9 million units during 1968.

Supplies to municipal consumers again reflected the largest percentage increase during 1968, having increased by 22.6 per cent above the corresponding figure for 1967. The town of Tzaneen was largely responsible for this increase due to its increase of consumption by 9 million units to 22.6 million units.

Other towns reflecting large increases in demand were Bethal, Ermelo, Middelburg and Nelspruit, these towns together purchasing 61.7 million units being an increase of 23.5 per cent above the 1967 figure.

Financial

The price per unit sold as shown by the red line on the graph increased from 0.5438 cents to 0.5540 cents in 1968, an increase of 1.8 per cent. The price per unit sold has increased by approximately 30 per cent over the ten year period shown on the above graph.

The substantial increase in costs between 1959 and 1961 reflect the exceptional expansion of this undertaking during that period to provide supplies to the Lowveld and northwards to Phalabora. Since 1961 the increase in cost has followed the general pattern. The revenue from sales and the average price per unit sold for the various main classes of consumer is given in the table below:—

Total revenue for the year amounted to R17,785,000 as compared with R15,483,000 in 1967. A surplus of R596,000 was shown in the revenue accounts, making the accumulated surplus R2,312,000.

DEVELOPMENT OF THE UNDERTAKING

As was the case in previous years, it was necessary to carry out extensive extensions to the transmission and distribution systems in the Undertaking to provide for the rapidly increasing demand for electricity.

Both 132 kV transmission lines as well as the 132/33 kV distribution station supplying the Highveld Steel and Vanadium Corporation were completed during February, 1968, and a 90 MVA supply made available. Their peak demand rose to 125 MVA early in 1969.

The third 75 MVA 275/132 kV transformer is being installed at Acornhoek, and the necessary extensions are in hand. Work is in progress with a third 132 kV transmission line between Acornhoek and Foskor. An additional 3.5 MVA transformer has been installed at the Ermelo distribution station.

The new Princeton distribution station was completed early in 1968. This distribution station will supply the town of Barberton as well as gold mines and other local consumers.

The 22 kV network has now been extended from the Kiepersol distribution station to supply the Skukuza Rest Camp in the Kruger National Park. The National Parks Board have requested further supplies within the Kruger Park area.

Work has commenced on the 88 kV Jericho/Kemp transmission line as well as the Kemp distribution station. This will supply the town of Piet Retief and industrial consumers in the district. This supply should be available by May, 1969.

A 22 kV line has been built from the distribution station near Jericho Dam to Panbult and Iswepe. This will supply saw mills in the area and other consumers.

Work is in progress with the third transmission line between Kruispunt distribution station and Grootpan near Witbank. This work will have to be completed before the Witbank Power Station can be shut down. It is also necessary to install an additional 132 kV/22 kV transformer in the distribution station next to the power station.

A transmission line has been built from the Steelport distribution station to supply the Groothoek Chrome Mine.

Extensions to the Noordkaap distribution station were completed during the year. Noordkaap is an important distribution station near Barberton supplying gold mines in the area. A duplicate supply can be made to the town of Barberton from this point.

Supplies are being made available in the Ogies district for crude oil pumping stations on the new Durban/Sasolburg pipeline. Site preparation work has commenced for the new Wintershoek distribution station. This distribution station is to be supplied from Witkloof by September, 1969, the transmission line being extended via Bosloop to Kafferskraal by September, 1970. This system will provide supplies to two booster pump stations, and a pump station at Kafferskraal Dam, which is being built in the Komati River to provide water supplies to Hendrina and Arnot Power Stations.

Rural Development

Good progress was made during the year with rural electrification. 237 farmers were provided with a supply, while 23 farmers took an increased supply. A further 66 rural supplies (not farmers) were made available.

The main areas where development took place were in the Highveld, the Lowveld and in the area around Groblersdal/Marble Hall, where 22 miles of transmission line were erected. Thirty-two miles of rural line were constructed in the Brondal district, and the figure for the northern section of the low veld is 36 miles of line completed.

The Ofcolaco scheme near Tzaneen is nearing completion, 43 miles of line having been constructed.

Construction work for the supply to the Radar station at Mariepskop and an F.M. tower, and provincial communication station will commence early in 1969. A total of 128 miles of 22 kV transmission line, and 183 miles of 11 kV line were completed during the year.

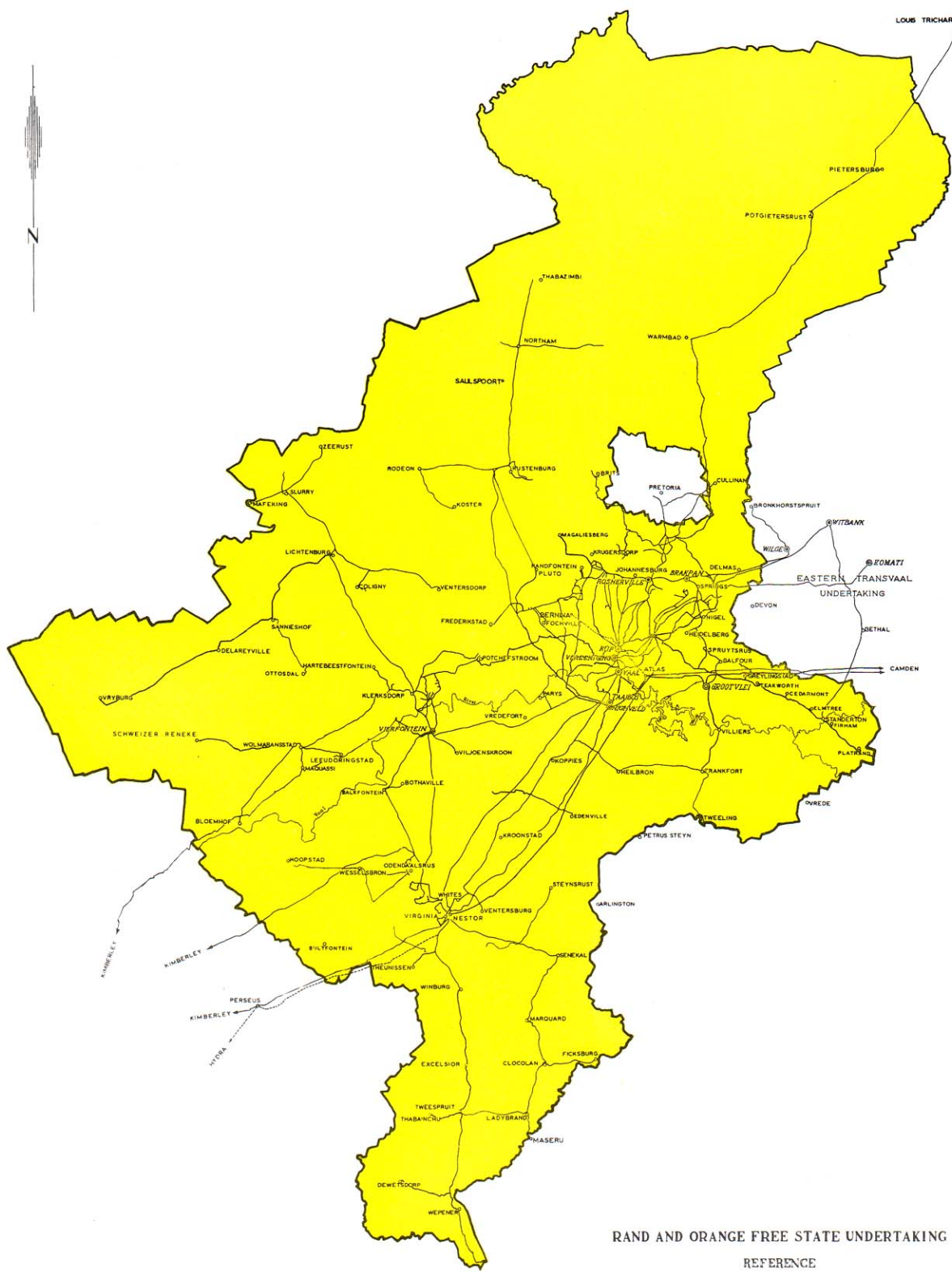
Sabie Gorge Power Station

The Sabie Gorge Hydro Power Station was maintained on a standby basis for use in emergencies only.

EASTERN TRANSVAAL UNDERTAKING

CONSUMER		SALES			REVENUE FROM SALES		AVERAGE PRICE/U.S.																																																																																																										
		Units		% Change	R	R	c	c																																																																																																									
Class	Number	1968	1967	68/67	67/66	1968	1967	1968	1967																																																																																																								
Traction	7	269 935 275	251 281 605	+ 7.423	+16.891	2 027 565	1 910 000	0.7511	0.7602																																																																																																								
Bulk	20	184 028 972	150 348 145	+22.402	+30.033	1 087 157	878 000	0.5908	0.5840																																																																																																								
Mining	79	1 162 863 916	1 026 816 317	+13.249	+16.084	6 312 655	5 376 000	0.5429	0.5431																																																																																																								
Industrial	1 804	1 539 437 438	1 370 514 505	+12.326	+17.390	7 693 567	6 521 000	0.4998	0.4758																																																																																																								
Domestic	4 754	34 496 377	30 073 066	+14.709	+20.116	537 199	480 000	1.5573	1.5948																																																																																																								
Street Lighting	23	605 952	588 661	+ 2.937	+ 3.840	20 921	20 000	3.4526	3.4293																																																																																																								
Total	6 687	3 191 367 930	2 829 622 299	+12.784	+17.498	17 679 064	15 385 000	0.5540	0.5437																																																																																																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2"></th> <th colspan="2">1968</th> <th colspan="2">1967</th> <th colspan="2">1967</th> <th colspan="2">Accumulated to 31/12/68</th> </tr> <tr> <th colspan="2"></th> <th colspan="2"></th> <th colspan="2"></th> <th colspan="2"></th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td>Total Revenue</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>R</td> <td>R</td> <td>R</td> <td>R</td> </tr> <tr> <td>Working Costs</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>17 785 293</td> <td>15 483 000</td> <td>15 483 000</td> <td></td> </tr> <tr> <td>Surplus</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>17 189 045</td> <td>14 933 000</td> <td>14 933 000</td> <td></td> </tr> <tr> <td>Deficit</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>596 248</td> <td>550 000</td> <td>550 000</td> <td></td> </tr> <tr> <td>Capital Expenditure</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>4 245 234</td> <td>5 007 000</td> <td>5 007 000</td> <td>2 312 500</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>141 258 845</td> </tr> </tbody> </table>												1968		1967		1967		Accumulated to 31/12/68												Total Revenue						R	R	R	R	Working Costs						17 785 293	15 483 000	15 483 000		Surplus						17 189 045	14 933 000	14 933 000		Deficit						596 248	550 000	550 000		Capital Expenditure						4 245 234	5 007 000	5 007 000	2 312 500										141 258 845																								
		1968		1967		1967		Accumulated to 31/12/68																																																																																																									
Total Revenue						R	R	R	R																																																																																																								
Working Costs						17 785 293	15 483 000	15 483 000																																																																																																									
Surplus						17 189 045	14 933 000	14 933 000																																																																																																									
Deficit						596 248	550 000	550 000																																																																																																									
Capital Expenditure						4 245 234	5 007 000	5 007 000	2 312 500																																																																																																								
									141 258 845																																																																																																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2"></th> <th colspan="2">Witbank</th> <th colspan="2">Komati</th> <th colspan="2">Sabie Gorge Hydro</th> </tr> <tr> <th colspan="2"></th> <th>1968</th> <th>1967</th> <th>1968</th> <th>1967</th> <th>1968</th> <th>1967</th> </tr> </thead> <tbody> <tr> <td>Electricity Units Sent Out</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Maximum</td> <td></td> <td>534 248 656</td> <td>607 413 036</td> <td>5 579 191 979</td> <td>6 440 819 201</td> <td>11 525</td> <td>17 100</td> </tr> <tr> <td>Demand kWS.O. } Half Hour</td> <td></td> <td>119 795</td> <td>122 072</td> <td>813 899</td> <td>919 853</td> <td>700</td> <td>750</td> </tr> <tr> <td>Load Factor %</td> <td></td> <td>50.8</td> <td>56.2</td> <td>78.0</td> <td>79.9</td> <td>900</td> <td>775</td> </tr> <tr> <td>Thermal Efficiency % S.O.</td> <td></td> <td>14.0</td> <td>14.5</td> <td>28.5</td> <td>28.0</td> <td>—</td> <td>—</td> </tr> <tr> <td>FUEL:</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Coal Consumed—Tons</td> <td></td> <td>609 061</td> <td>663 204</td> <td>3 196 666</td> <td>3 823 257</td> <td>—</td> <td>—</td> </tr> <tr> <td>Average Per Unit Sent Out—lb.</td> <td></td> <td>2.280</td> <td>2.195</td> <td>1.146</td> <td>1.187</td> <td>—</td> <td>—</td> </tr> <tr> <td>Calorific Value B.Th.U./lb.</td> <td></td> <td>10 360</td> <td>10 430</td> <td>10 460</td> <td>10 260</td> <td>—</td> <td>—</td> </tr> <tr> <td>Total Cost—Rand</td> <td></td> <td>860 005</td> <td>900 000</td> <td>4 052 748</td> <td>4 387 000</td> <td>—</td> <td>—</td> </tr> <tr> <td>Cost Per Ton—Rand</td> <td></td> <td>1.41</td> <td>1.36</td> <td>1.27</td> <td>1.15</td> <td>—</td> <td>—</td> </tr> </tbody> </table>												Witbank		Komati		Sabie Gorge Hydro				1968	1967	1968	1967	1968	1967	Electricity Units Sent Out								Maximum		534 248 656	607 413 036	5 579 191 979	6 440 819 201	11 525	17 100	Demand kWS.O. } Half Hour		119 795	122 072	813 899	919 853	700	750	Load Factor %		50.8	56.2	78.0	79.9	900	775	Thermal Efficiency % S.O.		14.0	14.5	28.5	28.0	—	—	FUEL:								Coal Consumed—Tons		609 061	663 204	3 196 666	3 823 257	—	—	Average Per Unit Sent Out—lb.		2.280	2.195	1.146	1.187	—	—	Calorific Value B.Th.U./lb.		10 360	10 430	10 460	10 260	—	—	Total Cost—Rand		860 005	900 000	4 052 748	4 387 000	—	—	Cost Per Ton—Rand		1.41	1.36	1.27	1.15	—	—
		Witbank		Komati		Sabie Gorge Hydro																																																																																																											
		1968	1967	1968	1967	1968	1967																																																																																																										
Electricity Units Sent Out																																																																																																																	
Maximum		534 248 656	607 413 036	5 579 191 979	6 440 819 201	11 525	17 100																																																																																																										
Demand kWS.O. } Half Hour		119 795	122 072	813 899	919 853	700	750																																																																																																										
Load Factor %		50.8	56.2	78.0	79.9	900	775																																																																																																										
Thermal Efficiency % S.O.		14.0	14.5	28.5	28.0	—	—																																																																																																										
FUEL:																																																																																																																	
Coal Consumed—Tons		609 061	663 204	3 196 666	3 823 257	—	—																																																																																																										
Average Per Unit Sent Out—lb.		2.280	2.195	1.146	1.187	—	—																																																																																																										
Calorific Value B.Th.U./lb.		10 360	10 430	10 460	10 260	—	—																																																																																																										
Total Cost—Rand		860 005	900 000	4 052 748	4 387 000	—	—																																																																																																										
Cost Per Ton—Rand		1.41	1.36	1.27	1.15	—	—																																																																																																										

Station on caretaker basis used in emergencies only.

