



The Camden Power Station which was opened by the Prime Minister of the Republic of South Africa in October, 1967, and will be completed to its full capacity of 1600 MW in 1969.

MEMBERS OF THE

Electricity Supply Commission

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Electricity Supply Commission

**To the Honourable,
The Minister of Economic Affairs,
House of Parliament,
Cape Town.**

**Escom Centre,
204 Smit Street,
Johannesburg.
2nd May 1968**

Sir,

As required by Section 19 of the Electricity Act, 1958, the Commission has the honour to present its forty-fifth Annual Report and Accounts covering its work for the financial year ended 31st December, 1967.

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

INCREASE IN SALES OF ELECTRICITY

Total sales in 1967 amounted to 26,657 million units, and reflected a growth rate of 8·7 per cent for the year. This is higher than growth rate for the year 1966, which was only 6·3 per cent, and is somewhat higher than the average rate experienced during the past ten years (7·6%). The increase in units sold in 1967 was spread equally over the three main categories

of consumers, that is, mining, industrial and bulk supplies to municipalities.

Sales to the mining industry increased by 6·1 per cent, although the increases were confined to the new gold mining areas and to the expansion of platinum mines in the Rustenburg area. In this area new developments called for substantial reinforcements of the distribution system in order to cope with the situation. Industrial users increased their consumption by 11·0 per cent during 1967 as compared with 7·2 per cent for 1966. This high rate is due in part to the severe water restrictions imposed during 1966 which was responsible for a sharp drop in purchase in that year by the Rand Water Board and municipalities for pumping purposes.

The growth of Escom's sales over the ten years 1958 to 1967 is depicted by the blue columns in the diagram below. The red line superimposed upon the

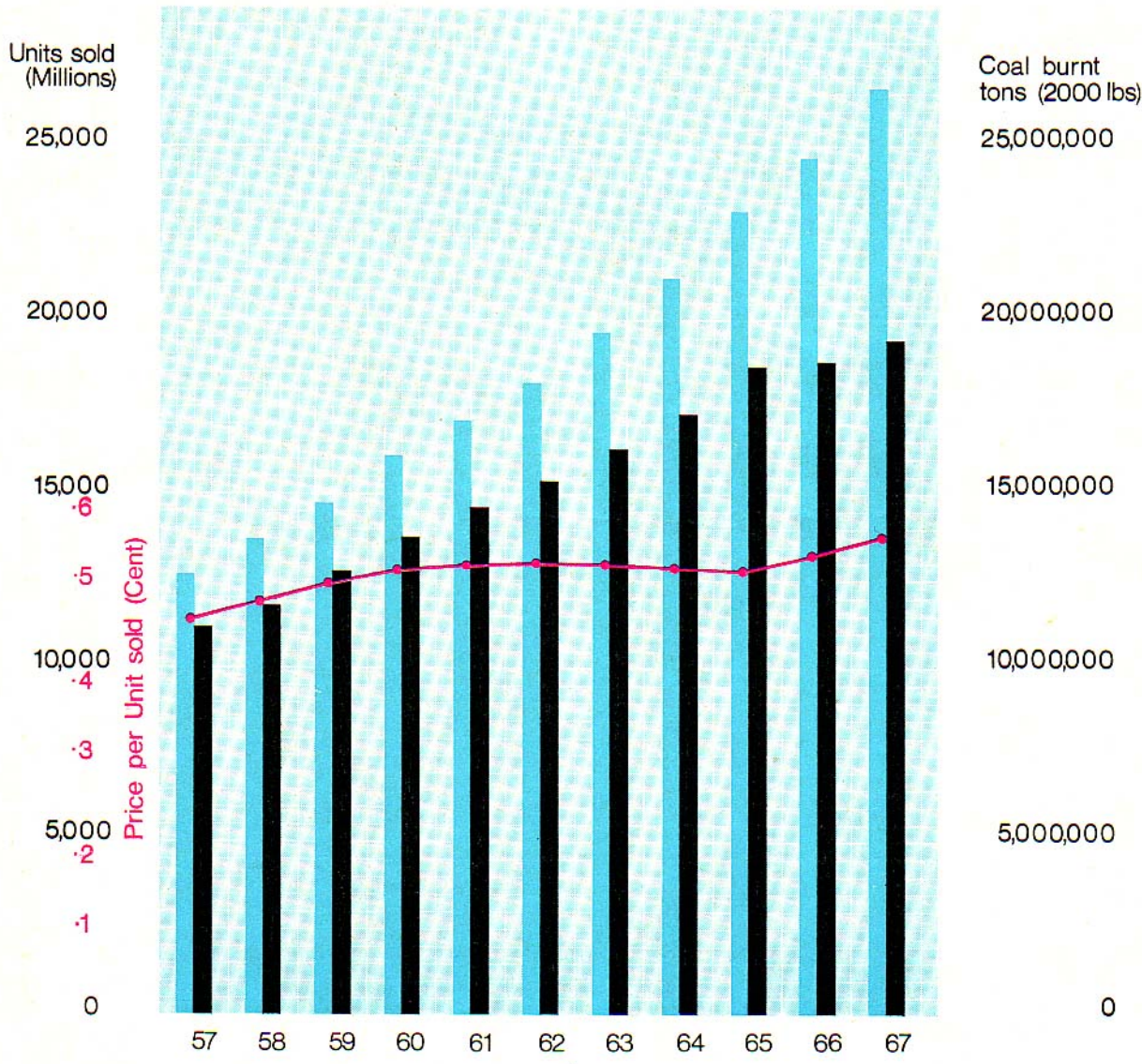


diagram shows the average price per unit sold: and the figure of 0·5467 cent/unit represents an increase of 4·1 per cent in the average price per unit sold. The cost per unit sold increased from 0·5315 cent/unit in 1966 to 0·5513 cent/unit in 1967 which is an increase of 3·7 per cent. The larger part of this increase is due to the increase in the cost of coal burnt, which rose by 6·9 per cent between the two years.

The figures represented in the diagram are the averages for all Undertakings. The prices for each Undertaking and for different classes of consumer in each Undertaking are given in the statistical tables relating to the individual Undertakings in the section of the Report commencing on page 19.

The rate of increase in coal burnt is again lower than the rate of increase in units sold. This indicates a continued improvement in overall thermal efficiency, as additional plant is brought into commission in the newer and larger power stations. This improvement in thermal efficiency can be summed up in the following figures:—

In 1957, on the average, 1,311 units of electricity were generated for each ton of coal burnt. In 1966 the average figure was 1,463 units generated for each ton of coal burnt.

In 1967, the average figure for all power stations improved further to 1,507 units per ton of coal burnt.

GROWTH OF INDUSTRIAL ACTIVITY

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 the industry:—

	Units Sold (millions)				
	1963	1964	1965	1966	1967
Building and Cement (including quarrying).	327	447	508	530	562
Chemical (including pharmaceutical)	849	868	1,023	1,098	1,214
Engineering (including the motor industry).	201	357	393	415	544
Foodstuffs, Consumer Goods and Commercial.	560	624	751	935	1,022
Iron, Steel and Base Metals.	1,659	1,991	2,326	2,435	2,680
Paper and Paper Products	212	212	267	416	469

UNITS GENERATED AND SOLD

The total units generated in all Escom's Undertakings in the year 1967 amounted to 30,422 million units, which represents an increase of 11.1 per cent over the corresponding figure for 1966.

Purchases from other Undertakings amounted to

69 million units, being considerably less than the figure of 629 million units during 1966. If outside purchases are taken into account the rate of increase in generation becomes 8.8 per cent.

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

EXPANSION OF MINING ACTIVITY

Sales of electricity to all classes of mining consumers reflected an increase of 6·1 per cent during the year under review. Sales to platinum mines again showed substantial increases, while sales to gold mines increased by 4·8 per cent, as against the abnormally low figure of 1·6 per cent for 1966. Relief in the form of special loans from the Government to mines which are in danger of closing down has had some influence on these figures.