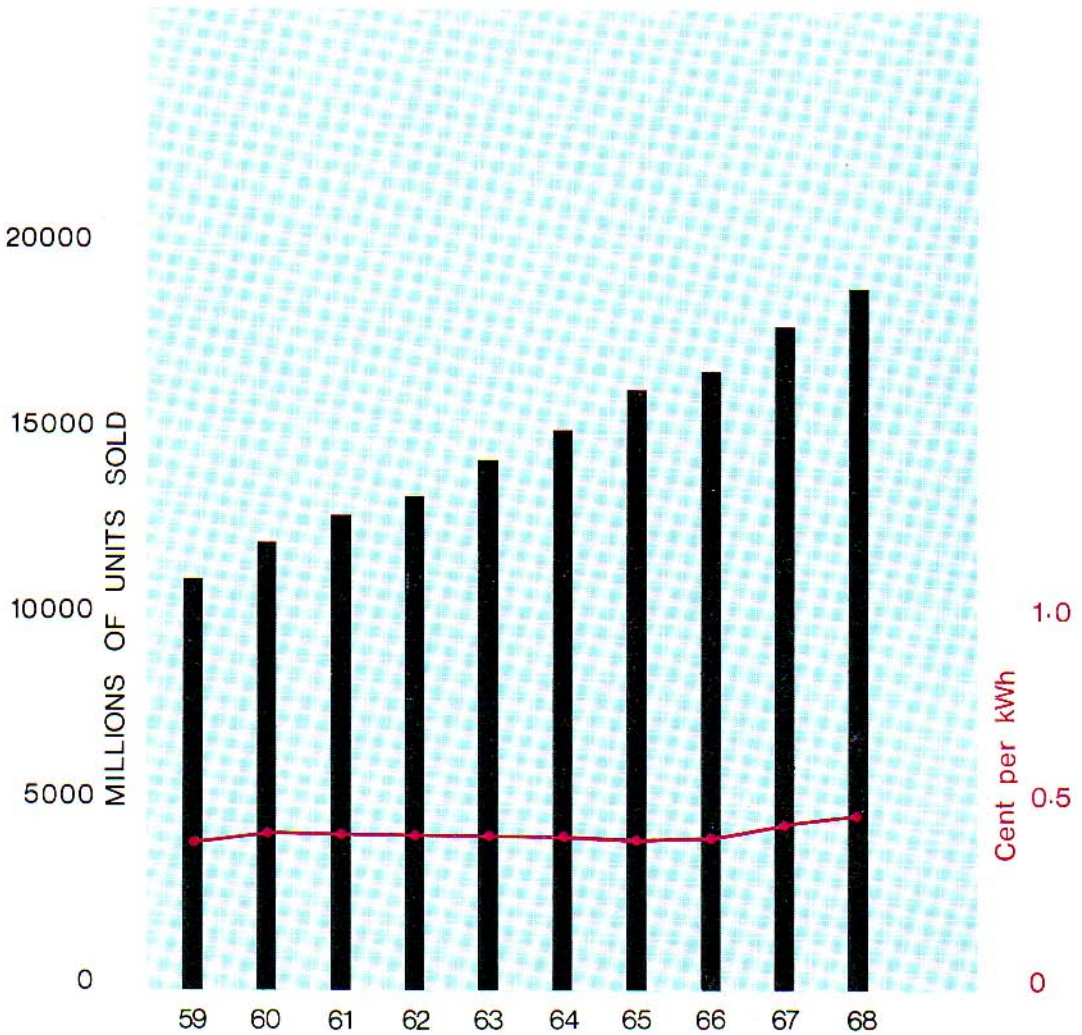


RAND AND ORANGE FREE STATE UNDERTAKING
REFERENCE

- Area of Supply (71 200 Square Miles) ...
- E.S.C. Power Stations ... (Under construction)
- Transmission Lines ...
- Transmission Lines under construction ...



RAND AND ORANGE FREE STATE UNDERTAKING



The licensed area of supply of the Orange Free State Undertaking is shown on the map on page 50.

Considerable progress has taken place in the Rand and Orange Free State Undertaking during the year under review, both in the development of the 400 and 275 kV systems as well as in the distribution network.

Sales of Electricity

The following graph indicates the increase in sales of electricity over the period 1958 to 1968, the red line being the average price per unit sold.

Over the years represented by the above graph, the total units sold increased from 11,035 million units in 1959 to 18,979 million units during 1968, an average annual increase of 7.2 per cent over this period.

The increase during 1968 represented an increase

of 6.9 per cent above the sales in 1967.

Sales for the year reflected a slight slackening in the tempo of economic development shown in the 1967 sales. Sales, however, increased to all classes of consumers.

Sales to the South African Railways for traction purposes during 1968 show an increase of 7.5 per cent over the sales recorded during 1967, suggesting increased haulage as no new electrified sections were brought into service.

Bulk supplies to local authorities increased by 13 per cent over the 1967 figure, thus maintaining the tempo of growth of recent years.

Sales to industrial consumers were 9.4 per cent above the sales recorded in 1967.

The units sold to the main groups of industrial consumers over the last four years were as follows:—

	Units sold (millions)			
	1965	1966	1967	1968
Building and Cement (including quarrying)	335	353	388	437
Chemical (including pharmaceutical)	594	637	673	652
Engineering (including the Motor Industry)	375	340	437	476
Foodstuffs, consumer goods and commercial	570	464	502	596
Iron, Steel and Base Metals	1,452	1,509	1,690	1,831
Paper and Paper Products	255	281	302	291

During the year under review supplies were given to the municipalities of Pietersburg (at Potgietersrus), and to Louis Trichardt. Arising from the Government's policy of co-operation with neighbouring African States, a bulk supply was made available to the Government of Lesotho at a substation on the Republic's territory in the vicinity of Maseru.

The largest supply was given to Scaw Metals Limited, for its new mill for which an installation including three 5 MVA units was provided.

The increase in supply to the Mining Industry amounted to 3.9 per cent as against 5.2 per cent for 1967. Gold and coal mines showed a slightly lower rate of development than for past years. Diamond and other mining recorded a significant increase of 16.6 per cent over the 1967 sales; the Rustenburg platinum mines again contributed largely to this increase. A temporary third party supply was made available to the new East Driefontein Gold Mine pending the completion of the new substation and a temporary supply was provided to the Impala Prospecting Company (Proprietary) Limited for platinum mining in the Rustenburg area.

The following table shows units sold to gold mines in the main gold mining areas over the last four years:—

Units sold (millions)

	1965	1966	1967	1968
Witwatersrand . . .	2,663	2,491	2,492	2,329
Klerksdorp . . .	1,560	1,702	1,851	1,987
Far West Rand . . .	2,193	2,271	2,410	2,639
Orange Free State . .	2,534	2,538	2,700	2,804

Again the only gold mining area which did not show an increase in sales was the old area of the Witwatersrand. The Far West Rand area showed the greatest increase (9.5 per cent) followed by the Klerksdorp area (7.3 per cent), and the Orange Free State area (6.4 per cent).

The Commission took emergency measures to meet the special demands brought about by the flooding of the West Driefontein Gold Mine. The substation transformer capacity was temporarily increased at both the West Driefontein and the adjacent Blyvooruitzicht mine to provide the additional supplies required for the intensified pumping at these gold mines.

Domestic consumption again recorded an increase over 22 per cent. A large proportion of these sales are due to the continued expansion of the Undertaking's networks in rural areas.

Financial

The price per unit sold as shown by the red line on the graph was 0.4528 for 1968. This is an increase of 2.2 per cent over the price for 1967, and is due to an increase in the price of coal. There were no tariff increases during the year.

There was a credit of R101,000 on Revenue Account for the year, reducing the accumulated deficit to R1,139,000.

DEVELOPMENT OF THE UNDERTAKING

Transmission System

In the previous Report, it was anticipated that the new Bernina distribution station on the West Rand

would be ready for service at the end of 1968. This distribution station is supplied by means of two 275 kV lines from Atlas distribution station, and is to reinforce supplies to large gold mining consumers in the West Rand area. The transmission lines were completed during March, 1969, and it is now expected that Bernina will be completed by mid May, 1969.

The main transmission system to the Northern Transvaal was completed on the 1st of September, 1968, when the last section of 132 kV line was placed in service between Potgietersrus and Louis Trichardt.

Temporary supplies were given to Warmbad and Pietersburg on the 25th February, 1968, when the transmission lines from Esselen distribution station were completed to these towns. The section of transmission line from Esselen to Warmbad is at present operating at 132 kV, but has been designed for 275 kV and will be uprated to this voltage when required. Permanent distribution stations supplying Warmbad, Potgietersrus and Louis Trichardt were completed during September, 1968.

The second 132 kV transmission line from Doornfontein distribution station near Carletonville to Trident distribution station in the Rustenburg area was completed in January, 1969. This was made necessary by the rapidly increasing demands of the platinum mines in this area. Further strengthening by means of a 275 kV line from Pluto distribution station is planned for 1970.

Work on the Perseus distribution station, and the 400 kV transmission line from the Atlas distribution station near Vereeniging commenced during 1968.

Perseus is near Dcalesville and will reinforce the supply to the Orange Free State mining area. This is also a future supply point to Bloemfontein and Kimberley as well as the Cape Northern Undertaking.

Rural Electrification

Very considerable development took place with the extension of rural electrification in the Undertaking. This development took place over wide areas of the Transvaal and Orange Free State, a record number of 1,000 farm supplies being connected during the year, involving the construction of 803 miles of transmission line. In addition, supply was given to 907 other consumers (not farmers) in peri-urban areas.

Construction is in progress in the Coligny/Lichtenburg areas where a further 78 consumers were given supply, making a total of 158 connections. Forty-five farmers were also connected between Greylingstad and Standerton.

In the scheme to supply farmers in the Britz area, commenced in 1966, 245 new consumers were connected during the year, giving a total of 634 consumers supplied in that area. The initial scheme will cater for about 1,870 supplies involving approximately 430 miles of line of which 302 miles have already been built.

An additional 102 consumers were added to the scheme south of Potchefstroom, making a total of 149 farmers out of a total of 260 in the initial scheme.

Other schemes under construction are the Lui-paardsvlei/Doornkop area (near Randfontein), and the Hennops River near Pretoria.

In the Orange Free State schemes are under construction in the Hoopstad, Koppies, Tweespruit and

Rhenosterkop (north of Kroonstad) areas. Total supplies given in these areas during the year were 132.

A number of existing schemes were extended during the year, resulting in a total of 582 additional supplies being made available to farmers.

Construction work will commence in the near future with rural schemes in the Heidelberg, Cullinan and Carletonville areas, while a large scheme south of Thabazimbi, involving 173 potential consumers will be undertaken soon.

Offers for supply have been made to an additional 815 farmers, and their acceptance is being awaited.

Operation of the Pooled Power Stations of the Rand and Orange Free State and the Eastern Transvaal

In terms of the licences granted by the Electricity Control Board, the Power Stations of the Rand and Orange Free State Undertaking, together with the Witbank and Komati Power Stations of the Eastern Transvaal operate as a single system of pooled power stations.

These power stations generated 26,236 million units during the year. The following Undertakings obtained their supplies either wholly or partially from these power stations:—

	Maximum Demand MW		Total Units (millions)		Increase
	1968	1967	1968	1967	%
Rand and Orange Free State	3,115	2,863	20,514	19,134	7·21
Eastern Transvaal Undertaking	485	425	3,252	2,872	13·34
Cape Northern Undertaking	117	102	656	556	17·94
Natal Undertaking	4	2	0·75	0·26	—

The seventh 200 MW generator at the Camden Power Station was brought up to full capacity in 1969, and it is expected that the eighth and final set will be in operation later in 1969. This power station produced 5,900 million units during the year, thus doubling its 1967 output.

With the Camden Power Station building up to fully capacity, it is possible to decommission some of the older and less efficient power stations. Twenty-two

boilers have already been decommissioned at the Vereeniging Power Station, and the power station is at present not being operated at night and during weekends. The available output is reduced to 60 MW. It is planned to shut the power station down during the latter portion of 1969.

The next power station is to be decommissioned early in 1970. This will be Witbank Power Station in the Eastern Transvaal.

RAND AND ORANGE FREE STATE UNDERTAKING

CONSUMER	Number		Units		SALES		REVENUE FROM SALES		AVERAGE PRICE/U.S.																																																									
	1967		1967		1967		1968		1967																																																									
	1968		1968		Units		R	% Change	R	c																																																								
Traction	2	2	777 509 906	724 063 987			4 251 011	- 0.044	3 899 000	0.5385																																																								
Bulk	125	117	3 002 474 155	2 656 674 607			14 709 853	+13.722	12 728 000	0.4791																																																								
Mining	101	103	10 473 819 593	10 078 483 593			44 465 507	+ 5.202	42 331 000	0.4200																																																								
Industrial	1 863	1 621	4 477 830 426	4 094 417 679			19 767 349	+10.112	17 486 000	0.4271																																																								
Domestic	20 254	17 587	247 602 865	201 665 846			2 214 000	+22.377	2 214 000	1.0979																																																								
Street Lighting	7	6	92 787	109 790				-15.487	2 000	1.8622																																																								
Total	22 352	19 436	18 979 329 732	17 755 415 502			85 928 596	+ 7.453	78 660 000	0.4430																																																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2"></th> <th colspan="2">1968</th> <th colspan="2">1967</th> <th colspan="2">Accumulated to 31/12/68</th> </tr> <tr> <th colspan="2"></th> <th>R</th> <th>c</th> <th>R</th> <th>c</th> <th>R</th> <th>R</th> </tr> </thead> <tbody> <tr> <td>Total Revenue</td> <td></td> <td>86 739 167</td> <td></td> <td>79 417 000</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Working Costs</td> <td></td> <td>86 638 342</td> <td></td> <td>79 718 000</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Surplus</td> <td></td> <td>100 925</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Deficit</td> <td></td> <td></td> <td></td> <td>301 000</td> <td></td> <td></td> <td>1 139 566</td> </tr> <tr> <td>Capital Expenditure</td> <td></td> <td>115 506 702</td> <td></td> <td>79 987 000</td> <td></td> <td></td> <td>639 313 322</td> </tr> </tbody> </table>													1968		1967		Accumulated to 31/12/68				R	c	R	c	R	R	Total Revenue		86 739 167		79 417 000				Working Costs		86 638 342		79 718 000				Surplus		100 925						Deficit				301 000			1 139 566	Capital Expenditure		115 506 702		79 987 000			639 313 322
		1968		1967		Accumulated to 31/12/68																																																												
		R	c	R	c	R	R																																																											
Total Revenue		86 739 167		79 417 000																																																														
Working Costs		86 638 342		79 718 000																																																														
Surplus		100 925																																																																
Deficit				301 000			1 139 566																																																											
Capital Expenditure		115 506 702		79 987 000			639 313 322																																																											