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)		
	1965	1966	1967
Gold Mining (including uranium)	9,345	9,490	9,946
Coal Mines	365	412	453
Diamond, Platinum and other Mines	634	910	1,042
	<u>10,344</u>	<u>10,812</u>	<u>11,441</u>

OUTPUT AND SALES

	1967	1966	% Increase 1967	Average Annual Increase over 10 years %
Units generated	30,421,663,224	27,395,479,555	11·05	7·59
Units purchased	69,604,511	629,876,210	—	—
Units sold	26,657,112,958	24,554,347,088	8·56	7·64

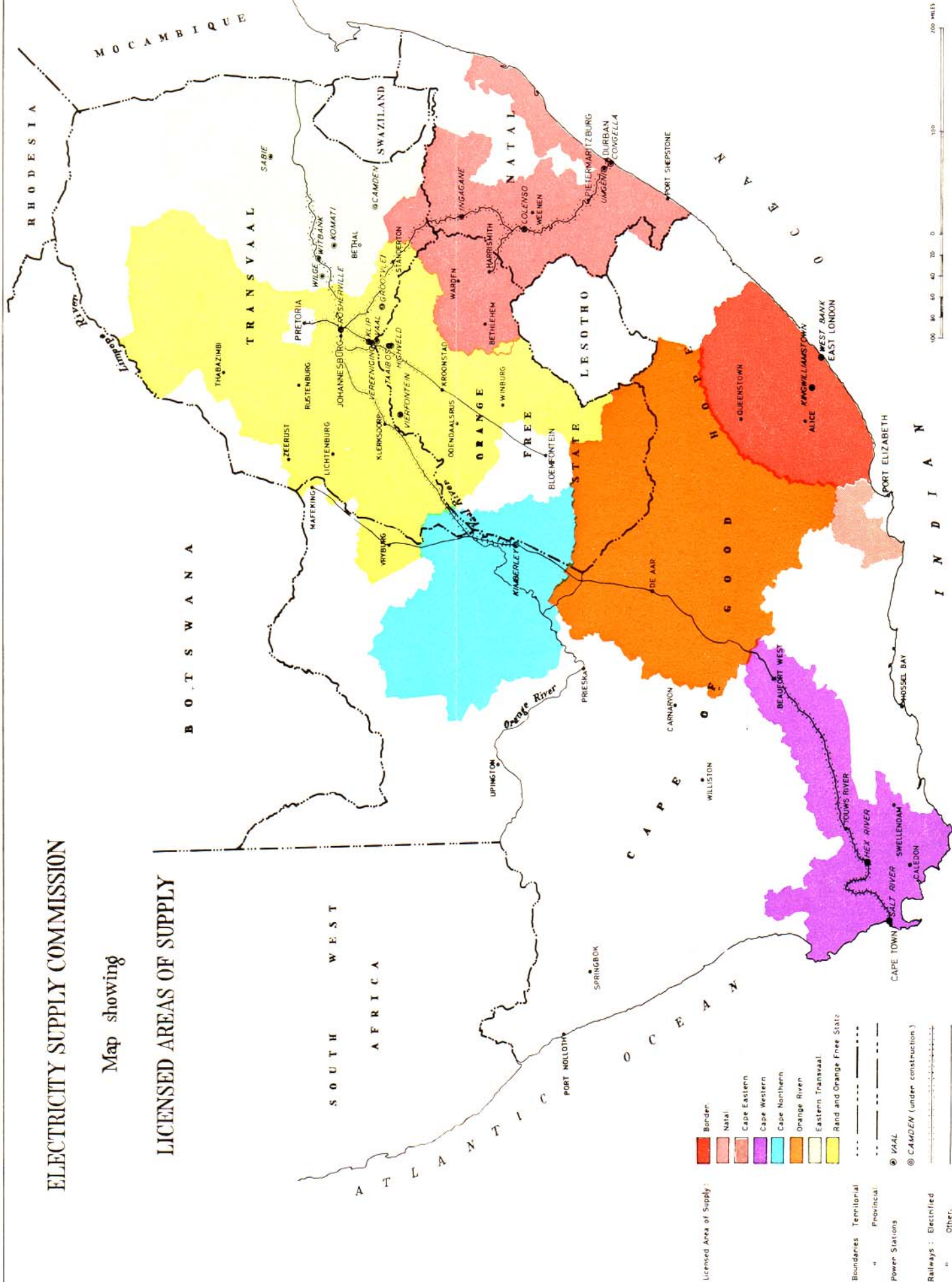
The total sales of electricity for the year 1967 in the main categories of supply, with the corresponding figures for 1966 and the rate of increase in the

year under review are shown in the following table. The final column reflects the average rate of growth over the ten years 1958 to 1967.

ELECTRICITY SUPPLY COMMISSION

Map showing

LICENSED AREAS OF SUPPLY



- Licensed Area of Supply:**
- Natal
 - Cape Eastern
 - Cape Western
 - Cape Northern
 - Orange River
 - Eastern Transvaal
 - Rand and Orange Free State
- Boundaries:**
- Territorial
 - Provincial
- Power Stations:**
- /AAL
 - /CAMDEN (under construction)
- Railways:**
- Electrified
 - Other



SALES TO MAIN CONSUMER CLASSES

	1967	1966	% Increase 1967	Average Annual Increase over 10 years %
<i>Bulk Supplies</i>				
Municipalities	5,965,702,255	5,344,193,439	11·6	8·90
<i>Direct Supplies</i>				
Traction	1,958,027,151	1,835,801,102	6·7	10·03
Mining	11,441,475,211	10,812,569,202	5·7	4·54
Industrial	6,729,072,097	6,070,034,563	11·0	11·13
Domestic	552,916,221	482,351,164	14·5	11·66
Street Lighting	9,919,023	9,397,618	5·5	9·07
	<u>26,657,111,958</u>	<u>24,554,347,088</u>	<u>8·6</u>	<u>7·64</u>

The total sales of electricity by individual Undertakings in 1967, with the corresponding figures for

1966, and the percentage increase for the year were as follows:—

SALES BY UNDERTAKINGS

	1967	1966	% Increase 1967	Average Annual Increase over 10 years %
Cape Western	1,533,071,894	1,366,976,337	12·2	8·18
Cape Northern	519,902,441	442,387,226	17·5	19·70
Cape Eastern	3,187,818	2,481,001	28·5	—
Border	294,192,276	272,390,860	8·0	7·47
Orange River	1,107,362	—	—	—
Natal	3,720,612,366	3,498,485,101	6·3	8·53
Eastern Transvaal	2,829,622,299	2,408,232,860	17·5	18·09
Rand and O.F.S.	17,755,415,502	16,563,393,703*	7·2	6·28
	<u>26,657,111,958</u>	<u>24,554,347,088</u>	<u>8·6</u>	<u>7·64</u>

*Includes sales to air system

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 O.F.S. Undertaking

The application made on the 11th November, 1965, for extension of the Greater Rand Extension and Orange Free State Licence to include a large area in the Northern Transvaal was granted by the Electricity Control Board on 4th March, 1968. The objection lodged by the Municipality of Warmbad was withdrawn and a permanent supply of electricity has been given to this town. During 1967 an urgent application was received from the Municipality of Louis Trichardt: and it is anticipated that a supply will be made available to this Municipality during the latter half of 1968.

Proposed Orange River Undertaking

The application for a licence for the proposed Orange River Undertaking, which was made to the

Electricity Control Board, on the 15th December, 1966, is still receiving attention. Objections to the granting of this licence were lodged by the Municipality of Somerset East and by the Municipalities of Trompsburg, Bethulie, Philippolis, Edenburg, Springfontein and Die Suid-Vrystaatse Elektriesiciteit- Voor-siening-Utiliteitsmaatskappy in the Orange Free State. After a meeting with representatives of the Municipality of Somerset East, the objection by this Municipality was withdrawn. Discussions have taken place with the other objectors and a public hearing of the application has been arranged for 3rd May, 1968.

Meanwhile, in order to avoid capital expenditure on extensions of the municipal power stations at Rouxville, Smithfield and Zastron in the short period before supplies of electricity could be made available from the proposed Undertaking, Escom has been purchasing small supplies of electricity from the Municipality of Aliwal North for distribution to these municipalities. The Revenue and Expenditure Account, which is included in this Report, reflects the results of these interim arrangements.

ECONOMIC CO-OPERATION IN SOUTHERN AFRICA

With the growth of loads and the development of high voltage transmission networks to supply these loads, co-operation between the States of Southern Africa in the field of power generation is technically and economically possible. During the year Escom has participated in investigations and discussion on several projects which offer the promise of worthwhile economic gains for the Republic and its neighbours.

South West Africa

As reported last year, Escom entered into an agreement with the South West Africa Water and Electricity Corporation (Pty.) Ltd., set up by the Industrial Development Corporation of South Africa, and a considerable amount of work has been done in investigating and preparing plans for the supply of electricity in South West Africa. Present plans envisage that development will proceed in two stages, first the establishment of a high-pressure steam station in the vicinity of Windhoek, and, at a later stage, the introduction of hydro-electric power from a hydro-electric power station to be built near the Ruacana falls on the Kunene River.

Cabora-Bassa Project in Mozambique

Following from preliminary discussions which were initiated in 1966, Escom was invited during the past year to take part in discussions between the Republic of South Africa, and the Portuguese Government, on the hydro-electric project to be built at Cabora-Bassa on the Zambesi River in Mozambique. The capacity of the first power station which is contemplated in this project is of the order of 2,000 MW.

Territory of Lesotho

An agreement was concluded for the supply of electric power to the Government of Lesotho. For this purpose an 88 kV transmission line is being built from Ladybrand in the Orange Free State to a point on the border near Maseru, and completion is scheduled for the beginning of May, 1968.

Following upon the discussions between the two Governments, preliminary discussions have taken place in connection with the development of the Oxbow water and hydro-electric project. Escom has agreed, in principle, that it will purchase surplus power from this source.