POOLED POWER STATIONS OF THE RAND AND ORANGE FREE STATE UNDERTAKING

	Wilge		Highveld	
	1968	1967	1968	1967
Electricity Units Sent Out.....	1 109 714 741	1 134 709 795	2 847 820 362	3 043 922 147
Maximum Demand kW.S.O. (Hour).....	213 077	212 069	453 373	463 861
Load Factor %.....	59.3	61.1	71.5	74.9
Thermal Efficiency % S.O.....	23.9	23.8	28.3	28.5
FUEL:				
Coal Consumed—Tons.....	824 734	844 386	1 823 410	1 944 739
Average Per Unit Sent Out—lb.....	1.486	1.488	1.281	1.278
Calorific Value B.Th.U./lb.....	9 600	9 520	8 750	8 690
Total Cost—Rand.....	1 097 844	1 109 000	3 429 893	3 444 000
Cost Per Ton—Rand.....	1.33	1.31	1.88	1.77

	Taatibos		Camden	
	1968	1967	1968	1967
Electricity Units Sent Out.....	2 902 569 813	3 010 538 824	5 612 664 123	2 057 158 945
Maximum Demand kW.S.O. (Hour).....	447 221	457 737	950 432	572 169
Load Factor %.....	73.9	75.1	67.2	57.6
Thermal Efficiency % S.O.....	24.8	26.1	32.8	—
FUEL:				
Coal Consumed—Tons.....	2 158 618	2 093 122	2 903 131	1 155 872
Average Per Unit Sent Out—lb.....	1.487	1.391	1.034	1.124
Calorific Value B.Th.U./lb.....	8 740	8 830	10 060	9 990
Total Cost—Rand.....	4 011 073	3 716 000	4 099 033	2 090 000
Cost Per Ton—Rand.....	1.86	1.78	1.41	1.81

POOLED POWER STATIONS OF THE RAND AND ORANGE FREE STATE UNDERTAKING

	Vereeniging			Klip		
	1968	1967	1968	1968	1967	1967
Electricity Units Sent Out	417 307 202	512 997 155	1 894 306 996	2 058 717 905		
Maximum Demand kWS.O. (Hour)	107 405	135 435	366 525	398 743		
Load Factor %	40.5	43.2	58.8	58.9		
Thermal Efficiency % S.O.	14.4	14.2	19.6	21.0		
FUEL:						
Coal Consumed—Tons.	562 344	719 365	1 818 751	1 869 015		
Average Per Unit Sent Out—lb.	2.695	2.805	1.920	1.816		
Calorific Value B.Th.U./lb.	8 620	8 410	8 780	9 080		
Total Cost—Rand	740 074	927 000	5 148 714	4 929 000		
Cost Per Ton—Rand	1.32	1.29	2.83	2.64		
	Vaal			Vierfontein		
	1968	1967	1968	1968	1967	1967
Electricity Units Sent Out	1 869 949 713	2 002 274 858	1 656 763 850	1 695 876 479		
Maximum Demand kWS.O. (Hour)	299 526	289 154	332 256	339 074		
Load Factor %	71.1	79.0	56.8	57.1		
Thermal Efficiency % S.O.	20.9	20.9	22.1	22.1		
FUEL						
Coal Consumed—Tons.	1 851 163	1 972 974	1 413 534	1 444 516		
Average Per Unit Sent Out—lb.	1.980	1.971	1.706	1.704		
Calorific Value B.Th.U./lb.	8 160	8 200	8 800	8 780		
Total Cost—Rand	2 132 659	2 287 000	2 402 472	2 390 000		
Cost Per Ton—Rand	1.15	1.16	1.70	1.65		

ORANGE RIVER UNDERTAKING

The licence for the operation of this Undertaking was granted by the Electricity Control Board on the 3rd June, 1968. The area of supply granted as defined in the licence is shown on the map on page 58.

This Undertaking purchases its requirements from the Municipality of Aliwal North, and supplies the towns of Rouxville, Smithfield and Zastron. It is expected that supplies will be available from the 400 kV transmission system at De Aar during the latter half of 1969.

Sales of Electricity

Total sales for 1968 amounted to 2.4 million units as compared with 1.1 million units for the previous year. Sales to the three towns in the Orange Free State which are at present connected to the system were as follows:—

Rouxville	346,000 units max. demand 108 kVA
Smithfield	477,000 units max. demand 130 kVA
Zastron	1,264,000 units max. demand 397 kVA

Electricity purchased from Aliwal North amounted to 2,567,000 units. The average price per unit was 2.1422 cents.

Financial

Total revenue for the year amounted to R52,000. There was a deficit of R2,000 on the year's working, giving an accumulated deficit at the end of 1968 of R1,700.

Development of the Undertaking

The first of the two 400 kV transmission lines from Perseus distribution station near Dealesville to Hydra distribution station near De Aar has been completed. Works has commenced on the civil works for the hydro-electric station at the Hendrik Verwoerd Dam. The station is due to be completed in 1971. The erection of Hydra distribution station is well advanced, and the initial commissioning is expected to take place in July, 1969.

The first of the two 132kV transmission lines from Hydra distribution station to Ruigtevallei distribution station near the Hendrik Verwoerd Dam is under erection, and will be completed towards the

middle of 1969. The second line is due to be commissioned in 1971, when supply from the second generator at the hydro-electric power station becomes available. Ruigtevallei distribution station is nearing completion, and will be ready for energizing towards the middle of 1969.

The erection of the 66 kV line from Ruigtevallei distribution station to Melkspruit distribution station at Aliwal North is proceeding, and will be completed within the first half of 1969. Melkspruit distribution station is almost complete, and is due for energizing in the second half of 1969. Melkspruit will supply over the 22 kV network to Aliwal North, Rouxville, Smithfield and Zastron.

Preparations are in hand for replacing the existing temporary 750 kVA 22/11 kV transformer in the Aliwal North distribution station with two 3 MVA units.

The 66/22 kV stepdown distribution station at Onverwag near Burgersdorp will be complete during the first half of 1969, and a 22 kV line, approximately 12 miles in length, will be erected to give supply to the Burgersdorp Municipality.

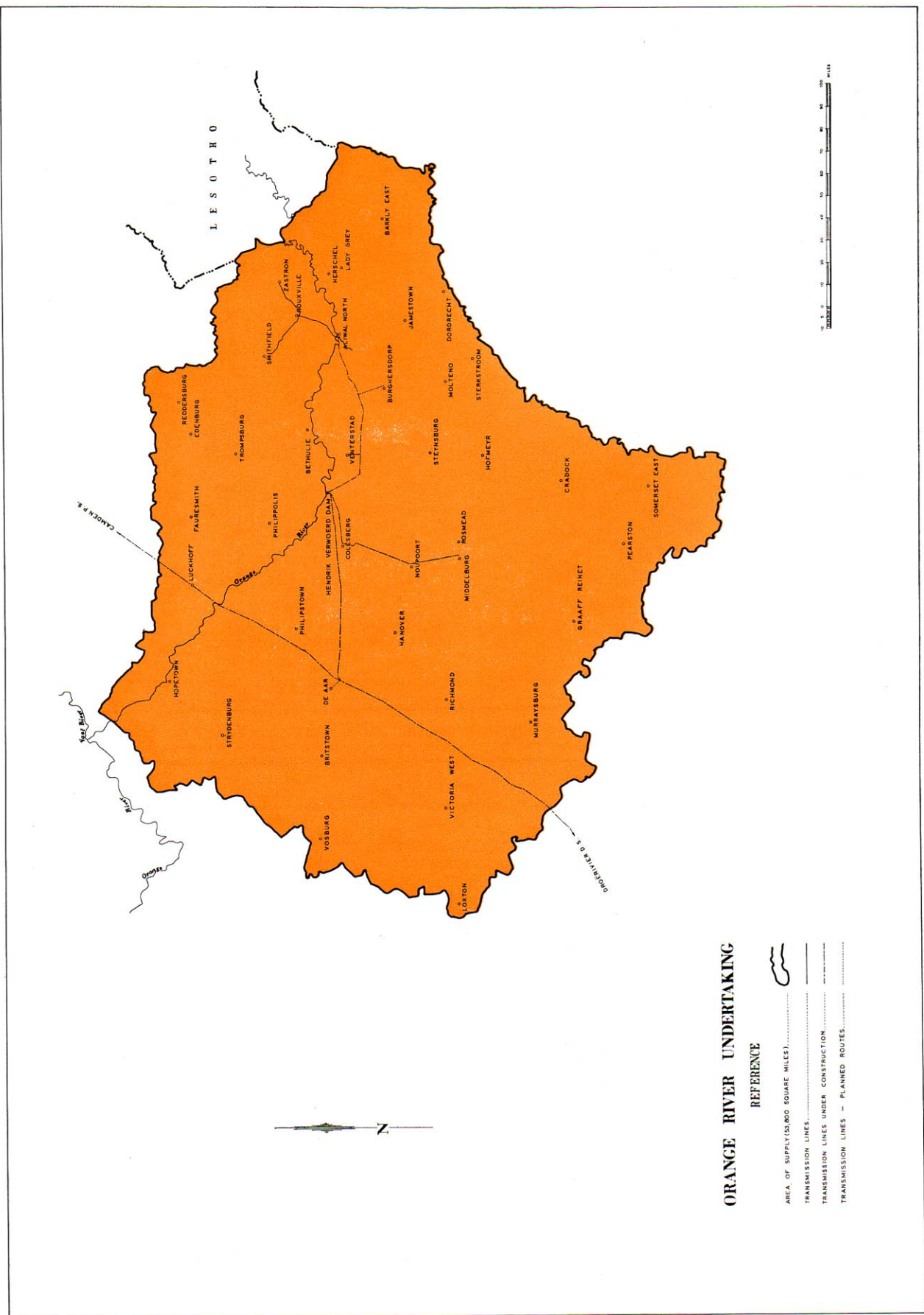
Preliminary work has started on the 66/22 kV distribution station at Badsfontein near Venterstad, and a route has been selected for the 22 kV line to the Venterstad Municipality. Work will be complete during the second half of 1969.

The 66 kV line from Ruigtevallei to Colesberg, Noupoot and Middelburg is being constructed, and supplies are due to be made available to these three towns during the second half of 1969. In addition, a 6.6 kV supply is to be given to the South African Railways Administration at Noupoot.

An agreement for supply was entered into with the Municipality of De Aar. This supply will be by means of two 22 kV lines from Hydra distribution station, and is due to be made available in the second half of 1969.

Supplies to Rural Consumers

This new Undertaking was not in a position during the year to make supplies of electricity available to farmers.



ORANGE RIVER UNDERTAKING

CONSUMER Class	Number		Units		% Change		REVENUE FROM SALES		AVERAGE PRICE/U.S.			
	1968	1967	1968	1967	1968	1967	R	R	c	c		
					67/66		1968		1967			
Traction	—	—	—	—	—	—	—	—	—	—		
Bulk	3	3	2 087 400	1 097 252	90·239	—	43 000	25 000	2·0562	2·2451		
Mining	—	—	—	—	—	—	—	—	—	—		
Industrial	1	1	340 547	10 110	—	—	9 000	1000	2·6689	13·9288		
Domestic	—	—	—	—	—	—	—	—	—	—		
Street Lighting	—	—	—	—	—	—	—	—	—	—		
Total	4	4	2 427 947	1 107 362	119·255	—	52 000	26 000	2·1422	2·3518		
							1968		1967		Accumulated to 31/12/1968	
							R		R		R	
Total Revenue							52 011		26 043		1 701	
Working Costs							53 993		25 762		9 032 101	
Surplus							—		281		—	
Deficit							1 982		—		—	
Capital Expenditure							9 032 101		—		—	

MUNICIPAL ELECTRICITY SUPPLY SCHEMES

Reports submitted during the year by the Commission to the Administrators of the various Provinces and South West Africa on the proposals of local authorities to establish or enlarge existing undertakings were as follows:—

New Schemes	Extensions
TRANSVAAL: Rayton	Fochville Johannesburg Vanderbijlpark
ORANGE FREE STATE: Cornelia	Bethulie Jagersfontein Ladybrand Springfontein Ventersburg
CAPE:	Clanwilliam Elliot Engcobo Knysna Ladismith Port Elizabeth Upington Vanrhynsdorp
NATAL:	—
SOUTH WEST AFRICA:	Grootfontein Karasburg Keetmanshoop (2) Mariental

Up to 31st December, 1968, a total of 1,935 reports on municipal supply schemes had been submitted by the Commission. Of these, 304 were in respect of new schemes, 1,003 were in respect of extension scheme and 628 were reports on tenders.

ANNEXURES

The Commission submits for the year 1968 with this report:—

ANNEXURE A: AUDITORS' REPORT AND ACCOUNTS

The Report of the Auditors.
Balance Sheet.

Schedule No. 1—Expenditure on Capital Account.

Schedule No. 2—Investments of the Redemption Fund.

Schedule No. 3—Loan Capital.

Account No. 1—Redemption Fund Account.

Account No. 2—Reserve Fund Account.

Consolidated Revenue Account.

Revenue Accounts in respect of:

Account No. 3—Cape Western Undertaking.

Account No. 4—Cape Northern Undertaking.

Account No. 5—Cape Eastern Undertaking.

Account No. 6—Border Undertaking.

Account No. 7—Orange River Undertaking.

Account No. 8—Natal Undertaking.

Account No. 9—Eastern Transvaal Undertaking.

Account No. 10—Rand and Orange Free State Undertaking.

Statement of pooled costs and allocation for Rand and Orange Free State and Eastern Transvaal Undertakings.

ANNEXURE B: STATISTICAL AND OTHER STATEMENTS

Statement No. 1—Summary of principal plant and equipment installed at the Commission's undertakings as at 31st December, 1968.

Statement No. 2—Summary of principal plant and equipment in course of installation or on order as at 31st December, 1968.

Statement No. 3—Units sold to all consumers during the past forty-one years.

Statement No. 4—Units sold and number of consumers, 1968.

Statement No. 5—Power Station Statistics, 1968.

Statement No. 6—Power purchased, 1968.

Statement No. 7—Showing the price or rent of land or rights or interests in or over land or other property acquired or hired by the Commission during the year 1968.

Statement No. 8—Coal used at the Commission's steamdriven power stations.

ANNEXURE C: NATIONAL STATISTICS

Tables, illustrating the production and distribution of electricity, incorporating information supplied by courtesy of the Bureau of Census and Statistics (Pretoria).

Yours faithfully,



Chairman.

THE REPORT OF THE AUDITORS

*The Chairman and Members,
Electricity Supply Commission,
Johannesburg.*

Johannesburg,
14th May, 1969

Gentlemen,

We have completed the audit of the books and accounts of the Commission for the year ended 31st December, 1968.

Redemption Fund

In the course of our audit we have examined the position of the Redemption Fund established by the Commission in terms of the Schedule to the Electricity Act, 1958, to provide for the redemption of the loans issued by the Commission. In terms of Section 10(2) of the Act the State President has directed that the provisions relating to the establishment of the Redemption Fund should not apply to Loans Nos. 20, 24, 41, 48, 57, 59, 62, 72, 74 and 77 which were raised outside the Republic.

Loan No. 73 was raised under the provisions of paragraph 1(3) of the Schedule to the Electricity Act, and the provisions relating to the Redemption Fund do not therefore apply to this loan.

In the records of the Commission, the Fund is divided into sections corresponding to its Undertakings. The Commission has invested the moneys accruing to the Fund in the investments prescribed in the Schedule to the Act. Up to 31st December, 1967, investments were allocated to the separate sections of the Fund. With effect from 1st January, 1968, the investments so allocated were consolidated in order to reduce administrative work, and investments are now held jointly on behalf of the different sections. To give effect to the consolidation on an equitable basis, investments held at 1st January, 1968, were written down to market value — differences between book values and market values being adjusted against the relevant sections of the Fund. We are in agreement with the method adopted by the Commission.

In valuing the Fund at 31st December, 1968, we have taken into account the market value of the investments at that date. The value of the Fund at 31st December, 1968, was in excess of the sum required, in terms of the Schedule to the Act, for the redemption of the respective loans.

The Commission has fixed Redemption periods of 30 years from the date of issue of the relevant loans in respect of the portions of loans used to finance the erection of certain high-voltage transmission lines; in respect of the remainder of the loans, the Redemption periods fixed do not exceed 25 years from the dates of issue of the respective loans.

The Minister has fixed the dates from which provision for redemption of Loans Nos. 58 and 60 commenced at 1st May and the date from which redemption of Loan No. 61 commenced at 1st July.

In accordance with the usual practice, provision has also been made for the redemption of moneys expended out of subsequent loans on works which had come into commercial operation before 31st December, 1968.

Foreign Loans

Repayments of capital, in respect of Loans Nos. 20 and 24, as laid down in the Loan Agreements, take the place of contributions to Redemption Fund normally required to be made for loans issued by the Commission.

Provision is being made for repayment of Loans Nos. 41, 57 and 77 by setting aside amounts over the periods of the loans, i.e. 15 years.

Loans Nos. 48 and 59 are repayable by half-yearly instalments over periods of eight and a half years from 1st December, 1963, and nine years from 1st June, 1968, respectively, but contributions are charged to Revenue Accounts of Undertakings on a 25 year sinking fund basis, the shortfall being met from local loans raised partly for this purpose.

Loans Nos. 62 and 74 are ten-year loans and provisions for repayment are being charged to Revenue Accounts of Undertakings over a period of 19 years. The difference between the amounts set aside and the instalments payable is being met from temporary borrowings.

Loans Nos. 72 and 73 are short-term loans and the Commission intends repaying them out of future borrowings.

Verification of Landed Properties, Rights and Investments

We have verified the existence of the titles of the landed properties and of the rights and investments as shown in the records of the Commission.

Head Office Administration, Engineering and General Expenses

The net expenditure under this heading, after crediting fees for reporting on power schemes of local authorities, and amounts chargeable to Revenue Accounts under other headings, has been allocated to:—

- (a) Capital and Reserve Fund Expenditure
- (b) Revenue Accounts of Undertakings

The amount allocated to Revenue Accounts of Undertakings has been apportioned by the Commission. We have no reason to disagree with the apportionment so made.

Revenue Accounts

The following is a summary of the operations of the Commission's Undertakings for 1967 and 1968:—

	Surplus + Deficit -		Amounts set aside to to Reserve Fund	
	1967	1968	1967	1968
Cape Western	— 524,000	— 140,000	726,000	958,000
Cape Northern	— 20,000	— 104,000	300,000	400,000
Cape Eastern	— 11,000	— 14,000	1,000	4,000
Orange River	— —	2,000	—	—
Border	— 58,000	— 122,000	150,000	188,000
Natal	+ 219,000	— 833,000	1,600,000	1,800,000
Eastern Transvaal	+ 550,000	+ 596,000	1,695,000	1,995,000
Rand and O.F.S.	— 301,000	+ 101,000	5,440,000	6,955,000
	<u>— R145,000</u>	<u>— R518,000</u>	<u>R9,912,000</u>	<u>R12,300,000</u>
Brought forward from previous year		3,137,000		
Net Accumulated Surplus at end of year as detailed in Balance Sheet		<u>R2,619,000</u>		

Operations during the year resulted in surpluses at Eastern Transvaal and Rand and O.F.S. Undertakings and deficits at the other Undertakings. In the case of the Cape Northern Undertaking, the accumulated surplus was reduced to R1,012,000 whilst the accumulated surplus at Eastern Transvaal Undertaking now amounts to R2,312,000. Accumulated surpluses or deficits at all other Undertakings, with the exception of Cape Eastern Undertaking, which is in the initial stages of development, do not exceed 5 per cent of the past year's sales of electricity at the respective Undertakings.

The Electricity Control Board granted a licence for the Orange River Undertaking on 3rd June, 1968.

General

As a result of our audit of the books and accounts of the Commission for the year 1968, and, subject to the foregoing remarks, in terms of Section 18(8) of the Electricity Act, 1958, we certify as follows:—

(a) We have found the Accounts of the Commission to be in order.

- (b) The Accounts issued present a true and correct view of the financial position of the Commission and its transactions and of the results of trading.
- (c) Due provision has been made for the redemption and repayment of moneys borrowed by or advanced to the Commission.
- (d) As formerly, the Land and Rights, Buildings and Civil Works, and Machinery and Plant are set out in the Balance Sheet on a cost basis.
- (e) Sums fixed by the Commission have been set aside to the Reserve Fund under Section 13 as prescribed.
- (f) All our requirements as Auditors have been complied with and carried out.

Yours faithfully,

HALSEY, BUTTON & PERRY,
ALEX, AIKEN & CARTER
Chartered Accountants (S.A.)
Auditors.

ACCOUNTS

STATISTICAL AND OTHER STATEMENTS
NATIONAL STATISTICS

Electricity Supply

Established under the

BALANCE SHEET AT

1967			
R834,295,000	Loans Outstanding (Schedule No. 3)		R1,005,316,000
92,588,000	Loans Repaid Less Assets Sold or Scrapped		113,980,000
116,685,000	Loans repaid (Schedule No. 3)	R139,232,000	
24,097,000	Less: Cost of Assets sold proceeds credited to Redemption Fund	25,252,000	
208,413,000	Redemption Fund (Account No. 1)		203,489,000
79,892,000	Reserve Fund (Account No. 2)		90,035,000
3,137,000	Balance on Revenue Accounts (Accounts Nos. 3 to 10)		2,619,000
Dr. 530,000	Cape Western Undertaking	Dr. 670,000	
1,116,000	Cape Northern Undertaking	1,012,000	
Dr. 18,000	Cape Eastern Undertaking	Dr. 32,000	
29,000	Border Undertaking	Dr. 93,000	
—	Orange River Undertaking	Dr. 2,000	
2,064,000	Natal Undertaking	1,231,000	
1,716,000	Eastern Transvaal Undertaking	2,312,000	
Dr. 1,240,000	Rand & Orange Free State Undertaking	Dr. 1,139,000	
50,759,000	Creditors and Provisions		68,124,000
34,883,000	Creditors	49,365,000	
9,382,000	Interest accrued on loans	12,081,000	
6,494,000	Provisions including provisions for repayment of overseas loans	6,678,000	
33,601,000	Temporary Borrowings		—
4,824,000	Amount due to Bankers less Cash on Current Accounts and on hand		—
28,777,000	Revolving Credits		—
R1,302,685,000		R1,483,563,000	

The Notes to the Balance Sheet appear on page 66.

Commission

Electricity Act, 1922

31st DECEMBER, 1968

		1967	1967
Capital Expenditure at Cost (Schedule No. 1)		R1,114,390,000	R950,863,000
Land and Rights	R10,488,000		9,846,000
Buildings and Civil Works	188,415,000		184,279,000
Machinery and Plant	712,576,000		652,693,000
Total amount in commission	911,479,000		846,818,000
Amount under Construction	202,911,000		104,045,000
Stores and Movable Plant		43,215,000	43,451,000
Stores and Materials at cost	37,696,000		38,336,000
Movable plant and equipment at cost less depreciation	5,519,000		5,115,000
Investment of Redemption Fund (Schedule No. 2)		204,646,000	208,182,000
Nominal Value	Market Value		
1967 R210,679,000	R188,357,000		
1968 R224,859,000	R200,290,000		
Investment of Reserve Fund		89,354,000	78,671,000
Stocks of Electricity Supply Commission, Republic of South Africa and Municipalities, including Interest Accrued			
Nominal Value	Market Value		
1967 R79,600,000	R72,195,000		
1968 R96,956,000	R87,815,000		
Sundry Investments		6,744,000	5,479,000
Electricity Supply Commission Foreign Loan Bonds including Interest accrued	1,207,000		802,000
Nominal Value	Market Value		
1967 R812,000	R800,000		
1968 R1,198,000	R1,217,000		
Entire Share Capital of the Rand Mines Power Supply Company Limited	1,000		1,000
Housing Loans to Employees secured by First Mortgage	5,536,000		4,676,000
Debtors and Payment in Advance		18,663,000	16,039,000
Debtors	14,700,000		13,637,000
Payments in advance	3,963,000		2,402,000
Cash on Deposit on Current Accounts and on Hand		6,551,000	—
Less: Amounts Due to Bankers			—
R1,483,563,000		R1,483,563,000	R1,302,685,000

NOTES TO THE BALANCE SHEET

NOTE 1

In addition to the liabilities shown on the Balance Sheet, the Commission is committed in the following matters:—

- (a) Expenditure of approximately R351,000,000 on Capital account, R3,900,000 chargeable against Reserve Fund, and R383,000 in respect of loans granted under the Commission's Home Ownership Scheme and not yet paid.
- (b) An annual payment of R130,000 to the Electricity Supply Commission Pension and Provident Fund for the period ending 31st December, 1969, and R22,000 during 1970, in addition to the annual contributions.
- (c) The purchase from certain Stockholders of Electricity Supply Commission 6½ per cent Local Registered Stock 1991 at R97 per cent, as follows:—
 - (i) R4,500,000 not later than September, 1976,
 - (ii) R2,000,000 in five annual instalments of R400,000, at the option of the Stockholder.

NOTE 2

The Commission has indemnified the Electricity Supply Commission Pension and Provident Fund against any loss resulting from the negligence, dishonesty or fraud of any of the Fund's officers or of the Trustees.

Electricity Supply Commission

SCHEDULE No. 1

Schedule of Capital Expenditure at 31st December, 1968

UNDERTAKING	IN COMMISSION			UNDER CON- STRUCTION	TOTAL
	Land and Rights	Buildings and Civil Works	Machinery and Plant		
Cape Western	R1,265,000	R16,459,000	R77,713,000	R11,393,000	R106,830,000
Cape Northern	189,000	1,032,000	16,811,000	1,338,000	19,370,000
Cape Eastern	9,000	48,000	579,000	320,000	956,000
Border	153,000	2,863,000	14,673,000	2,109,000	19,798,000
Orange River	—	2,000	175,000	8,855,000	9,032,000
Natal	1,417,000	32,250,000	114,962,000	13,052,000	161,681,000
Eastern Transvaal	1,569,000	30,382,000	107,203,000	2,105,000	141,259,000
Rand and O.F.S.	4,663,000	100,566,000	380,460,000	153,625,000	639,314,000
Head Office	1,223,000	4,813,000	—	13,000	6,049,000
	R10,488,000	R188,415,000	R712,576,000	R192,810,000	R1,104,289,000
Expenditure not yet allocated				10,101,000	10,101,000
Totals at 31st December, 1968	R10,488,000	R188,415,000	R712,576,000	R202,911,000	R1,114,390,000
Totals at 31st December, 1967	9,846,000	184,279,000	652,693,000	104,045,000	950,863,000
Capital expenditure during 1968	R642,000	R4,136,000	R59,883,000	R98,866,000	R163,527,000

Electricity Supply Commission

Schedule of Investments of the Redemption Fund at 31st December, 1968

INVESTMENTS	Nominal Value	Book Value
LOCAL REGISTERED STOCKS		
Electricity Supply Commission		
3½ per cent 1965/70.....	R1,836,000	R1,775,000
3 per cent 1967/73.....	2,805,000	2,487,000
3 per cent 1968/74.....	1,177,000	991,000
3½ per cent 1968/73.....	10,583,000	9,355,000
3½ per cent 1969/74.....	—	—
3½ per cent 1969/74.....	223,000	196,000
5 per cent 1967/69.....	3,633,000	3,626,000
5 per cent 1968/70.....	3,968,000	3,898,000
5 per cent 1867/70.....	6,736,000	6,604,000
5 per cent 1971/74.....	24,000	23,000
5 per cent 1971/75.....	26,000	24,000
4⅝ per cent 1975/80.....	9,804,000	8,234,000
4⅝ per cent 1975/80.....	8,175,000	7,006,000
5⅞ per cent 1976/81.....	4,912,000	4,259,000
5⅞ per cent 1977/82.....	1,059,000	910,000
5⅞ per cent 1976/82.....	4,086,000	3,502,000
5⅞ per cent 1977/83.....	10,117,000	8,610,000
5⅞ per cent 1978/83.....	3,872,000	3,370,000
5⅞ per cent 1979/84.....	5,097,000	4,529,000
5⅞ per cent 1979/84.....	7,072,000	6,108,000
5⅞ per cent 1979/85.....	6,076,000	5,215,000
5⅞ per cent 1980/85.....	7,230,000	6,177,000
5½ per cent 1980/86.....	5,043,000	4,352,000
5⅞ per cent 1981/86.....	7,441,000	6,680,000
6¼ per cent 1981/86.....	6,192,000	5,803,000
6⅞ per cent 1982/87.....	6,303,000	5,802,000
5¼ per cent 1982/87.....	6,465,000	5,351,000
5 per cent 1983/88.....	10,308,000	8,202,000
5 per cent 1980/83.....	6,316,000	5,298,000
5 per cent 1982/84.....	3,335,000	2,763,000
5½ per cent 1982/84.....	3,239,000	2,827,000
5⅞ per cent 1983/85.....	10,153,000	9,292,000
6½ per cent 1983/85.....	6,623,000	6,375,000
6½ per cent 1989/91.....	9,137,000	8,641,000
6¼ per cent 1991.....	5,036,000	4,900,000
6⅞ per cent 1992.....	5,830,000	5,745,000
6½ per cent 1992.....	3,652,000	3,441,000
6⅞ per cent 1992.....	3,904,000	3,779,000
6½ per cent 1969.....	5,000,000	5,000,000
6½ per cent 1993.....	3,023,000	2,766,000
6⅞ per cent 1993.....	11,353,000	10,936,000
6½ per cent 1993.....	1,901,000	1,748,000
6⅞ per cent 1993.....	1,756,000	1,690,000
<i>Carried forward</i>	<u>R220,521,000</u>	<u>R198,290,000</u>