HIGH VOLTAGE TRANSMISSION SYSTEM

In the previous reports, attention was directed to the important economic advantages of the proposed transmission system between the Eastern Transvaal and the Western Cape. By the end of 1967 considerable progress had been made with the development of this system.

Three 400 kV transmission lines are already in service between the Camden Power Station and Atlas Distribution Station near Vereeniging. Electric power for the gold mines and other users on the Witwatersrand is supplied from this substation, and towards the end of 1968, a 400 kV transmission line between Atlas and Perseus (near Dealesville) should be in service. A further 400 kV feed to Perseus but from

Grootvlei power station, is scheduled for completion by the winter of 1970. From this point supplies will be made available to the Orange Free State goldfields and to Kimberley, and at a later date, possibly to Bloemfontein.

The system is to be extended from Dealesville to a substation to be built near De Aar (Hydra Distribution Station), where supplies are to be taken for the proposed Orange River Undertaking. It is expected that the first line, and the substation at De Aar, will be ready in March, 1969. From De Aar two lines are to be built to Beaufort West. The first line is to be ready by the winter of 1969, in order to augment supplies in the Western Cape, using the existing network between Beaufort West and Muldersvlei for the first year. The 400 kV system should reach Muldersvlei by 1970. Duplicate 400 kV transmission lines will be completed to Beaufort West by March, 1971, and to Muldersvlei by March, 1972. It is anticipated that the first 400 kV line will reach Muldersvlei by March, 1970, the second line being completed in 1972.

The Natal Undertaking will also be connected to the nation-wide 400 kV network. Duplicate 400 kV transmission lines are planned to connect Camden Power Station with Ingagane Power Station in Northern Natal and thence to a substation Mersey to be built between Pietermaritzburg and Greytown, which will serve Durban, Pietermaritzburg, and eventually the Richards Bay area. Construction of these lines will be carried out in two stages, commencing with the construction of the 400 kV line between Ingagane and Mersey which should be completed by the end of 1970.

The connection between Camden Power Station and Ingagane is planned for early 1971.

All the material has been purchased for the building of two 275 kV transmission lines from Georgedale substation in Natal to Klaarwater substation just outside Durban. The material for this substation, which is to supply the Municipality of Durban, has been ordered and it is expected that the supply will be available about the middle of 1968.

Great development is expected in the Richards Bay area, and provisional plans have been drawn up to build two 275 kV transmission lines from Mersey to Richards Bay as soon as Government approval is given.

Provision is also being made for the electrification of the railway to be built to Richards Bay, which is expected to be required by 1972.

ELECTRIFICATION OF RAILWAYS

Supplies purchased by the South African Railways for traction purposes increased by 6·7 per cent to 1,958 million units in 1967.

The greatest percentage increase in supplies took place in the Northern Cape, where the electrification of the section of railway line between Kimberley and Postmasburg was completed. It is expected that the section between Postmasburg and Hotazel will be in service by mid 1968.

Electrification of the railway on the north and south coasts of Natal is also in progress, provision being made to supply five traction substations between Duffs Road and Mandini and also five substations between Durban and Kelso.




PLANT CAPACITY

The capacity of new generating plant installed and taken into service in Escom's power stations during

1967, and the capacity of boilers and turbo-generators under construction or on order at the end of the year are given in the table below.

	Plant taken into service in 1967		Plant under construction or on order at 31-12-67	
	Boilers lb/hr	Generators kW	Boilers lb/hr	Generators kW
Cape Western Undertaking				
Salt River No. 2 Power Station	780,000	120,000	—	—
Border Undertaking				
West Bank No. 2 Power Station	210,000	20,000	210,000	20,000
Natal Undertaking				
Ingagane Power Station	900,000	100,000	1,800,000	200,000
Rand and O.F.S. Undertaking				
Camden Power Station	5,400,000	800,000	9,000,000	800,000
Grootylei Power Station			7,110,000	800,000
Hendrina Power Station			6,800,000	800,000
Arnot Power Station			7,932,000	1,050,000
	7,290,000	1,040,000	32,852,000	3,670,000

PLANNED EXPANSION OVER THE NEXT FIVE YEARS

		1968	1969	1970	1971	1972	
	GENERATING PLANT (MEGAWATTS)	500	820	322	1460	550	
	TRANSMISSION LINES (MILES)	400 kV	142	328	684	514	429
		275 kV	78	70	140	210	—
	TRANSMISSION LINES (MILES)	132 kV	554	254	263	173	145

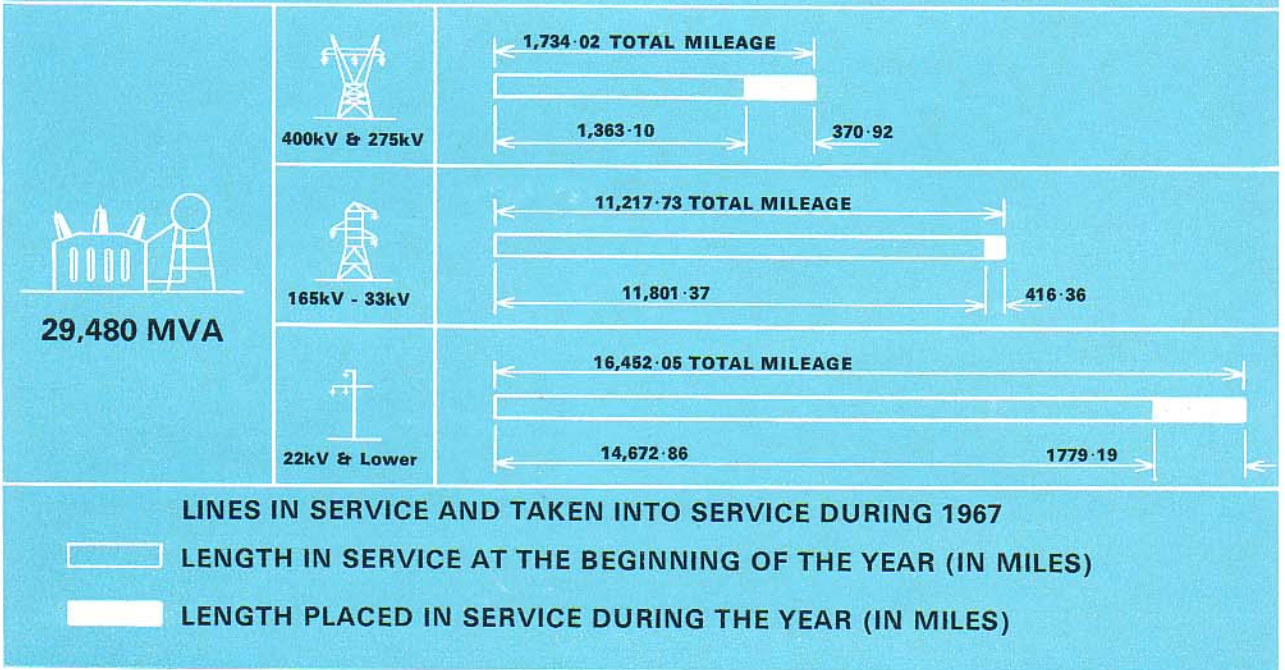
EXTENSIONS OF ESCOM'S TRANSMISSION SYSTEMS

During the year 1967 a total of 2,710 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 1967, with similar figures for the years 1963-1966 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 to 33 kV;
- (iii) distribution lines and cables of lower voltages ranging from 22 kV to 380 volts.

Route Miles of Transmission Lines and Cables taken into Service: Years 1963-67				
Year	400/275 kV	165/33 kV	22 kV and lower	Total (miles)
1963	141·60	589·16	1,283·55	2,014·31
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