	Nominal Value	Book Value
<i>Brought forward</i>	R220,521,000	R198,290,000
Republic of South Africa		
3 per cent 1959/69.....	200,000	196,000
3 per cent 1960/70.....	687,000	658,000
5¼ per cent 1979.....	300,000	281,000
6 per cent 1985.....	500,000	483,000
Municipal — Johannesburg		
3½ per cent 1965/70.....	588,000	558,000
3 per cent 1967/77.....	60,000	44,000
5⅞ per cent 1974/79.....	194,000	167,000
Municipal — Cape Town		
3 per cent 1976.....	200,000	151,000
5⅞ per cent 1980/85.....	300,000	250,000
Municipal — Durban		
3½ per cent 1962/72.....	231,000	206,000
3½ per cent 1965/75.....	90,000	71,000
3¼ per cent 1966/76.....	100,000	78,000
3 per cent 1967/77.....	668,000	490,000
5⅞ per cent 1974/79.....	120,000	103,000
Municipal — Bloemfontein		
5⅞ per cent 1975/80.....	80,000	67,000
Municipal — Germiston		
5⅞ per cent 1985.....	20,000	16,000
	<u>R224,859,000</u>	<u>R202,109,000</u>
Interest Accrued		2,537,000
		<u>R204,646,000</u>
Market Value	<u>R200,290,000</u>	

Electricity Supply Commission

SCHEDULE No. 3

Loans at 31st December, 1968

Loan No.	Loans Nos. 1 and 2 R16,000,000 repaid out of subsequent Loans Local Registered Stocks	Outstanding	Repaid	Loan No.	Description	Outstanding	Repaid
3	R1,000,000 4½ per cent 1953/63		R1,000,000		R1,021,000,000 Brought forward	R913,708,000	R96,000,000
4	R5,000,000 4½ per cent 1953		5,000,000				
5	R13,500,000 3¾ per cent 1954/64		13,500,000		FOREIGN BOND ISSUES		
6	R5,000,000 3½ per cent 1959/64		5,000,000	41	R8,275,000 Swiss Francs 50,000,000 5 per cent. Repayable by annual instalments 1965/74	4,965,000	3,310,000
7	R4,000,000 3¼ per cent 1956/66		4,000,000	57	R8,921,000 German Marks 50,000,000 6½ per cent. Repayable by annual instalments 1971/80	8,921,000	
8	R4,000,000 3½ per cent 1957/67		4,000,000	62	R10,776,000 \$15,000,000 7 per cent. Repayable by ten equal instalments 1968/77	9,698,000	1,078,000
9	R4,000,000 3¾ per cent 1959/64		4,000,000	74	R11,012,000 15,000,000 Units of Account 7 per cent in Luxembourg. Repayable by annual instalments 1969/78	11,012,000	
10	R3,000,000 3¾ per cent 1960/65		3,000,000	77	R18,034,000 German Marks 100,000,000 6½ per cent. Repayable by annual instalments 1974/83	18,034,000	
11	R4,000,000 3¼ per cent 1961/66		4,000,000		DIRECT PLACEMENTS		
12	R5,000,000 3¼ per cent 1965/70	R5,000,000			EXPORT-IMPORT BANK OF WASHINGTON		
13	R6,000,000 3 per cent 1967/73	6,000,000		24	R14,016,000 \$19,600,000 4 per cent. Repayable by half-yearly instalments 1956/70	2,383,000	11,633,000
14	R6,000,000 3 per cent 1968/74	6,000,000			COMMONWEALTH DEVELOPMENT FINANCE COMPANY LIMITED		
15	R30,000,000 3¼ per cent 1968/73	30,000,000		30	R4,000,000 5 per cent. Repayable by half-yearly instalments 1954/68	—	4,000,000
16	R6,000,000 3½ per cent 1969/74	6,000,000			INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT		
17	R6,000,000 3¾ per cent 1969/74	6,000,000		20	R21,465,000 \$30,000,000 4 per cent. Repayable by half-yearly instalments 1954/70	3,336,000	18,129,000
18	R10,500,000 3¾ per cent 1965/67		10,500,000	28	R2,822,000 \$30,000,000 4¾ per cent. Repayable by half-yearly instalments 1955/63 Less repaid out of local loans	R21,454,000 18,632,000	
19	R6,000,000 3¾ per cent 1964/67		6,000,000			<u>R2,822,000</u>	2,822,000
21	R10,000,000 3¾ per cent 1964/68		10,000,000	48	R5,160,000 \$14,000,000 5½ per cent. Repayable by half-yearly instalments 1963/71 Less repaid out of local loans	R10,012,000 4,852,000	
22	R9,000,000 4¼ per cent 1964/67		9,000,000			<u>R5,160,000</u>	4,096,000
23	R10,000,000 5 per cent 1964/67		10,000,000	59	R13,582,000 \$20,000,000 6¼ per cent. Repayable by half-yearly instalments 1968/76 Less repaid out of local loans	R14,357,000 775,000	
25	R7,000,000 5 per cent 1966/68		7,000,000			<u>R13,582,000</u>	13,123,000
26	R8,000,000 5 per cent 1967/69	8,000,000			SWISS BANKS		
27	R8,500,000 5 per cent 1968/70	8,500,000		72	R7,436,000 Swiss Francs 45,000,000 7 per cent. Repayable by four annual instalments 1970/73	7,436,000	—
29	R16,000,000 5 per cent 1967/70	16,000,000			BARCLAYS BANK D.C.O.		
31	R16,000,000 5 per cent 1971/74	16,000,000		73	R8,604,000 £5,000,000 6½ per cent. Repayable 1973	8,604,000	—
32	R20,000,000 5 per cent 1971/75	20,000,000					
33	R16,000,000 4½ per cent 1975/80	16,000,000			<u>R1,155,103,000</u>	<u>R1,005,316,000</u>	<u>R138,495,000</u>
34	R16,000,000 4¾ per cent 1975/80	16,000,000					
35	R16,500,000 5¼ per cent 1976/81	16,500,000					
36	R20,000,000 5¼ per cent 1977/82	20,000,000					
37	R22,000,000 5¼ per cent 1976/82	22,000,000					
38	R24,000,000 5¼ per cent 1977/83	24,000,000					
39	R24,000,000 5¾ per cent 1978/83	24,000,000					
40	R22,000,000 5½ per cent 1979/84	22,000,000					
42	R20,000,000 5¾ per cent 1979/84	20,000,000					
43	R16,000,000 5¾ per cent 1979/85	16,000,000					
44	R16,000,000 5¾ per cent 1980/85	16,000,000					
45	R17,000,000 5½ per cent 1980/86	17,000,000					
46	R16,000,000 5¾ per cent 1981/86	16,000,000					
47	R18,000,000 6¼ per cent 1981/86	18,000,000					
49	R18,000,000 6¼ per cent 1982/87	18,000,000					
50	R22,000,000 5½ per cent 1982/87	22,000,000					
51	R29,000,000 5 per cent 1983/88	29,000,000					
52	R40,000,000 5 per cent 1980/83	40,000,000					
53	R20,000,000 5 per cent 1982/84	20,000,000					
54	R20,000,000 5½ per cent 1982/84	20,000,000					
55	R32,000,000 5¾ per cent 1983/85	32,000,000					
56	R38,000,000 6¼ per cent 1983/85	38,000,000					
58	R30,000,000 6¼ per cent 1989/91	30,000,000					
60	R35,000,000 6¾ per cent 1991	35,000,000					
61	R35,000,000 6¾ per cent 1992	35,000,000					
63	R5,000,000 6 per cent 1971	5,000,000					
64	R12,000,000 6¼ per cent 1992	12,000,000					
65	R37,000,000 6¾ per cent 1992	37,000,000					
67	R11,000,000 6¼ per cent 1969	11,000,000					
70	R10,000,000 6¼ per cent 1993	10,000,000					
71	R70,000,000 6¾ per cent 1993	70,000,000					
75	R22,000,000 6¼ per cent 1993	21,340,000					
76	R48,000,000 6¾ per cent 1993	37,368,000					
					<i>Sundry Loans</i>		737,000
	R1,021,000,000 Carried forward	R913,708,000	R96,000,000				<u>R139,232,000</u>

*Payable in full not later than 28th February, 1969, in terms of the Prospectus.

Electricity Supply

Reserve Fund Account for the Year

Commission

Ended 31st December, 1968

ACCOUNT No. 2

1967			
R2,437,000	Expenditure During the Year on Replacements and Betterment		R1,137,000
1,202,000	Cape Western Undertaking	R30,000	
37,000	Cape Northern Undertaking	3,000	
—	Cape Eastern Undertaking	—	
68,000	Border Undertaking	13,000	
340,000	Natal Undertaking	382,000	
23,000	Eastern Transvaal Undertaking	74,000	
767,000	Rand and Orange Free State Undertaking	635,000	
79,892,000	Balance as per Balance Sheet		90,035,000
6,424,000	Cape Western Undertaking	7,258,000	
2,124,000	Cape Northern Undertaking	2,496,000	
3,000	Cape Eastern Undertaking	7,000	
807,000	Border Undertaking	974,000	
10,889,000	Natal Undertaking	12,171,000	
7,675,000	Eastern Transvaal Undertaking	9,534,000	
51,970,000	Rand and Orange Free State Undertaking	57,595,000	
R82,329,000			R91,172,000

NOTE: The Book Values of all Investments were adjusted to Market Value on 1st January, 1968, to facilitate the pooling of Investments previously allocated to the separate sections of the Fund.
At 31st December, 1968, the Book Values were re-adjusted having regard to the par values and periods to maturity.

			1967	
Balance at Beginning of Year		R79,892,000	R68,270,000	
Less Adjustment of Values of Investments (See Note)		6,475,000	—	
		73,417,000	68,270,000	
Cape Western Undertaking	R5,904,000		6,508,000	
Cape Northern Undertaking	1,952,000		1,754,000	
Cape Eastern Undertaking	3,000		1,000	
Border Undertaking	741,000		684,000	
Natal Undertaking	10,006,000		9,079,000	
Eastern Transvaal Undertaking	7,053,000		5,636,000	
Rand and Orange Free State Undertaking	47,758,000		44,608,000	
Amounts set aside during the year as per revenue accounts		12,300,000	9,912,000	
Cape Western Undertaking	958,000		726,000	
Cape Northern Undertaking	400,000		300,000	
Cape Eastern Undertaking	4,000		1,000	
Border Undertaking	188,000		150,000	
Natal Undertaking	1,800,000		1,600,000	
Eastern Transvaal Undertaking	1,995,000		1,695,000	
Rand and Orange Free State Undertaking	6,955,000		5,440,000	
Interest earned on investments		5,151,000	4,147,000	
Adjustment of values of investments at 31st December, 1968 (See Note)		304,000	—	
		R91,172,000	R82,329,000	

Electricity Supply

Consolidated Revenue Account for

Commission

the Year Ended 31st December, 1968

1967			
R57,106,000	Generation		R62,133,000
	Operation—		
42,488,000	Fuel	R45,117,000	
1,247,000	Water and Stores	1,623,000	
5,317,000	Salaries and Wages	5,965,000	
194,000	Other Expenses	199,000	
	Maintenance—		
2,365,000	Stores	2,830,000	
5,089,000	Salaries and Wages	5,877,000	
406,000	Other Expenses	522,000	
313,000	Purchase of Electricity		121,000
7,146,000	Distribution		8,097,000
	Operation and Maintenance—		
1,263,000	Stores	1,418,000	
4,985,000	Salaries and Wages	5,662,000	
898,000	Other Expenses	1,017,000	
10,603,000	General Expenses		12,176,000
3,080,000	Local Administration and Technical Management	3,559,000	
4,896,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	5,411,000	
1,032,000	Head Office Administration	1,482,000	
943,000	Head Office Engineering Expenses	994,000	
652,000	Research Expenses	730,000	
71,760,000	Capital Charges		79,466,000
37,312,000	Interest	43,282,000	
20,025,000	Redemption Fund	18,684,000	
4,511,000	Instalments and Provision for Repayment of Overseas Loans	5,200,000	
9,912,000	Reserve Fund	12,300,000	
<u>R146,928,000</u>			<u>R161,993,000</u>
R145,000	Balance brought down		R518,000
3,137,000	Balance as per Balance Sheet		2,619,000
<u>R3,282,000</u>			<u>R3,137,000</u>

1967			
	Sales of Electricity	R160,319,000	R145,721,000
	Traction Supplies	R16,471,000	14,735,000
	Bulk Supplies	40,016,000	36,174,000
	Mining Supplies	53,894,000	50,848,000
	Industrial Supplies	41,009,000	36,123,000
	Domestic and Lighting Supplies	8,929,000	7,841,000
	Revenue from Air and Steam	438,000	414,000
	Other Revenue	160,757,000	146,135,000
		718,000	648,000
	Balance carried down	161,475,000	146,783,000
		518,000	145,000
		<u>R161,993,000</u>	<u>R146,928,000</u>
	Balance brought forward	R3,137,000	R3,282,000
		<u>R3,137,000</u>	<u>R3,282,000</u>

Electricity Supply Commission

Cape Western Undertaking

Revenue Account for the Year

Ended 31st December, 1968

<u>1967</u>		
R6,998,000	Generation	R7,468,000
	Operation—	
5,525,000	Fuel	R5,899,000
118,000	Water and Stores	105,000
550,000	Salaries and Wages	574,000
96,000	Other Expenses	117,000
	Maintenance—	
78,000	Stores	96,000
525,000	Salaries and Wages	574,000
106,000	Other Expenses	103,000
161,000	Purchase of Electricity	—
1,231,000	Distribution	1,429,000
	Operation and Maintenance—	
138,000	Stores	183,000
887,000	Salaries and Wages	1,003,000
206,000	Other Expenses	243,000
1,679,000	General Expenses	1,926,000
527,000	Local Administration and Technical Management	684,000
925,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	956,000
118,000	Head Office Administration Expenses	170,000
109,000	Head Office Engineering Expenses	116,000
7,260,000	Capital Charges	7,790,000
4,016,000	Interest	4,508,000
2,339,000	Redemption Fund	2,138,000
179,000	Instalments and Provision for Repayment of Overseas Loans	186,000
726,000	Reserve Fund	958,000
<u>R17,329,000</u>		<u>R18,613,000</u>
R524,000	Balance brought down	R140,000
6,000	Balance brought forward	530,000
<u>R530,000</u>		<u>R670,000</u>

			<u>1967</u>
	Sales of Electricity	R18,415,000	R16,732,000
	Traction Supplies	R4,100,000	3,911,000
	Bulk Supplies	3,281,000	3,016,000
	Industrial Supplies	7,293,000	6,410,000
	Domestic and Lighting Supplies	3,741,000	3,395,000
	Other Revenue	58,000	73,000
	Balance carried down	18,473,000	16,805,000
		140,000	524,000
		<u>R18,613,000</u>	<u>R17,329,000</u>
	Balance brought forward	—	—
	Balance as per Balance Sheet	R670,000	R530,000
		<u>R670,000</u>	<u>R530,000</u>

Electricity Supply Commission

Cape Northern Undertaking

Revenue Account for the Year

Ended 31st December, 1968

<u>1967</u>		<u>1967</u>
R2,200,000	Generation	R2,675,000
1,954,000	Proportion of Pooled Costs of Rand and Orange Free State and Eastern Transvaal Undertakings	R2,392,000
246,000	Proportion of Transmission Costs Charged by Rand and Orange Free State Undertaking	283,000
252,000	Distribution	299,000
	Operation and Maintenance—	
42,000	Stores	47,000
165,000	Salaries and Wages	198,000
45,000	Other Expenses	54,000
250,000	General Expenses	303,000
94,000	Local Administration and Technical Management	116,000
94,000	General Expenses (including Stores Expenses, Rates, Insurances, Pension Fund Contributions, etc.)	104,000
32,000	Head Office Administration Expenses	49,000
30,000	Head Office Engineering Expenses	34,000
1,881,000	Capital Charges	2,187,000
1,041,000	Interest	1,207,000
540,000	Redemption Fund	580,000
300,000	Reserve Fund	400,000
<u>R4,583,000</u>		<u>R5,464,000</u>
R20,000	Balance brought down	R104,000
1,116,000	Balance as per Balance Sheet	1,012,000
<u>R1,136,000</u>		<u>R1,116,000</u>

<u>1967</u>		<u>1967</u>
	Sales of Electricity	R5,349,000
	Traction Supplies	R1,461,000
	Bulk Supplies	958,000
	Mining Supplies	2,096,000
	Industrial Supplies	600,000
	Domestic and Lighting Supplies	234,000
	Other Revenue	11,000
	Balance carried down	5,360,000
		104,000
		<u>R4,583,000</u>
	Balance brought forward	R1,116,000
		—
		<u>R1,116,000</u>

Electricity Supply Commission

Border

Undertaking

Revenue Account for the Year

Ended 31st December, 1968

1967		1967
R1,539,000	Generation	R1,625,000
	Operation—	
1,073,000	Fuel	R1,102,000
17,000	Water and Stores	16,000
217,000	Salaries and Wages	238,000
20,000	Other Expenses	22,000
	Maintenance—	
42,000	Stores	51,000
150,000	Salaries and Wages	172,000
20,000	Other Expenses	24,000
196,000	Distribution	219,000
	Operation and Maintenance—	
18,000	Stores	21,000
142,000	Salaries and Wages	161,000
36,000	Other Expenses	37,000
301,000	General Expenses	340,000
118,000	Local Administration and Technical Management	141,000
138,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	142,000
24,000	Head Office Administration Expenses	34,000
21,000	Head Office Engineering Expenses	23,000
1,356,000	Capital Charges	1,618,000
796,000	Interest	954,000
410,000	Redemption Fund	476,000
150,000	Reserve Fund	188,000
<u>R3,392,000</u>		<u>R3,802,000</u>
R58,000	Balance brought down	R122,000
29,000	Balance as per Balance Sheet	—
<u>R87,000</u>		<u>R122,000</u>

1967		1967
	Sales of Electricity	R3,676,000
	Bulk Supplies	R2,827,000
	Industrial Supplies	448,000
	Domestic and Lighting Supplies	401,000
	Other Revenue	4,000
	Balance carried down	3,680,000
		122,000
		<u>R3,392,000</u>
	Balance brought forward	R29,000
	Balance as per Balance Sheet	93,000
		<u>R122,000</u>
		<u>R3,392,000</u>
		R87,000
		<u>R87,000</u>

Electricity Supply Commission

Orange River

Undertaking

Revenue Account for the Period

12th January, 1967, to 31st December, 1968

Electricity Purchased	R50,000	
Distribution	5,000	
Operation and Maintenance—		
Stores	—	
Other Expenses	<u>R5,000</u>	
General Expenses		5,000
Local Administration and Technical Management	2,000	
General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	<u>3,000</u>	
Capital Charges		20,000
Interest	<u>20,000</u>	

Sales of Electricity		R78,000
Bulk Supplies	R68,000	
Industrial Supplies	<u>10,000</u>	
Balance carried down		2,000

	<u>R80,000</u>	
Balance brought down	R2,000	
	<u>R2,000</u>	

		<u>R80,000</u>
Balance brought down		—
Balance as per Balance Sheet		<u>R2,000</u>
		<u>R2,000</u>

Electricity Supply Commission

Natal

Undertaking

Revenue Account for the Year

Ended 31st December, 1968

1967		
R12,438,000	Generation	R13,224,000
	Operation—	
9,359,000	Fuel	R9,713,000
306,000	Stores	332,000
1,028,000	Salaries and Wages	1,184,000
250,000	Other Expenses	243,000
	Maintenance—	
465,000	Stores	458,000
894,000	Salaries and Wages	1,052,000
136,000	Other Expenses	242,000
7,000	Electricity Purchased	7,000
—	Electricity Supplied by Rand and Orange Free State Undertaking	2,000
1,288,000	Distribution	1,453,000
	Operation and Maintenance—	
254,000	Stores	263,000
779,000	Salaries and Wages	912,000
255,000	Other Expenses	278,000
1,821,000	General Expenses	2,150,000
672,000	Local Administration and Technical Management	782,000
783,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	916,000
191,000	Head Office Administration Expenses	268,000
175,000	Head Office Engineering Expenses	184,000
11,327,000	Capital Charges	13,208,000
6,146,000	Interest	7,225,000
3,266,000	Redemption Fund	3,824,000
315,000	Instalments and Provision for Repayment of Overseas Loans	359,000
1,600,000	Reserve Fund	1,800,000
26,881,000	Balance carried down	30,044,000
219,000		—
<u>R27,100,000</u>		<u>R30,044,000</u>
R2,064,000	Balance brought down	R833,000
—	Balance as per Balance Sheet	1,231,000
<u>R2,064,000</u>		<u>R2,064,000</u>

	Sales of Electricity	R29,062,000
	Traction Supplies	R4,632,000
	Bulk Supplies	17,062,000
	Mining Supplies	1,020,000
	Industrial Supplies	5,141,000
	Domestic and Lighting Supplies	1,207,000
	Other Revenue	149,000
	Balance carried down	833,000
		—
		<u>R30,044,000</u>
	Balance brought forward	R2,064,000
	Balance brought down	—
		<u>R2,064,000</u>

Electricity Supply Commission

Eastern Transvaal

Undertaking

Revenue Account for the Year

Ended 31st December, 1968

1967		R10,568,000
R8,998,000	Generation	
8,993,000	Proportion of Pooled Costs (Statement attached)	R10,562,000
	Other Operation and Maintenance Costs—	
2,000	Operation—	
1,000	Salaries and Wages	4,000
	Other Expenses	1,000
2,000	Maintenance—	
	Salaries and Wages	1,000
299,000	Electricity Supplied by Rand and Orange Free State Undertaking	336,000
692,000	Distribution	768,000
	Operation and Maintenance—	
83,000	Stores	110,000
435,000	Salaries and Wages	487,000
174,000	Other Expenses	171,000
638,000	General Expenses	780,000
383,000	Local Administration and Technical Management	428,000
648,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	698,000
186,000	Head Office Administration Expenses	268,000
172,000	Head Office Engineering Expenses	183,000
1,389,000		1,577,000
751,000	Less charged to Pooled Costs	797,000
4,306,000	Capital Charges	4,737,000
7,175,000	Interest	7,588,000
3,237,000	Redemption Fund	2,938,000
710,000	Instalments and Provision for Repayment of Overseas Loans	697,000
1,695,000	Reserve Fund	1,995,000
12,817,000		13,218,000
8,511,000	Less Charged to Pooled Costs	8,481,000
14,933,000		17,189,000
550,000	Balance carried down	596,000
<u>R15,483,000</u>		<u>R17,785,000</u>
R1,716,000	Balance as per Balance Sheet	R2,312,000
<u>R1,716,000</u>		<u>R2,312,000</u>

	R17,679,000	1967 R15,385,000
Sales of Electricity		
Traction Supplies	R2,027,000	1,910,000
Bulk Supplies	1,087,000	878,000
Mining Supplies	6,313,000	5,576,000
Industrial Supplies	7,694,000	6,521,000
Domestic and Lighting Supplies	558,000	500,000
Other Revenue	106,000	98,000
Other Revenue	202,000	182,000
Less Credited to Pooled Costs	96,000	84,000

Electricity Supply Commission

Rand and Orange Free State

Undertaking

Revenue Account for the Year

Ended 31st December, 1968

1967		R67,751,000
R60,995,000	Generation	
3,122,000	Proportion of Pooled Costs (Statement attached)	3,614,000
	Distribution	
	Operation and Maintenance—	
725,000	Stores	R791,000
2,569,000	Salaries and Wages	2,885,000
175,000	Other Expenses	221,000
3,469,000		3,897,000
	Less charged to—	
101,000	Pooled Costs (Interconnector)	—
246,000	Cape Northern Undertaking	283,000
1,599,000		1,906,000
	General Expenses	
1,282,000	Local Administration and Technical Management	1,403,000
2,302,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	2,581,000
480,000	Head Office Administration Expenses	692,000
442,000	Head Office Engineering Expenses	475,000
4,506,000		5,151,000
2,907,000	Less Charged to Pooled Costs	3,245,000
14,002,000		13,367,000
	Capital Charges	
18,103,000	Interest	21,743,000
10,219,000	Redemption Fund	8,709,000
3,308,000	Instalments and Provision for Repayment of Overseas Loans	3,957,000
5,440,000	Reserve Fund	6,955,000
37,070,000		41,364,000
23,068,000	Less Charged to Pooled Costs	27,997,000
86,638,000		86,638,000
	Balance carried down	101,000
R79,718,000		R86,739,000
R301,000	Balance brought down	—
939,000	Balance brought forward	R1,240,000
R1,240,000		R1,240,000

	R85,929,000	1967 R78,660,000
Sales of Electricity		
Traction Supplies	R4,251,000	3,899,000
Bulk Supplies	14,710,000	12,728,000
Mining Supplies	44,466,000	42,331,000
Industrial Supplies	19,767,000	17,486,000
Domestic and Lighting Supplies	2,735,000	2,216,000
Revenue from Air and Steam	438,000	414,000
Electricity Supplied to Undertakings	86,367,000	79,074,000
	338,000	299,000
		299,000
Eastern Transvaal Undertaking	336,000	—
Natal Undertaking	2,000	—
Other Revenue	34,000	44,000
Other Revenue	377,000	326,000
Less Credited to Pooled Costs	343,000	282,000
Balance carried down	86,739,000	79,417,000
	—	301,000
R86,739,000	R86,739,000	R79,718,000
Balance brought down	R101,000	—
Balance as per Balance Sheet	1,139,000	R1,240,000
R1,240,000	R1,240,000	R1,240,000

Electricity Supply Commission

Rand and Orange Free State and

Eastern Transvaal Undertakings

Statement of Pooled Costs and Allocation

for the Year Ended 31st December, 1968

<u>1967</u>		<u>1967</u>
R36,857,000	Generation	R40,604,000
	Operation—	
26,531,000	Fuel	R28,403,000
891,000	Water and Stores	1,255,000
3,520,000	Salaries and Wages	3,965,000
473,000	Other Expenses	525,000
	Maintenance—	
1,780,000	Stores	2,226,000
3,518,000	Salaries and Wages	4,077,000
144,000	Other Expenses	153,000
113,000	Electricity Purchased	20,000
101,000	Interconnector	—
3,658,000	General Expenses	4,042,000
923,000	Local Administration and Technical Management	908,000
1,944,000	General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	2,150,000
791,000	Head Office Administration and Engineering Expenses	984,000
31,579,000	Capital Charges	36,478,000
15,127,000	Interest	18,882,000
7,937,000	Redemption Fund	6,887,000
3,750,000	Instalments and Provision for Repayment of Overseas Loans	4,413,000
4,765,000	Reserve Fund	6,296,000
<u>R72,308,000</u>		<u>R81,144,000</u>

	<u>1967</u>	<u>1967</u>
Sundry Revenue	R439,000	R366,000
Allocation	80,705,000	71,942,000
Rand and Orange Free State Undertaking	R67,751,000	60,995,000
Eastern Transvaal Undertaking	10,562,000	8,993,000
Cape Northern Undertaking	2,392,000	1,954,000
	<u>R81,144,000</u>	<u>R72,308,000</u>

Electricity Supply Commission

ANNEXURE B

POWER STATIONS: PRINCIPAL EQUIPMENT INSTALLED AS AT 31st DECEMBER, 1968

Undertaking and Area (sq. miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb./hr.	Generators MW	No.	Continuous Maximum Rating Each 1000s lb./hr.	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Border (21 500)	King William's Town	Steam	10·0	3·0	1	10·0	2	1·5		
			36·0		3	12·0				
	Total		46·0	3·0	4		2			
	West Bank No. 1...	Steam	129·0	1·5	6	21·5	1	1·5		
			220·0	8·0	4	55·0	2	4·0		
	Total		349·0	32·0	10		3	7·5		
West Bank No. 2...	Steam	680·0	45·0	4	170·0	3	15·0			
		210·0	20·0	1	210·0	1	20·0			
Total 1 & 2		890·0	65·0	5		4				
Total		1 239·0	97·0	15		10				
Border	Total		1 285·0	100·0	19		12			
Cape Eastern (3 100)	No Generating Plant									
Cape Western (24 200)	Salt River No. 1....	Steam	120·0	30·0	2	60·0	3	10·0	1	0·3
			600·0	60·0	6	100·0	3	20·0		
	Total		720·0	90·3	8		6		1	
	Salt River No. 2....	Steam	2 600·0	120·0	10	260·0	4	30·0		
				120·0			2	60·0		
	Total 1 & 2		2 600·0	240·0	10		6		1	
		3 320·0	330·3	18		12				
Hex River	Steam	800·0	60·0	4	200·0	3	20·0			
		550·0	60·0	2	275·0	2	30·0			
Total		1 350·0	120·0	6		5				
Cape Western	Total		4 670·0	450·3	24		17		1	0·3