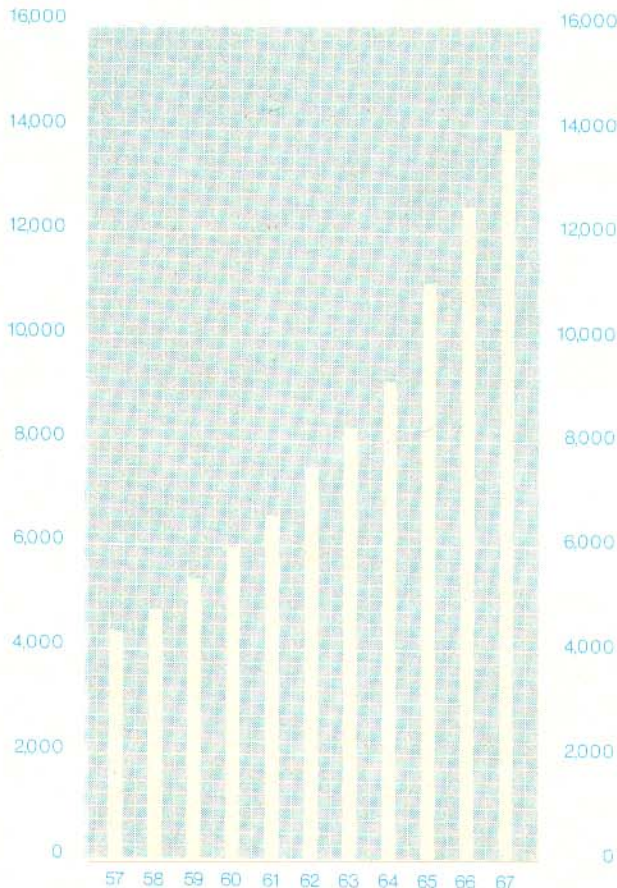
TRANSFORMERS AND TRANSMISSION LINES IN SERVICE

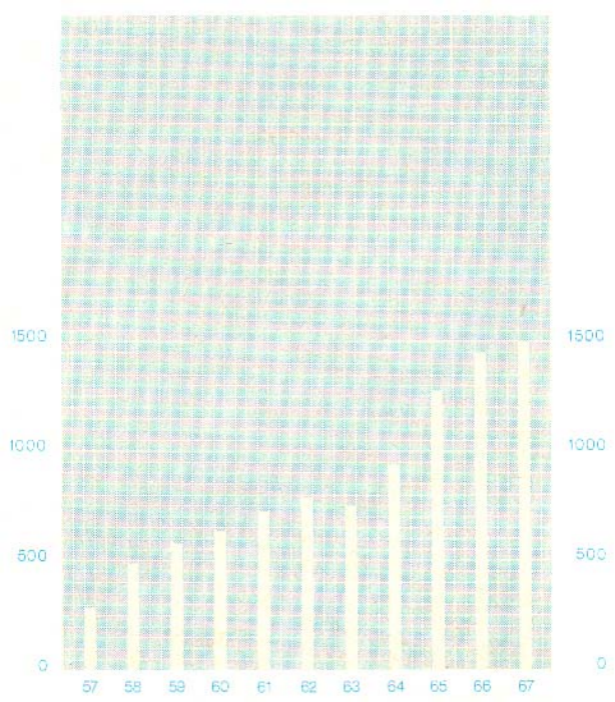


SUPPLIES TO FARMERS

The steady expansion of Escom rural networks year by year is shown in the diagram below and on page

15, which depicts (i) the total number of farms supplied at the end of the year and (ii) the number of new connections made during the year.





STATISTICAL SUMMARY

The figures of revenue, production costs, output and sales, which are customarily set out in a statistical summary are shown in the table which appears on page 17.

This table has been extended to show the figures for the last five years, as well as showing the increase or decrease in the 1967 figures as compared with the 1966 figures.

COSTS AND TARIFFS

The more important components of Escom's cost structure are shown in the diagram on page 18, depicting the production costs for the year 1967.

Tariffs

During the year the following changes were made to tariffs.

Cape Western Undertaking

The 5 per cent discount which was introduced in January, 1965, was withdrawn in October, 1967.

Rand and Orange Free State Undertaking

The tariffs for all large power users were increased by 6 per cent with effect from January, 1967.

Border Undertaking

Due to rising costs and to cover the cost of additional generating plant installed at the West Bank Power Station, 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 a surcharge of 10 per cent was introduced on this Undertaking from the beginning of January, 1968.

FINANCIAL

Loan Capital

During 1967 five local loans totalling R100,000,000 were raised, as shown on p. 16.

These loans were fully subscribed, but at the year end the amount received on account of the three loans issued on the 2nd October, 1967, was R46,178,000. The balance of R7,822,000 payable not later than 29th February, 1968, in terms of the prospectus, has since been received. At the year end the loans raised locally as Local Registered Stock totalled R871,000,000. Three local loans Nos. 8, 18 and 19 for R4,000,000, R10,500,000 and R6,000,000 respectively were redeemed during the year.

On the 15th June, 1967, a loan of U.S. \$15,000,000 (R10,776,000) was arranged through Kredietbank S.A. Luxembourgeoise bearing interest at 7 per cent per annum and repayable in ten equal annual instalments commencing on 15th June, 1968. During the year a further amount of R6,016,000 was received against the loan from the International Bank for Reconstruction and Development. Repayments of overseas loans amounted to R4,828,000. The total amount of loans outstanding at the end of the year was R834,295,000.

Revolving Credits

During the year certain overseas bankers provided revolving credit loans which, if required, must be renewed each six months during the period of the loan. In the case of the two French loans, the amount need not be taken up for any six-month period, but if the Standard Bank loan is not renewed, the agreement will terminate automatically. Details of these revolving credits are as shown on p. 16.

Redemption Fund

The amount in the Redemption Fund at the 31st December, 1967, totalled R208,413,000 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 realisation of investments.

Reserve Fund

The amount in the Reserve Fund at the 31st December, 1967, was R79,892,000.

Capital Expenditure

Expenditure on Capital Account during the year amounted to R110,081,000, which increased the total capital expenditure at the 31st December, 1967, to R950,863,000.

Expenditure on Capital Account will amount to approximately R1,492,000,000 on completion of all the works to which the Commission is committed and on projected works.

Investments

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, 1967, was

R286,853,000 the nominal value being R290,279,000. The market value of these investments at that date was R260,552,000.

Assets and Liabilities

The Commission's total assets at the 31st December,

1967, amounted to R1,302,685,000, and its total liabilities to R918,655,000, the difference being R384,030,000, which is represented by the amounts in the redemption and reserve funds, loans repaid and balance on revenue accounts.

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			

(Assets Sold Excluded)

LOANS RAISED IN 1967

Date Issued	Amount	Interest	Issue Price	Redeemable
21st March	R35,000,000	6 $\frac{7}{8}$ %	R97.00	31.3.1992
2nd October	5,000,000	6%	98.45	31.3.1971
2nd October	12,000,000	6 $\frac{1}{2}$ %	91.40	30.9.1992
2nd October	37,000,000	6 $\frac{7}{8}$ %	95.70	30.9.1992
1st December	11,000,000	6 $\frac{1}{2}$ %	100.00	30.11.1969
	<u>R100,000,000</u>			

REVOLVING CREDITS

Date Issued	Bank	Amount	Rand Equivalent	Period
6th November	Credit Commercial de France and three other European banks	U.S. \$20 million	R14,404,000	5 years
4th December	Standard Bank Ltd. London and Midland bank	U.S. \$10 million	R7,102,000	5 years
27th December	Credit Commercial de France	F.F. 50 million	R7,271,000	1 year

Investments

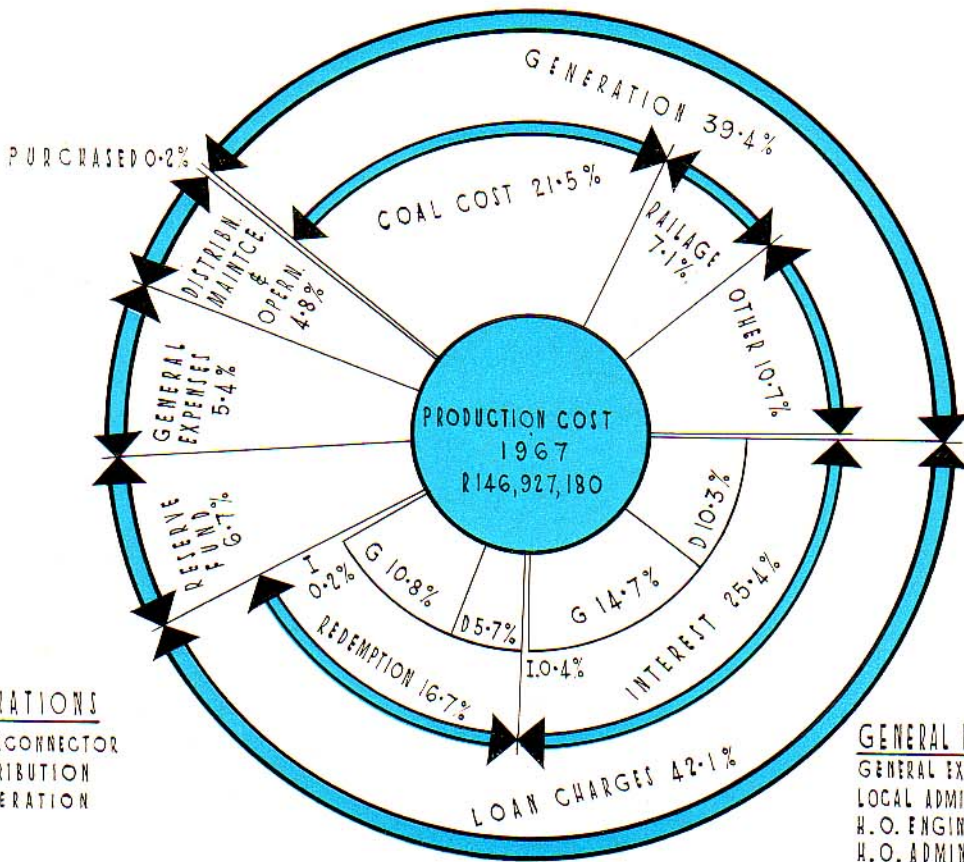
The book value of securities, representing investment in stocks of Electricity Supply Commission, Republic of South Africa and Municipalities held by the Commission on behalf of the redemption and reserve funds at 31st December, 1967, was

R286,853,000 the nominal value being R290,279,000. The market value of these investments at that date was R260,552,000.