Undertaking and Area (sq. miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb./hr.	Generators MW	No.	Continuous Maximum Rating Each 1000s lb./hr.	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Natal (33 600)	Colenso Nos. 1 & 2	Steam	480·0		8	60·0				
			320·0	60·0	4	80·0	5	12·0		
			900·0	75·0	5	180·0	3	25·0		
			400·0	30·0	2	200·0	1	30·0		
	Total		2 100·0	165·0	19		9			
	Ingagane	Steam	4 500·0	400·0	5	900·0	4	100·0		
	Congella Nos. 1 & 2	Steam		36·0			60·0	3	12·0	
360·0			20·0	6	60·0	1	20·0			
400·0			30·0	4	100·0	1	30·0			
Total		1 600·0	120·0	8	200·0	3	40·0			
2 360·0	206·0	18		8						
Umgeni	Steam	1 440·0	120·0	8	180·0	4	30·0			
		1 300·0	120·0	5	260·0	2	60·0			
Total		2 740·0	240·0	13		6				
Port Shepstone	Oil			2·0			2	1·0		
		Total		2·0			2			
Natal	Total		11 700·0	1 013·0	55		29			
Orange River (53 800)	No Generating Plant									
Cape Northern (23 200)	No Generating Plant									
Eastern Transvaal (35 700)	Komati	Steam	4 500·0	500·0	5	900·0	5	100·0		
			4 500·0	500·0	4	1 125·0	4	125·0		
	Total		9 000·0	1 000·0	9		9			
Witbank	Steam	1 400·0	120·0	20	70·0	6	20·0		1	8·0
		160·0	8·0	2	80·0					
Total		1 560·0	128·0	22		6			1	
Eastern Transvaal	Sabie Gorge	Hydro		1·35			3	0·45		
	Total		10 560·0	1 129·35	31		18		1	8·0

Undertaking and Area (sq. miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb./hr.	Generators MW	No.	Continuous Maximum Rating Each 1000 _s lb./hr.	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Rand & O.F.S. (73 200)	Camden	Steam	10 800·0	1 200·0	6	1 800·0	6	200·0		
	Highveld	Steam	4 400·0	480·0	8	550·0	8	60·0		
Rand & O.F.S.	Klip	Steam	4 500·0	396·0 28·0	25	180·0	12	33·0	4	7·0
	Total		4 500·0	424·0	25		12		4	
	Taaibos	Steam	4 640·0	480·0	8	580·0	8	60·0		
	Vaal	Steam	3 420·0	297·0 21·0	18	190·0	9	33·0	3	7·0
	Total		3 420·0	318·0	18		9		3	
	Vereeniging	Steam	1 080·0	60·0 90·0	6	180·0	3 3	20·0 30·0		
	Total		1 080·0	150·0	6		6			
	Vierfontein	Steam	3 990·0	360·0	19	210·0	12	30·0		
	Wilge	Steam	500·0		4	125·0				
			1 600·0	60·0	4	400·0	2	30·0		
	580·0		180·0	1	580·0	3	60·0			
Total		2 680·0	240·0	9		5				
Rand & O.F.S.	Total		35 510·0	3 652·0	118		66		7	7·0
E. T. U. + R. & O.F.S.U.	Total		46 070·0	4 781·35	148		84		8	
Total all Escom....	Oil Hydro Steam Steam	—	2·0			2				
		—	1·35			3				
		63 725·0	6 284·0 57·3	243		137			9	
		63 725·0	6 344·65	243		142			9	

MAJOR ITEMS OF PLANT COMMISSIONED IN 1968

Undertaking and Area (sq. miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb./hr.	Generators MW	No.	Continuous Maximum Rating Each 1000 _s lb./hr.	No.	Normal Rating Each MW	No.	Normal Rating Each MW
R. & O.F.S.	Camden				2	1 800	2	200		
Natal	Ingagane				2	900	1	100		

TRANSMISSION LINES AND CABLES (EXCLUDING SERVICE CONNECTIONS
ON RETICULATION SYSTEMS) AT 31st DECEMBER, 1968.

(a) TRANSMISSION LINES

Undertaking	400 kV	275 kV	132 kV	88 kV	66 kV	42 kV	33 kV	22 kV 21 kV	11 kV	6·6 kV	3·3 kV	2·0 kV 2·1 kV 2·2 kV	380/220 V	Total
Border	—	—	—	—	172·00	—	35·70	195·35	653·76	—	4·97	—	103·32	1 165·10
Cape Eastern	—	—	746·17	—	317·36	—	—	78·00	116·51	—	—	—	5·60	200·11
Cape Northern	—	150·00	542·25	—	747·11	—	—	235·11	755·03	—	—	—	29·39	2 233·06
Cape Western	—	—	599·82	468·77	162·30	—	150·27	406·32	2 632·00	327·29	—	—	1 214·56	6 019·80
Eastern Transvaal	—	254·66	320·97	1 085·64	—	—	354·48	1 463·05	1 543·87	41·45	9·44	47·58	271·46	4 862·40
Natal	—	366·27	—	—	—	—	—	34·07	2 987·04	194·16	—	—	429·38	5 772·96
Orange River	—	728·02	1 559·26	3 154·32	—	1 466·45	—	76·73	3 392·75	296·30	—	—	—	76·73
Rand & O.F.S.	370·72	—	—	—	—	—	—	402·69	—	—	—	—	645·49	12 016·00
Totals	370·72	1 498·95	3 768·47	4 708·73	1 398·77	1 466·45	540·45	2 891·32	12 080·96	859·20	14·41	48·53	2 699·20	32 346·16

(b) UNDERGROUND CABLES

Undertaking	400 kV	275 kV	132 kV	88 kV	66 kV	42 kV	33 kV	22 kV 21 kV	11 kV	6·6 kV	3·3 kV	2·0 kV 2·1 kV 2·2 kV	380/220 V	Total
Border	—	—	—	—	—	—	—	0·01	30·05	—	2·34	—	10·33	42·73
Cape Eastern	—	—	—	—	—	—	—	—	1·58	—	—	—	6·40	7·98
Cape Northern	—	—	9·66	—	24·04	—	71·77	—	184·90	6·46	2·40	—	250·33	549·56
Cape Western	—	—	—	—	—	—	—	25·34	24·73	1·57	1·04	0·11	86·10	138·89
Eastern Transvaal	—	—	—	1·17	—	—	5·03	—	102·24	8·70	0·29	0·01	47·04	164·48
Natal	—	—	—	—	—	—	—	93·59	94·24	268·08	—	—	111·25	592·80
Orange River	—	—	—	—	—	25·54	76·80	118·94	437·74	284·81	6·07	0·22	511·45	1 496·44
Rand & O.F.S.	—	—	9·66	1·17	24·04	25·54	76·80	118·94	437·74	284·81	6·07	0·22	511·45	1 496·44
Totals	—	—	9·66	1·17	24·04	25·54	76·80	118·94	437·74	284·81	6·07	0·22	511·45	1 496·44

CAPACITY OF TRANSFORMERS IN SERVICE AT 31st DECEMBER, 1968

Undertaking	Number	M.V.A.
Border	725	134·56
Cape Eastern	335	7·60
Cape Northern	1 560	878·500
Cape Western	6 392	1 676·579
Eastern Transvaal	2 692	2 781·405
Natal	4 406	3 607·791
Orange River	7	2·38
Rand & Orange Free State	10 611	22 765·413
Compressor Stations, Rand	43	336·720
TOTALS	26 771	32 190·948

STATEMENT No. 2

POWER STATIONS: PRINCIPAL EQUIPMENT ON ORDER AS AT 31st DECEMBER, 1968

Undertaking and Area (sq. miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb./hr.	Generators MW	No.	Continuous Maximum Rating Each 1000s lb./hr.	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Natal	Ingagane	Steam					1	100·0		
R. & O.F.S.	Camden P.S.				2	1 800	2	200		
	Grootylei P.S.				5	1 700	5	200		
	Hendrina P.S.				5	1 700	5	200		
	Arnot P.S.				6	2 620	6	350		
O.R.U.	Hendrik Verwoerd ..						2	90		

UNITS SOLD BY UNDERTAKINGS TO ALL CONSUMERS DURING THE PAST FORTY-ONE YEARS

(MILLION UNITS)

Year	Border	Cape Eastern	Cape Northern	Cape Western	Eastern Transvaal	Klip	Natal Central	Natal Southern	Natal U.	Rand & O.F.S.	Sabie	Vaal	Total
1928				31.0	464.3		114.2	15.6			2.8		627.9
1929				47.9	543.1		123.9	78.9			3.2		797.0
1930				49.8	619.0		117.1	99.2			4.6		889.6
1931				52.1	603.4		101.1	103.9			6.6		867.1
1932				64.3	610.3		100.3	109.8			6.1		890.7
1933				100.7	639.4		109.2	118.5			6.3		974.1
1934				73.6	648.2		124.9	131.1			7.3		985.2
1935				80.0	727.9		154.3	149.9			7.2		1,119.2
1936				85.8	696.4		171.5	170.5			6.9		1,688.0
1937				94.0	684.5		210.6	189.4			7.2		2,535.6
1938				98.8	768.1		234.9	209.5			7.2		2,985.5
1939				106.5	767.7		266.2	233.7			6.4		3,573.7
1940				119.8	853.3		281.1	242.7			6.7		4,070.2
1941				136.2	862.6		302.4	270.3			6.6		4,254.0
1942				151.8	873.4		307.7	273.7			6.3		4,320.8
1943				145.7	849.1		312.4	293.4			5.9		4,275.6
1944				158.7	889.2		336.0	321.6			6.7		4,415.8
1945				165.9	830.7		333.2	348.8			6.6	377.9	4,706.1
1946				184.6	896.9		347.0	369.7			7.4	582.5	5,002.4
1947	56.2			198.6	887.7		346.0	402.6			7.6	668.6	5,114.5
1948	69.2			222.4	633.2	1,207.4	367.9	448.7			7.3	435.1	5,576.9
1949	68.7			249.5	358.2		371.8	513.0			7.0		6,222.2
1950	79.9		53.9	378.5	378.5		406.5	561.8			6.3		6,910.6
1951	88.1		58.5	303.5	386.8		433.4	617.0			6.1		7,456.5
1952	97.7		61.3	341.2	425.0		454.0	655.6			6.1		8,080.6
1953	107.8		67.1	375.5	409.9		492.3	713.2			6.4		8,732.2
1954	118.2		70.7	436.2	270.5		532.5	777.7			5.6		9,676.6
1955	130.8		73.2	527.1	394.6		546.4	870.8			5.7		10,964.0
1956	139.1		78.7	585.1	505.9		595.4	957.7			6.0		12,019.5
1957	143.1		86.1	698.6	536.6		621.7	1,018.7			5.9		12,763.1
1958	152.9		115.2	826.0	584.1		616.1	1,104.1			3.0		13,602.2
1959	165.0		171.4	861.8	633.3		629.4	1,228.6					14,724.5
1960	172.3		185.2	871.6	762.0		649.3	1,409.0					16,094.1
1961	178.8		191.3	860.0	901.5		684.0	1,497.5			Orange River		17,013.2
1962	188.6		224.9	945.0	1,012.2		731.0	1,589.5					18,121.0
1963	204.9		264.9	1,051.4	1,212.1		779.0	1,764.6					19,500.0
1964	228.8	0.4	311.4	1,163.9	1,553.6		—	—	2,922.1				21,247.5
1965	250.5	1.6	393.2	1,267.4	1,936.8		—	—	3,182.5				23,143.3
1966	272.4	2.5	442.4	1,367.0	2,408.2		—	—	3,498.5				24,554.3
1967	294.2	3.2	519.9	1,533.1	2,829.6		—	—	3,720.6		1.1		26,657.1
1968	310.5	4.1	609.6	1,666.2	3,191.4		—	—	4,121.5		2.4		28,885.0

Notes: (1) Klip & Vaal are now included in Rand & O.F.S. Undertaking.

(2) Sabie Undertaking Incorporated in Eastern Transvaal Undertaking since 1st July, 1958, in terms of the Amended Licence. De—Commissioned November, 1964.

(3) Natal Central and Southern one Undertaking as from 1st April, 1964.

UNITS SOLD AND NUMBER OF CONSUMERS, 1968

Statement No. 4

Undertakings	TRACTION			BULK			MINING		
	Units	Per cent Traction	No. Cons.	Units	Per cent Bulk	No. Cons.	Units	Per cent Mining	No. Cons.
Border.....	—	—	—	268 160 954	4·045	14	—	—	—
Cape Eastern.....	—	—	—	1 147 720	0·018	1	—	—	—
Cape Northern.....	161 825 684	7·420	3	133 564 061	2·015	11	228 216 436	1·902	67
Cape Western.....	391 319 448	17·945	7	356 457 205	5·378	34	—	—	—
Eastern Transvaal.....	269 935 275	12·379	7	184 028 972	2·776	20	1 162 863 916	9·694	79
Natal.....	580 079 577	26·601	12	2 680 222 072	40·437	25	130 575 686	1·089	29
Rand & O.F.S.....	777 509 906	35·655	2	3 002 474 155	45·299	125	10 473 819 593	87·315	101
Orange River Undertaking.....	—	—	—	2 087 400	0·032	3	—	—	—
Total Electricity.....	2 180 669 890	100·000	31	6 628 142 539	100·000	233	11 995 475 631	100·000	276
Per cent of Total.....		7·549			22·947			41·528	

Cape.....	520 522 990		9	787 773 807		61	225 617 956		62
Natal.....	540 678 927		10	2 614 261 447		18	130 575 686		29
O.F.S.....	54 287 651		2	384 059 085		50	2 898 721 399		20
Transvaal.....	1 065 180 322		10	2 842 048 200		104	8 740 560 590		165
Total.....	2 180 669 890		31	6 628 142 539		233	11 995 475 631		276

INDUSTRIAL			DOMESTIC AND STREET LIGHTING			TOTAL UNITS SOLD		Total Number of Consumers
Units	Per cent Ind.	No. Cons.	Units	Per cent Dom & SL	No. Cons.	Units	Per cent Total Units Sold	
20 763 881	0·279	429	21 572 743	3·361	3 873	310 497 578	1·075	4 316
1 549 359	0·021	81	1 401 309	0·218	354	4 098 388	0·014	436
71 521 452	0·961	319	14 485 071	2·257	2 233	609 612 704	2·110	2 633
672 317 585	9·038	6 104	246 128 181	38·346	40 946	1 666 222 419	5·769	47 091
1 539 437 438	20·694	1 804	35 102 329	5·468	4 777	3 191 367 930	11·048	6 687
655 100 218	8·807	2 939	75 474 294	11·759	12 783	4 121 451 847	14·269	15 788
4 477 830 426	60·195	1 863	247 695 652	38·590	20 261	18 979 329 732	65·706	22 352
340 547	0·004	1	—	—	—	2 427 947	0·008	4
7 438 860 906		13 540	641 859 579		85 227	28 885 008 545		99 307
	25·753			2·223			100·00	

765 325 363		6 933	283 340 778		47 402	2 582 580 894		54 467
649 630 559		2 622	69 680 480		11 240	4 004 827 099		13 919
299 571 242		296	16 357 405		2 071	3 652 996 782		2 439
5 724 333 742		3 689	272 480 916		24 514	18 644 603 770		28 482
7 438 860 906		13 540	641 859 579		85 227	28 885 008 545		99 307

POWER STATION OPERATING STATISTICS YEAR 1968

Statement No. 5

ELECTRICITY GENERATION

1—1 STEAM ELECTRIC Stations at 31/12/68—The number of Stations, those with separate Turbine Houses (i.e. not under same roof) are counted as two e.g. Salt River and West Bank