STATISTICAL SUMMARY

Revenue, costs, output and sales, and other figures relating to the operation of the Commission's Undertakings during the years 1963 to 1967 are as follows:—

	1963	1964	1965	1966	1967	Increase 1967 over 1966
TOTAL REVENUE.....	R101,401,000	R108,861,000	R117,959,000	R129,517,000	R146,783,000	13·331%
TOTAL COSTS.....	100,010,000	108,751,000	118,673,000	130,500,000	146,928,000	12·589%
Difference between Total Revenue and Total Costs.....	1,391,000	110,000	714,000	983,000	145,000	R838,000
Sales of Electricity, Air and Steam.....	100,953,000	108,382,000	117,481,000	129,009,000	146,135,000	13·275%
Net Costs (less Sundry Revenue).....	99,562,000	108,272,000	118,195,000	129,992,000	146,280,000	12·530%
Average Price per Unit Sold.....	0·5177	0·5101c	0·5076c	0·5254c	0·5467c	4·048%
Average cost per Unit Sold.....	0·5129c	0·5118c	0·5128c	0·5315c	0·5512c	3·706%
Average Net Cost per Unit Sold.....	0·5106c	0·5096c	0·5107c	0·5294c	0·5488c	3·665%
Cost of Coal Consumed (including railage) ...	31,009,000	32,367,000	34,986,000	37,901,000	42,053,000	10·955%
Railage on Coal Consumed.....	8,428,000	8,504,000	8,856,000	9,524,000	10,462,000	9·849%
Coal Consumed (in tons of 2,000 lb).....	16,226,535	17,256,296	18,438,075	18,720,084	20,180,802	7·803%
Units Generated.....	22,312,389,427	24,355,271,933	26,440,445,395	27,395,479,555	30,421,691,463	11·05%
Units Sent Out.....	20,793,543,262	22,695,417,029	24,634,982,969	25,528,081,820	28,370,890,385	11·14%
Units Purchased.....	18,582,815	40,950,587	126,642,689	629,876,210	69,604,511	—
Units Sold.....	19,500,013,697	21,247,542,296	23,143,311,124	24,554,347,088	26,657,111,958	8·559%



STAFF

GENERAL MANAGER

The Commission desires to record its appreciation of the distinguished service rendered by Mr. G. R. D. Harding who retired from the position of General Manager of Escom on the 31st December, 1967, after a period of service of more than 40 years.

Mr. H. J. de Villiers was appointed to the position of General Manager from 1st January, 1968.

Home Ownership Scheme

The balance at 31st December, 1967, 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 R4,676,000.

Personnel

The staff employed by the Commission at the 31st December, 1967, numbered 19,817 employees, made up as follows:—

	1967	1966	Increase
Whites	6,946	6,455	494 7.6%
Coloured and Bantu	12,871	12,124	747 6.2%
	19,817	18,579	1,238 6.7%

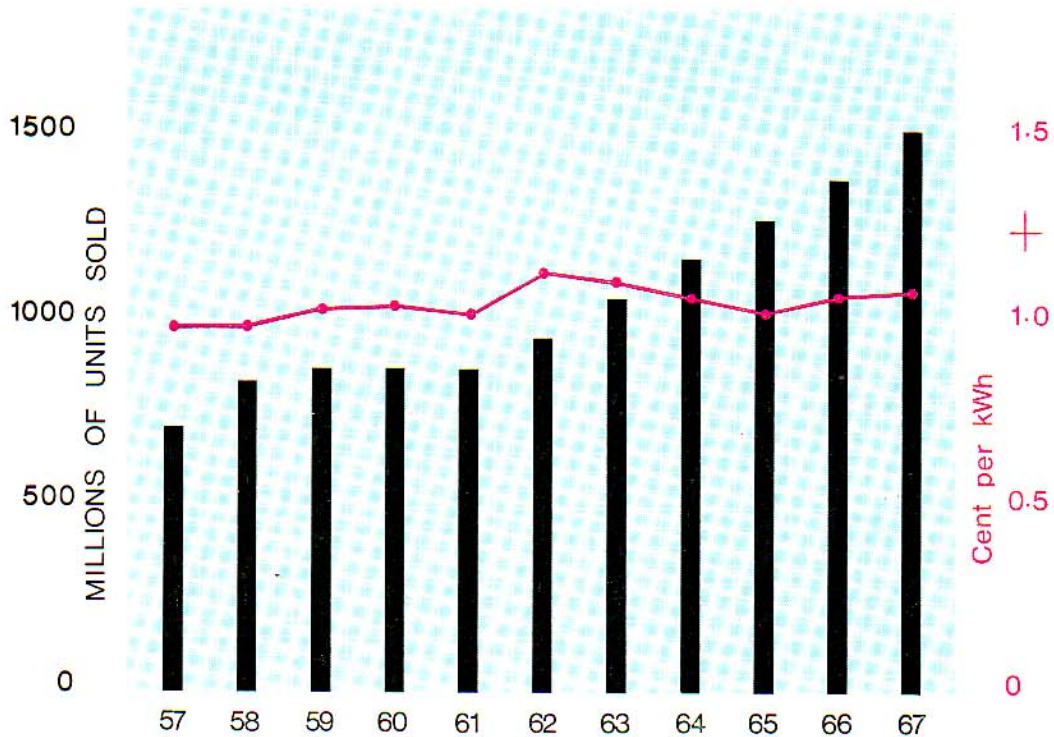
The Commission desires to record its appreciation of the loyalty and conscientious service of its employees.

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



Expansion of the Cape Western Undertaking

The above graph depicts the expansion of the Cape Western Undertaking which serves the area shown on page 20, in terms of the units sold over the years 1958 to 1967. Sales have increased from 826 million units in 1958 to 1,533 million units in 1967, an annual increase of 8.2 per cent over this period, and an increase of 12.2 per cent over sales for 1966.

The average price per unit of electricity sold is shown on the graph by the red line. The average revenue per unit was 1.0914 cents, an increase of 2.7 per cent over the previous year's figure. Part of this increase is due to the increase in tariffs of 5 per cent, which was introduced in October, 1967.

The development of the Undertaking during 1967 followed the same pattern as in 1966, with an increase in sales to all classes of consumers excepting for traction which again remained static. Industrial sales were responsible for the large increase in units sold, being 20.7 per cent greater than for 1966.

The bulk of the plant comprising the "C" extensions to the Salt River Power Station was commissioned according to programme.

An additional 19,295 kVA of transformer capacity was installed during the year.

A new distribution substation which will be used to provide a bulk supply to the Cape Town City Council, is being built by the City Council at Montagu Gardens, some 1.6 route miles from the Acacia substation. The target date for completion is April, 1969.

Details of sales to the main consumer classes, revenue received and the more important features of the power station operating statistics for the year 1967, are shown in the table on page 23.

Output and Sales

Units generated in the Undertaking power stations increased from 1,525 million units in 1966 to 1,700 million units in 1967. Total sales amounted to 1,533 million units, being 12.1 per cent higher than the sales for 1966.

The maximum demand for the year on a sent-out basis was 276.6 MW, being an increase of 19.1 MW or 7.4 per cent over the 1966 figure.

It was again necessary to make use of the arrangement for obtaining supplies from the Cape Town City Council to assist over peak periods. 32.9 million units were purchased with a maximum half-hour demand of 34.5 MW. With the improved plant position at Salt River Power Station, it was possible to cease taking supply from this source in September, 1967.

With the commissioning of generator No. 5 on the 4th March, 1967, and generator No. 6 on the 26th May, 1967, the output from Salt River No. 2 was increased to 1,014.4 million units for 1967, as compared with 677.7 million units during 1966. It was, therefore, possible to reduce the loading on the less efficient Salt River No. 1 Station from 165.2 million units in 1966 to 82.2 million units in 1967.

It was necessary to reduce the output of the Hex River Power Station by 14 per cent during March and

April of this year on account of water restrictions enforced by the Worcester Town Council. The output from Hex River, which was used mainly as a regulating station, decreased to 520 million units during 1967 as against 606 million units during 1966.

Coal stocks at all power stations were generally satisfactory during the year.

Extensions to Salt River Power Station No. 2

The bulk of the plant comprising the "C" extensions was commissioned in accordance with the dates programmed.

Two of the four 260,000 lb/hr Babcock and Wilcox boilers were placed in service in January, 1967, and the remaining two followed in May and August.

The two associated turbo-generators were commissioned in March and May respectively.

Power Station Operation and Maintenance

Total units generated for the year showed an increase of 11.4 per cent over the 1966 figure. The balance of the units to meet the load growth was purchased from the Cape Town City Council.

Salt River Power Station

The units generated by the combined Salt River power stations increased by 30 per cent above the units generated during 1966.