Power Station	Units Generated	Units Sent Out	MAXIMUM DEMANDS		Stn. L.F. % S.O.
			½ Hour (Hour) sent out kW	2 Min. Peak kW	
Border Undertaking					
King William's Town.....		Diesel Set	Sold in 1966		
West Bank Nos. 1 & 2.....	329 619 860	313 217 480	64 860	71 000	55·0
Total.....	329 619 860	313 217 480	64 860	71 000	
Cape Western Undertaking					
Hex River.....	441 008 500	415 833 380	115 200	121 000	41·1
Salt River No. 1.....	32 236 400	29 085 990	55 100	60 000	6·0
Salt River No. 2.....	1 415 461 200	1 352 322 400	226 700	250 000	67·9
Total.....	1 888 706 100	1 797 241 770			
Natal Undertaking					
Colenso Nos. 1 & 2.....	532 513 300	495 806 200	130 070	149 000	43·4
Congella Nos. 1 & 2.....	722 810 100	665 883 600	146 795	169 000	51·6
Ingagane.....	2 276 271 000	2 136 979 600	372 400	403 000	65·3
Umgeni.....	1 074 983 000	1 009 784 200	228 800	246 000	50·2
Total.....	4 606 577 400	4 308 453 600			
Eastern Transvaal Undertaking					
Komati.....	6 025 984 291	5 579 191 979	813 899		78·0
Witbank.....	582 507 592	534 248 656	119 795		50·8
Total.....	6 608 491 883	6 113 440 635			
Rand/O.F.S. Undertaking					
Arnot.....					
Camden.....	5 947 674 377	5 612 664 123	950 432		67·2
Grootylei.....					
Hendrina.....					
Highveld.....	3 043 901 176	2 847 820 362	453 373		71·5
Klip.....	2 049 133 894	1 894 306 996	366 525		58·8
Taaibos.....	3 135 781 090	2 902 569 813	447 221		73·9
Vaal.....	2 000 818 095	1 869 949 713	299 526		71·1
Vereeniging.....	457 054 164	417 307 202	107 405		40·5
Vierfontein.....	1 789 025 207	1 656 763 850	332 256		56·8
Wilge.....	1 204 440 069	1 109 714 741	213 077		59·3
Total.....	19 627 828 072	18 311 096 800			
Total E.T.U. + R. & O.F.S.U.....	26 236 319 955	24 424 537 435			
Total B.U. & C.W.U. + N.U.....	6 824 903 360	6 418 912 850			
Grand Total.....	33 061 223 315	30 843 450 285			

Coal Burnt Tons (2,000 lb.)	LB OF COAL		Calorific Value of Coal B.Th.U. As Received (Wt. Ave.)	B.Th.U. PER UNIT		OVERALL THERMAL EFFICIENCY%	
	Per Unit Generated	Per Unit Sent Out		Generated	Sent Out	Gen.	Sent Out
208 042	1·262	1·328	11 640	14 690	15 460	23·2	22·1
208 042							
257 223	1·167	1·237	11 430	13 340	14 140	25·6	24·1
20 404	1·730	1·917	11 560	20 000	22 160	17·1	15·4
735 933	1·029	1·077	11 560	11 900	12 450	28·7	27·4
1 013 560							
415 410	1·560	1·676	11 480	17 910	19 240	19·1	17·8
527 335	1·459	1·584	11 210	16 360	17 760	20·8	19·2
1 135 563	0·998	1·063	11 070	11 050	11 770	30·9	29·0
630 220	1·173	1·248	11 830	13 880	14 760	24·6	23·1
2 708 528	1·176	1·257					
3 196 666	1·061	1·146	10 460	11 100	11 990	30·7	28·5
609 061	2·091	2·280	10 360	22 290	24 300	15·3	14·0
3 805 727							
2 903 131	0·976	1·034	10 060	9 820	10 410	34·8	32·8
1 823 410	1·198	1·281	8 750	11 300	12 080	30·2	38·3
1 818 751	1·775	1·920	8 780	16 060	17 360	21·2	19·6
2 158 618	1·377	1·487	8 740	12 740	13 760	26·8	24·8
1 851 163	1·850	1·980	8 160	15 280	16 350	22·3	20·9
562 344	2·461	2·695	8 620	21 660	23 720	15·8	14·4
1 413 534	1·580	1·706	9 060	14 310	15 460	23·8	22·1
824 734	1·369	1·486	9 600	13 160	14 280	25·9	23·9
13 355 685							
17 161 412							
3 930 130							
21 091 542							

Statement No. 5—(continued)

1-2 HYDRO ELECTRIC

Power Station	Units Generated	Units Sent Out	Maximum Demand—kW		Stn. Load Factor Sent Out	Rain	
			½ Hour Sent Out	2 Minutes Generated		Inches	M.M.
Sabie Gorge.....	11 650 0 000	11 525 0 000	700 0 000	900 0 000	N/A 0 000	N/A 0 000	N/A 0 000
Sabie Falls	11 650	11 525	700	900	0 000	0 000	0 000
Totals							

N/A Not Applicable.

Station on caretaker basis used in emergencies only.

(3) GENERATION SUMMARY

		Units Generated	Units Sent Out	Coal Burnt
Electricity Total Units .....	) Steam Hydro Diesel	33 061 223 315	30 843 450 285	21 091 542
		11 650	11 525	—
Grand Total 1968.....		—	—	—
		33 061 234 965	30 843 461 810	21 091 542
Total for 1967.....		30 421 691 463	28 370 890 385	20 180 802
Change on 1967 (Units or Tons).....		2 639 543 502	2 472 571 425	910 740
Per cent.....		8·68	8·72	4·51

POWER PURCHASED FROM OUTSIDE SOURCES IN 1968

Undertaking	Purchased from	Maximum Demands	Units
Natal Undertaking.....	Durban Navigation Collieries Ltd.....	2 778	588 420
Cape Eastern.....	Port Elizabeth Municipality (Aloes)...	1 323	3 962 953
	Port Elizabeth Municipality (Loerie)...	360	793 200
Cape Western.....	Nil	Nil	Nil
Orange River.....	Aliwal North Municipality.....	610	2 567 000
Rand & Orange Free State.....	Nil	Nil	Nil
Eastern Transvaal.....	Nil	Nil	Nil
Total Units Purchased.....			7 911 573
Total Units Sold.....			28 885 008 545
Purchased as % of Sales.....			0.027%

STATEMENT No. 7

STATEMENT SHOWING THE PRICE OR RENT OF LAND OR INTERESTS IN OR OVER LAND OR OTHER PROPERTY ACQUIRED OR HIRED BY THE COMMISSION DURING THE YEAR 1968.

(See previous Annual Report for Rights or Interests in or over land acquired prior to 1967.)

Cape Western Undertaking

Immovable property acquired for considerations amounting to	NIL
Servitudes acquired—capitalized payments amounting to	R4661.68

Cape Northern Undertaking

Immovable property acquired for considerations amounting to	R699.13
Servitudes acquired—capitalized payments amounting to	R3,310.89

Cape Eastern Undertaking

Immovable property acquired for considerations amounting to	R1,900.00
Servitudes acquired—capitalized payments amounting to	NIL

Natal Undertaking

Immovable property acquired for considerations amounting to	R37,558.11
Servitudes acquired—capitalized payments amounting to	R20,540.68

Eastern Transvaal Undertaking

Immovable property acquired for considerations amounting to	R209,709.82
Servitudes acquired—capitalized payments amounting to	R2,881.35

Border Undertaking

Immovable property acquired for considerations amounting to	R400.00
Servitudes acquired—capitalized payments amounting to	NIL

**COAL USED AT COMMISSION'S POWER STATIONS
AVERAGE COST PER TON (2,000 lb.)**

Power Station	1958		1959		1960		1961		1962		1963		1964		1965		1966		1967		1968	
	R		R		R		R		R		R		R		R		R		R		R	
Brakpan	1.73		1.93		1.70		1.77		1.82		1.83											
Colenso	2.97		3.17		3.12		3.11		3.36		3.48		3.37		3.77		3.91		3.90		3.81	
Congella	3.58		3.82		3.79		3.75		3.91		3.59		3.25		3.42		3.56		3.64		3.80	
Hex River	4.54		4.70		4.68		4.76		4.93		5.21		5.17		5.33		5.57		5.79		5.64	
Highveld	—		1.33		1.45		1.60		1.53		1.55		1.66		1.62		1.64		1.77		1.88	
Ingagane	—		—		—		—		—		2.27		2.26		2.46		2.52		2.52		2.51	
Kimberley Central	3.59		3.83		3.78		3.75		3.90		4.12		4.10		4.07		4.24		—		—	
Klip	1.79		1.82		2.09		2.14		2.13		2.04		2.02		2.17		2.49		—		—	
King William's Town	4.81		4.54		—		4.58		—		4.58		—		—		4.65		—		—	
Komati	—		—		—		1.19		1.29		1.53		1.34		1.17		1.24		1.15		1.27	
Rosherville	1.92		2.04		1.86		1.90		2.08		2.13		2.15		2.19		2.49		—		—	
Salt River	4.57		4.86		4.83		4.85		5.03		5.36		5.32		5.42		5.65		5.95		5.88	
Taaibos	0.84		0.93		1.83		1.98		1.75		1.70		1.58		1.56		1.65		1.78		1.86	
Umgeni	3.72		4.05		4.04		4.01		4.28		4.37		4.32		4.54		4.82		5.09		5.06	
Vaal	0.73		0.74		0.79		0.93		0.95		1.03		1.04		1.04		1.09		1.16		1.15	
Vereeniging	0.98		0.91		0.87		0.96		1.02		1.07		1.05		1.06		1.32		1.29		1.32	
Vierfontein	1.23		1.23		1.50		1.56		1.46		1.43		1.42		1.55		1.68		1.65		1.70	
West Bank	4.39		4.66		4.61		4.59		4.77		5.02		5.01		5.10		5.22		5.31		5.30	
Wilge	0.91		0.97		0.90		0.94		0.97		0.95		0.96		0.99		1.09		1.31		1.33	
Witbank	1.05		1.11		1.06		1.05		1.14		1.15		1.16		1.27		1.37		1.36		1.41	
Camden	—		—		—		—		—		—		—		—		—		—		—	

**POWER SUPPLY IN SOUTH AFRICA
ESCOM AND REPUBLIC**

	Escom		Units Generated (kWh) (Millions)		Escom coal burnt (Tons) (Thousands)	Sales (kWh) (Millions)		Escom total staff	Sales Escom + V.F.P. (kWh) (Millions)
	Capital Expenditure (Rand)	Installed Capacity (MW)	Escom + V.F.P. (X)	Republic of S.A. (Y)		(X) / (Y) %	Escom			Republic of S.A.
1925		1.35					0.1		
1926		61.35					161.7		1,376.4
1927		121.35					551.0		1,516.9
1928	1,399,678	175.65	1,422.2	2,109.6	1,934.9		627.9		1,694.2
1929	1,575,492	194.65	1,516.7	2,300.1	2,086.1		797.0	633	1,807.4
1930		215.65	1,766.3	2,453.7	2,166.4		889.6		2,007.6
1931	16,591,164	215.65	1,857.4	N.A.	2,237.2		867.1	688	1,632.4
1932	16,823,332	227.65	2,028.7	N.A.	2,388.0		890.7	664	1,689.5
1933	17,275,780	247.65	2,246.4	2,946.6	2,542.0		974.1	645	1,814.2
1934	18,786,190	287.65	2,525.9	3,308.6	2,831.3		985.2	678	1,929.0
1935	22,980,968	307.65	2,848.4	3,772.5	3,152.3		1,119.2	706	2,140.3
1936	27,103,556	486.843	3,406.7	4,602.9	3,584.3		1,688.0	778	2,414.9
1937	30,563,380	519.843	3,980.6	5,336.0	3,844.2		2,535.6	862	2,820.6
1938	34,296,968	623.346	4,452.8	5,933.0	4,176.4		2,985.4	1,024	3,238.5
1939	36,645,076	737.656	4,740.7	6,574.3	4,409.2		3,573.7	1,097	3,639.7
1940	38,661,664	770.631	5,098.3	7,167.8	4,626.0		4,070.2	1,100	4,095.6
1941	40,808,068	771.300	5,444.9	7,592.1	4,903.7		4,254.0	1,189	4,516.9
1942	43,762,646	770.551	5,538.9	7,798.5	5,111.9		4,320.8	N.A.	4,833.5
1943	46,573,506	795.456	5,404.0	7,999.8	4,977.6		4,275.6	N.A.	4,920.0
1944	48,036,044	796.856	5,597.8	8,042.9	5,164.2		4,415.8	1,238	4,795.8
1945	49,913,496	862.856	5,748.7	8,328.5	5,309.2		4,706.1	1,328	4,970.5
1946	52,852,490	975.690	5,895.6	8,556.9	5,321.9		5,002.4	1,531	5,101.1
1947	57,649,694	1,033.190	6,035.5	8,787.8	6,000.3		5,144.5	1,836	5,218.8
1948	90,815,886	1,385.071	6,553.5	9,480.7	6,126.0		5,576.9	2,169	5,341.7
1949	100,234,082	1,411.985	7,075.3	10,013.3	6,365.6		6,222.2	2,692	5,787.0
1950	115,128,520	1,439.895	7,773.6	11,187.0	6,970.4		6,910.6	8,764	
1951	137,283,154	1,520.590	8,326.6	11,895.0	7,344.8		7,456.5	9,352	
1952	176,559,102	1,624.590	8,778.0	12,517.0	7,841.1		8,080.6	10,336	
1953	218,739,074	1,806.070	9,442.0	13,744.0	8,150.3		8,732.2	10,889	
1954	270,621,248	2,051.010	10,651.9	15,184.0	8,846.0		9,676.6	11,518	
1955	304,341,966	2,377.721	12,214.5	17,172.0	9,920.5		10,964.0	12,317	
1956	342,068,024	2,734.871	13,578.4	18,535.0	10,679.8		12,019.5	12,490	
1957	377,265,178	2,826.700	14,388.1	19,954.0	11,266.2		12,763.1	12,977	
1958	417,700,898	3,036.550	15,582.6	20,133.0	11,887.4		13,602.2	13,421	
1959	453,130,370	3,289.450	16,926.5	21,165.0	12,730.3		14,724.5	13,947	
1960	491,471,208	3,408.950	18,543.3	22,561.0	13,792.8		16,094.1	14,654	
1961	529,565,151	3,558.950	19,575.4	24,365.0	14,544.8		17,013.2	15,441	
1962	581,579,266	3,758.950	20,805.5	26,105.0	15,383.3		18,121.0	16,467	
1963	637,076,261	4,175.950	22,312.4	27,828.0	16,227.2		19,500.0	16,804	
1964	679,192,772	4,499.600	24,355.3	30,422.0	17,256.3		21,247.5	17,172	
1965	741,109,317	4,624.750	26,440.4	32,772.0	18,438.1		23,143.3	17,851	
1966	840,781,679	4,806.350	27,395.5	34,759.0	18,720.1		24,554.3	18,579	
1967	950,862,731	5,845.350	30,421.7	37,869.0	20,180.8		26,657.1	19,817	
1968	1,114,390,015	6,344.65	33,061.2	40,948.0	21,091.5		28,885.0	20,893	