This was due to the commissioning of 60 MW Generators Nos. 5 and 6 in the early part of the year at the Salt River No. 2 Power Station. The turbine spindle for generator No. 1, to replace that lost on the *Seafarer* has now been received, and the work of replacing this is well in hand.

With the commissioning of the new boilers and generating plant it will now be possible to revert to a normal programme of maintenance.

A second coal tippler is being installed. This will facilitate overhaul of the existing unit.

Hex River Power Station

Generation at the Hex River Power Station decreased by 14 per cent below the figure for 1965. This was due to water restrictions and improved plant availability at the more efficient Salt River No. 2 Power Station.

Major Transmission Lines

Progress continued during 1967 with the survey work on the 400 kV transmission line routes from the Hydra Distribution Station (near De Aar) to Muldersvlei. The setting out of the angle structures for No. 1 line on the section between Beaufort West and Muldersvlei, except for certain mountainous sections, is complete. It is anticipated that the section of 400 kV transmission line between De Aar and Beaufort

West will be ready for service in March, 1969. It will then be possible to feed a certain amount of power from the Rand and O.F.S. power stations into the Cape Western system, making use of the existing line between Beaufort West and Worcester.

Construction work is proceeding with the Muldersvlei-Moorreesburg 132 kV transmission line and with the Moorreesburg substation.

Completion is scheduled for March, 1968. Additional supplies will then be available to the Saldanha Bay area.

With the completion of the second 132 kV underground cable from Salt River Power Station to Acacia substation, a duplicate 132 kV supply has been made available to the Acacia and Muldersvlei substations. Difficulties with the 66 kV supply cables to the Oakdale substation have been temporarily overcome by installing a 60 MW transformer intended for Moorreesburg substation at Acacia to provide coupling between the 132 kV and 66 kV systems at that point, and by connecting the Oakdale-Windmill 66 kV line to Muldersvlei substation.

Development of Urban Supplies

The maximum demand in the urban areas of Goodwood, Parow and Bellville increased by 7.2 per cent to a total of 71.8 MVA during 1967. Units sold increased by 9.2 per cent.

With the increase in demand in the Cape Flats area, it has been decided to build a new substation in this area fed from the Muldersvlei substation. This should be complete by 1970.

The transformer capacity at Acacia substation is to be increased.

Development of the Rural Supplies

Extensions to the rural network totalled over 290 miles of 22 kV and 11 kV transmission line as well as 3½ miles of street lighting mains. The total connected transformer capacity increased to 187,014 kVA by the end of the year.

The 22 kV distribution scheme in the Koo-Montagu-Barrydale area has now been completed.

A total of 622 applications for new connections and increased supplies were dealt with during the year. 194 of these applications were from farmers.

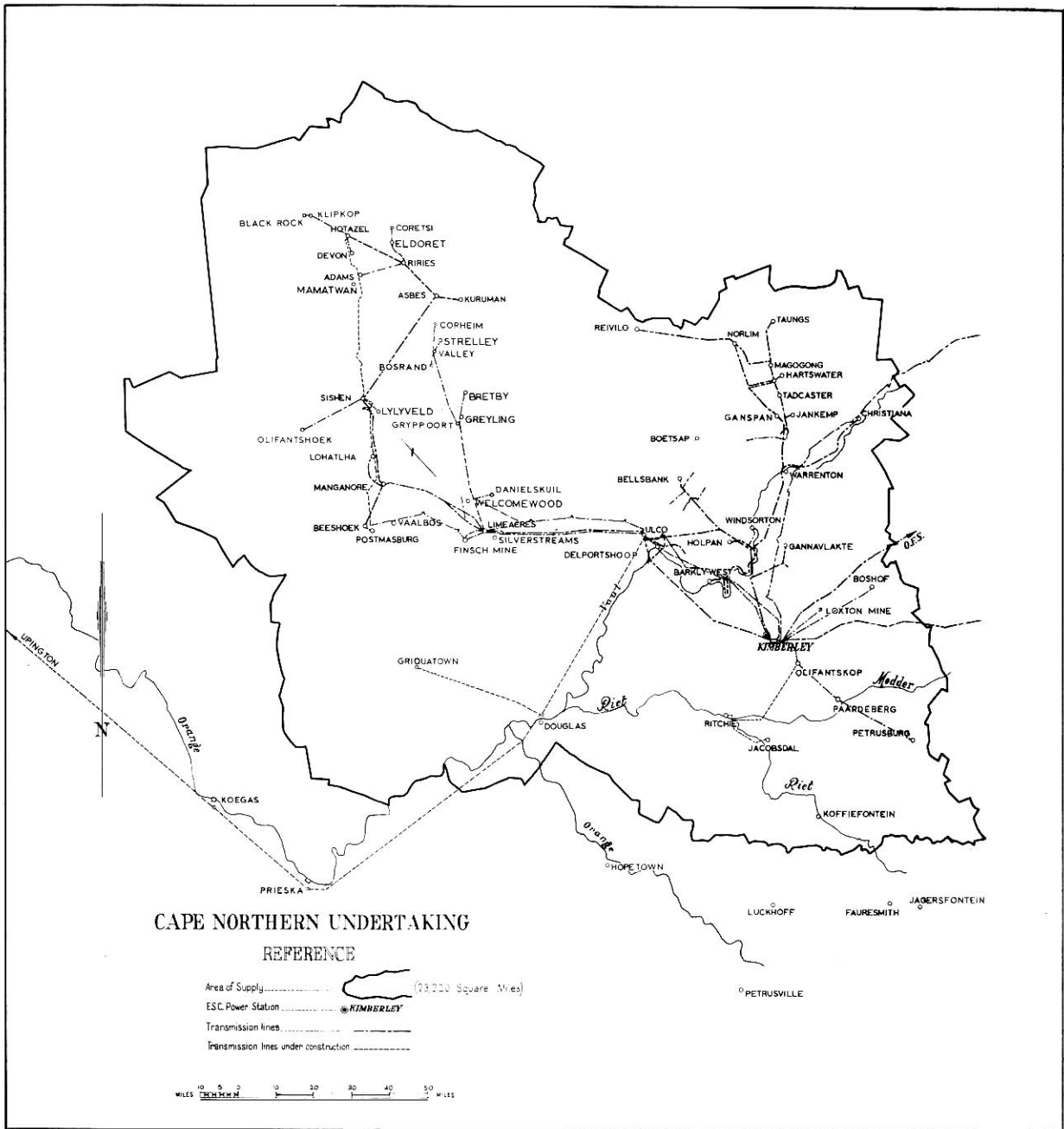
Financial

Total revenue for the year amounted to R16,804,866 as against working costs of R17,328,715 resulting in a deficit of R523,849. The accumulated deficit was thus R529,539.

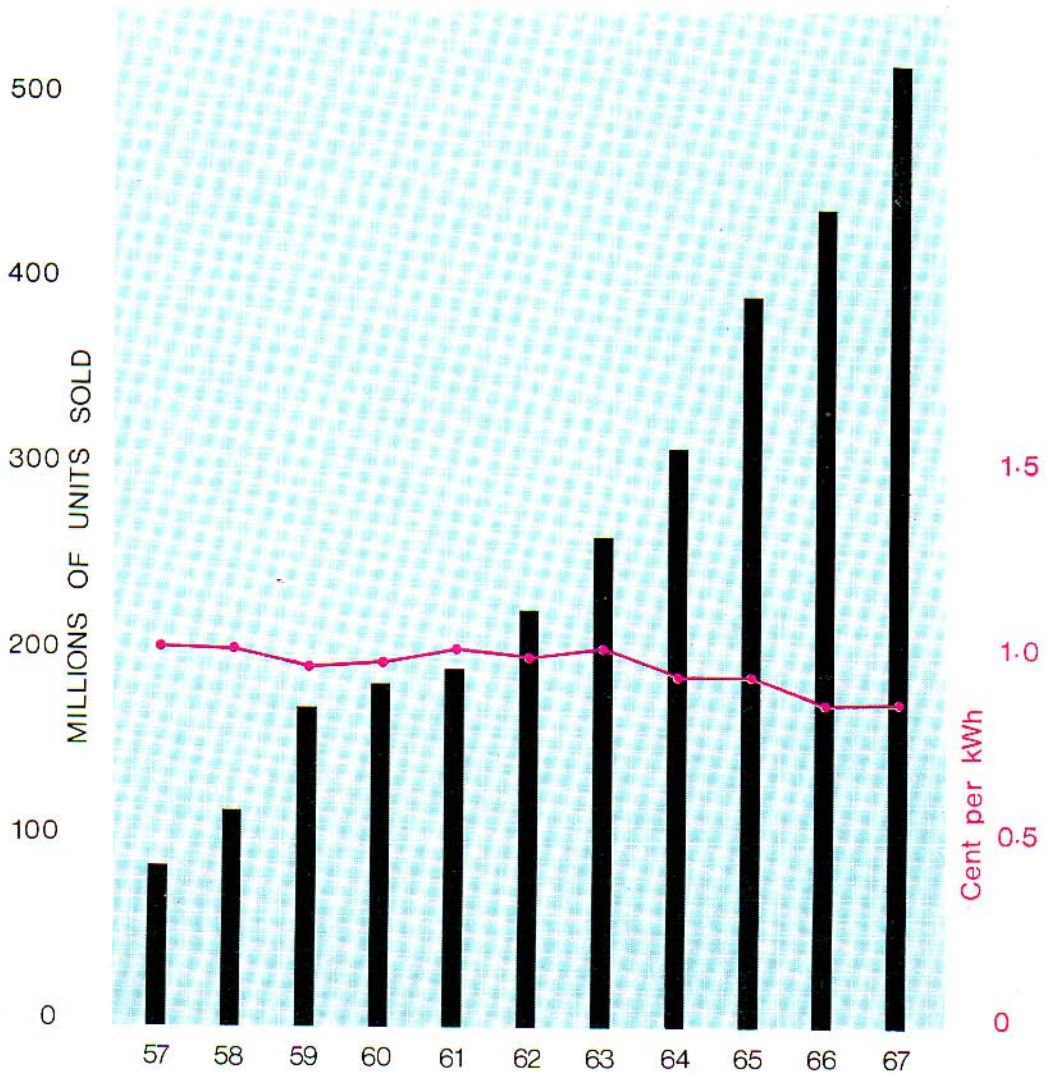
It was necessary to purchase a total of 32.9 million units from the Cape Town City Council at a total cost of R161,000.

CAPE WESTERN UNDERTAKING

CONSUMER		SALES			REVENUE FROM SALES		AVERAGE PRICE/U.S.	
Class	Number		Units	% Change	R		c	
	1967	1966			1967	1966	1967	1966
Traction	7	7	351 671 494	+ 4-771	3 911 000	3 676 000	1-0616	1-0453
Bulk	33	33	307 498 630	+ 8-726	3 016 000	2 672 000	0-9021	0-8688
Mining	4 992	4 567	499 101 858	+ 12-141	6 410 000	5 183 000	1-0640	1-0385
Industrial	41 207	39 071	202 628 457	+ 9-217	3 253 000	2 865 000	1-4698	1-4142
Domestic	40	42	6 513 842	+ 7-208	142 000	127 000	2-1797	2-0875
Street Lighting								
Total	46 279	43 720	1 366 976 337	+ 12-150	16 732 000	14 523 000	1-0914	1-0624
					1967	1966	Accumulated to 31/12/67	
Total Revenue					R	R	R	
Working Costs					16 805 000	14 566 000	14 841 000	
Surplus					17 329 000			
Deficit								
Capital Expenditure					524 000	275 000	530 000	
					6 019 000	13 642 000	94 577 000	
					Salt River No. 1 Power Station		Hex River Power Station	
					1967	1966	1967	1966
Electricity Units Sent Out	82 235 380	165 234 860	1 014 446 000		677 720 800	520 020 380	606 482 920	
Maximum	65 200	83 461	190 600		94 034	115 300	119 000	
Demand kW.S.O. } Half Hour	70 000	89 000	210 000		100 000	121 000	124 000	
} 2 Minute	14-4	22-6	60-8		82-3	51-5	58-1	
Load Factor %	16-13	18-2	26-93		26-9	25-1	25-5	
Thermal Efficiency % S.O.								
FUEL:					Salt River No. 2 Power Station		Hex River Power Station	
Coal Consumed—Tons	35 442	69 311	588 718		428 013	312 948	347 925	
Average Per Unit Sent Out—lb.	1-82	1-595	1-09		1-079	1-20	1-147	
Calorific Value B.Th.U./lb.	11 626	11 770	11 626		11 770	11 320	11 670	
Total Cost—Rand	3 713 000	2 811 000	Included under Salt River No. 1 Station		1 812 000	1 812 000	1 937 000	
Cost Per Ton—Rand	5-95	5-65			5-79	5-79	5-57	



CAPE NORTHERN UNDERTAKING



Expansion of the Cape Northern Undertaking

The area supplied by the Cape Northern Undertaking is shown on page 24.

The rapid expansion of this Undertaking over the period 1958-1967 is depicted in the above diagram, which indicates the units sold during these years. In the last four years sales have almost doubled.

The red line imposed upon the diagram indicates the average price per unit sold, which at 0.875 cents in 1967 remained the same as that of 1966 in spite of the increasing cost of coal and labour.

Sales

Sales of electrical energy increased from 442.4 million in 1966 by 17.5 per cent to almost 520 million units in 1967.

Details of units sold to the various classes of consumers appear on page 26, where it will be seen that the major increase was for traction purposes. During

May, 1967, an additional nine new railway substations and 126 route miles of track were brought into service between Kimberley and Postmasburg. 104.6 million units were supplied to the S.A.R. Administration during the year, being an increase of 117.9 per cent above the 1966 figure.

Sales to the Kimberley City Council increased by 6.7 per cent to 101 million units.

The De Beers Company's four working diamond mines in Kimberley increased consumption slightly to 85.5 million units. These mines have now attained full production and should maintain output at this level for a number of years.

The De Beers Finsch diamond mine near Silverstreams increased its energy consumption to 14.5 million units to which must be added 3.8 million units used for water pumping from the Vaal River, and one million units for mine housing. This total of 19.4 million units in 1967 is an increase of nearly 67 per cent over the previous year.

The small diamond mines in the Bellsbank and Boshof areas again increased consumption by over 18 per cent to 9.9 million units and further expansion will take place in these fields in the future.

The increase for diamond mining as a whole was 7.4 per cent.

The Anglo-Alpha Cement Company's cement and lime works at Ulco reduced consumption by 8.2 per cent to 50.2 million units. The reduction took place when their new Dudfield cement works in the Transvaal came into production during the year: but this reduction may be of a temporary nature.

The Northern Lime Company's works at Silverstreams and Taung increased consumption from 19.6 million to 20.4 million units. The rapidly increasing demand for lime, for both metallurgical and uranium processing, strained the available plant capacity. The position should, however, be alleviated somewhat when the new crusher and a large kiln are brought into operation in the first half of 1968 at Silverstreams.

After several years of exceptional expansion in the production of blue asbestos, the rate of growth slack-

ened off during the period under review, and an increased consumption of only 3.3 per cent to 40.2 million units was recorded. The Strelley mine was supplied in December, 1967, and Bosrand and Corheim mines were scheduled for supply early in 1968. These three new asbestos mines are near Kuruman and are shown on the area map.

The combined increase of energy consumed by the iron ore mining companies around Sishen was 4.7 per cent: total consumption for the year was 33 million units.

With the increase of about 60 per cent in the handling capacity of the railways due to electrification, an increase in the export of iron ore is now possible.

The manganese mines show an increase of 9.4 per cent to 9.3 million units.

Gypsum quarrying has increased by 30 per cent to 3 million units. Although one gypsum quarry is being worked out, several economical new deposits are being developed.

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

	Million Units		% Increase of units during year 1967	% of total units sold 1967
	1966	1967		
Diamonds	102.3	109.8	7.4	21.1
Lime and Cement	74.3	70.6	-5.0	13.6
Blue Asbestos	38.9	40.2	3.3	7.7
Iron Ore	31.5	33.0	4.7	6.3
Manganese	8.5	9.3	9.4	1.8
Gypsum	2.3	3.0	30.4	0.6
	<u>257.8</u>	<u>265.9</u>	<u>3.1</u>	<u>51.1</u>

Sales to the small municipalities increased as follows:—

The greatest number of units was purchased during the year by the Municipality of Postmasburg, which increased its consumption by 5.1 per cent to 5.34 million units, and the Municipality of Kuruman, which increased its consumption by 9.1 per cent to 5.70 million units. Petrusburg Municipality was given a bulk supply in April, 1967, and consumed 234,000 units up to the end of the year.

The Municipality of Barkly West showed the greatest percentage increase, increasing its consumption by 26.4 per cent to 2.16 million units.

Several other municipalities increased their demands for electricity by percentages ranging from 5 to 17 per cent.

One thousand and sixty-five Vaalharts plholders increased consumption by 10.3 per cent to a total of 4.85 million units during 1967.

The Taung area, mainly in the Bantu Reserve, continued to expand at the rate of 7.1 per cent and consumed 1.26 million units.

Riparian pumping farmers on the Vaal and Harts Rivers consumed a total of 4 million units during the year.

Development of the Undertaking

Contractors completed the construction of the 132 kV lattice steel transmission line from Postmasburg to Sishen during the year under review. The continuation of this line from Sishen to the railway terminus at Hotazel is proceeding. The line which will supply six additional traction substations feeding 86 miles of rail track, is scheduled to be in operation by mid 1968.

This will complete the present programme of railway electrification in the Northern Cape.

The Undertaking's construction staff erected 22 miles of 66 kV line on wooden structures between Gryppoot and Valley substations on the asbestos mountains and 17 miles of 22 kV line to supply the three new asbestos mines mentioned previously.

A 22 kV line some 23 miles in length was constructed from Warrenton to Christiana to improve voltage conditions at Christiana. A twelve mile line of similar voltage was also erected from Kimberley to supply a new diamond mine—Loxton—15 miles from Kimberley in the direction of Boshof. The Loxton line will be extended when required to improve voltage conditions at Boshof where a voltage regulator has now been installed pending this development.

A commencement was made on the 53-mile 132 kV line between Ulco and Herbert (near Douglas) substations, from where bulk supplies are to be furnished to both Douglas and Griquatown Municipalities early in 1969.

This line will be extended to Prieska Municipality, and finally to Upington Municipality.

Negotiations were completed during the year to supply Modder River, Ritchie and the Jacobsdal Municipality.

The riparian farmers at the confluence of the Modder and Riet Rivers have agreed to take supplies for river pumping, fruit canning, etc. This scheme should be completed within eighteen months when additional water becomes available from the new Krugersdrift dam, which is situated on the Modder River some 23 miles north-west of Bloemfontein.

Negotiations are proceeding with the riparian farmers near Paardeberg.

Interconnection with the Pooled Power Stations

During the year 555·7 million units and a maximum demand of 102 MW were supplied from the Rand and O.F.S. network and transmitted to the Kimberley Distribution Station from where 532·2 million units were sent out to the local network.

Financial

Total revenue for the year amounted to R4,563,000 as against R3,880,000 for 1966.

Since working costs for the year amounted to R4,583,000, there was a deficit of R20,000 on the year's working. The accumulated credit balance on revenue account has therefore been reduced to R1,116,000.

CAPE NORTHERN UNDERTAKING

CONSUMER		Number		SALES		REVENUE FROM SALES		AVERAGE PRICE/U.S.		
Class	1967	1966	Units		% Change		R		c	
			1967	1966	67/66	66/65	1967	1966	1967	1966
Traction	3	2	104 586 562	47 981 433	-117.973	+21.902	998 000	428 000	0.9545	0.8924
Bulk	10	9	122 019 250	113 480 990	+ 7.524	+ 7.259	851 000	811 000	0.6975	0.7148
Mining	62	59	215 715 163	203 013 768	+ 6.256	+ 16.242	1 953 000	1 893 000	0.9051	0.9325
Industrial	290	275	65 175 334	66 763 760	- 2.379	+ 3.684	542 000	538 000	0.8307	0.8062
Domestic	2 131	2 048	12 227 290	10 992 930	+11.229	+23.138	206 000	197 000	1.6891	1.7923
Street Lighting	6	5	178 842	154 345	+15.872	+45.782	4 000	4 000	2.0017	2.3027
Total	2 502	2 398	519 902 441	442 387 226	+17.522	+ 12.500	4 554 000	3 871 000	0.8758	0.8751
							1967		1966	
							R		R	
							4 563 000		3 880 000	
							4 583 000		3 822 000	
							20 000		58 000	
							-1 270 000		2 841 000	
									Accumulated to	
									31/12/67	
									R	
									1 116 000	
									17 904 000	
									Central Power Station (Kimberley)	
									1967	
									1966	
									6 878 890	
									13 608	
									15 400	
									5.8	
									5.7	
									Decommissioned	
									12 309	
									3.579	
									11 200	
									52 000	
									4.24	

CAPE EASTERN UNDERTAKING

Expansion of the Cape Eastern Undertaking

The above graph depicts the expansion of the Cape Eastern Undertaking which serves the area shown on page 30, in terms of the units sold since the Undertaking came into operation in 1964.

Sales have increased from 0.4 million units in 1964 to 3.2 million units in 1967.

The average cost per unit sold is shown on the graph by the red line, the average revenue per unit sold in 1967 being 3.0832 cents, which is 3.1 per cent lower than the figure for 1966.

Output and Sales

Sales to consumers increased by 28.5 per cent, from 2,481,000 units in 1966 to 3,187,818 units in 1967. The system maximum demand for the Sundays River Valley increased from 1,107 kVA in 1966 to 1,280 kVA in 1967; the maximum demand for the Gamtoos River Valley system was 192 kVA.

Sales in the Sundays River Valley amounted to 3,115,105 units, and in the Gamtoos River Valley 72,713 units.

Kirkwood Municipality purchased 1,110,760 units, the increase for the year being 13.7 per cent. The maximum demand increased by 10.6 per cent to 416 kVA.

Total purchases from the Port Elizabeth Municipality at Aloys and Loerie amounted to 3,713,685 units.

DEVELOPMENT OF THE UNDERTAKING

Supply of Electricity in the Sundays River Valley

The supply system in the irrigation area is now well developed and the majority of prospective consumers have been connected. However, progress in adding new consumers to the system was maintained at a satisfactory rate during the year, and the net increase in the number of consumers was 40, bringing the total at the end of the year to 306. All the additional consumers were in the domestic or small power user classes.

Supply of Electricity in the Gamtoos River Valley

The 22 kV line from the Kouga Dam to Apex substation, where the permanent interconnection with the Port Elizabeth Municipality's system will be made, was completed except for the stringing of the conductors over the five-mile section between Loerie and Apex.

Pending completion of the hydro-electric station at Kouga Dam, a temporary supply was taken from Port Elizabeth Municipality at Loerie, in May, 1967, and the first supplies were made available to two consumers at Loerie in this month.

Good progress was made on the erection of the reticulation systems in Patensie and Hankey, and a start was made on the connection of consumers in these towns in August, 1967. By the end of the year 27 consumers had been connected in Patensie and 20 in Hankey.

The total number of consumers in the Valley at the year end was 49, of whom one was a large user.

Terms have been quoted to a large number of farmers in the irrigation area, and the planning and layout of the rural network will depend on their response.

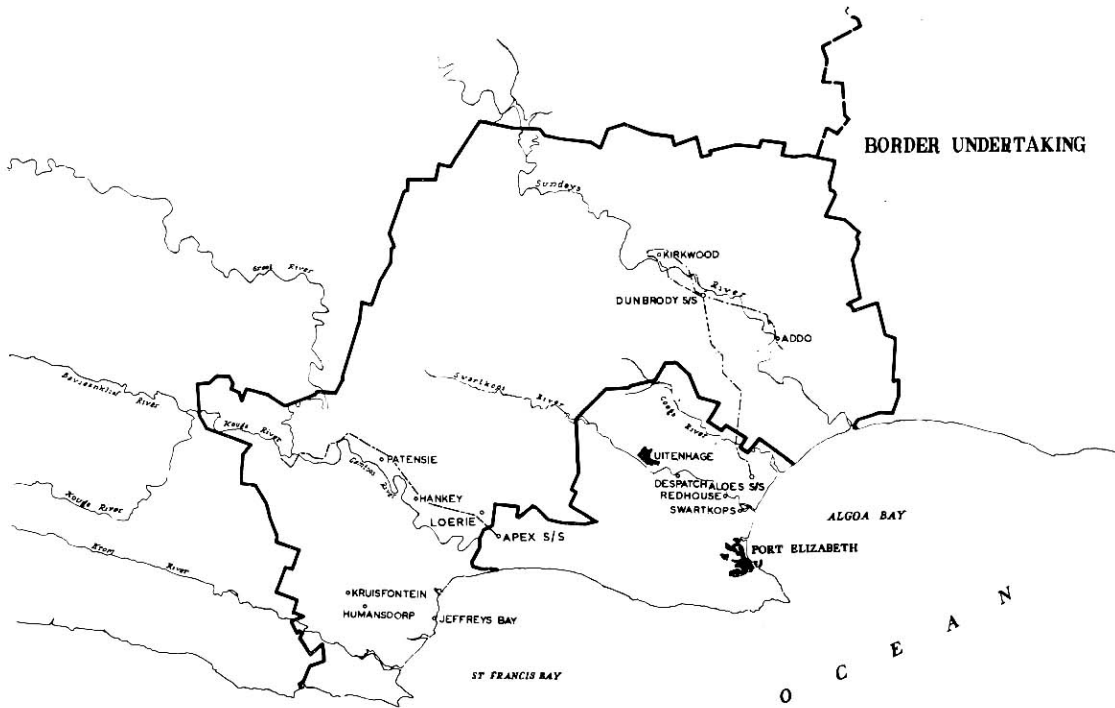
Negotiations for the purchase of Apex substation site were concluded, and work was commenced on the erection of the substation, which is due for completion by June, 1968. The portion of 22 kV line between Loerie and Apex will be completed early in 1968.

The erection of the hydro-electric station at Kouga Dam is in progress and it is hoped that power will become available from the station in the second or third quarter of 1968.

Financial

The total revenue for the year amounted to R99,204, which represents an increase of 25.0 per cent over the revenue for 1966.

The year's working resulted in a deficit of R11,144, which brought the accumulated deficit up to a total of R17,646. A surcharge of 10 per cent on the standard tariffs has been applied with effect from January, 1968.



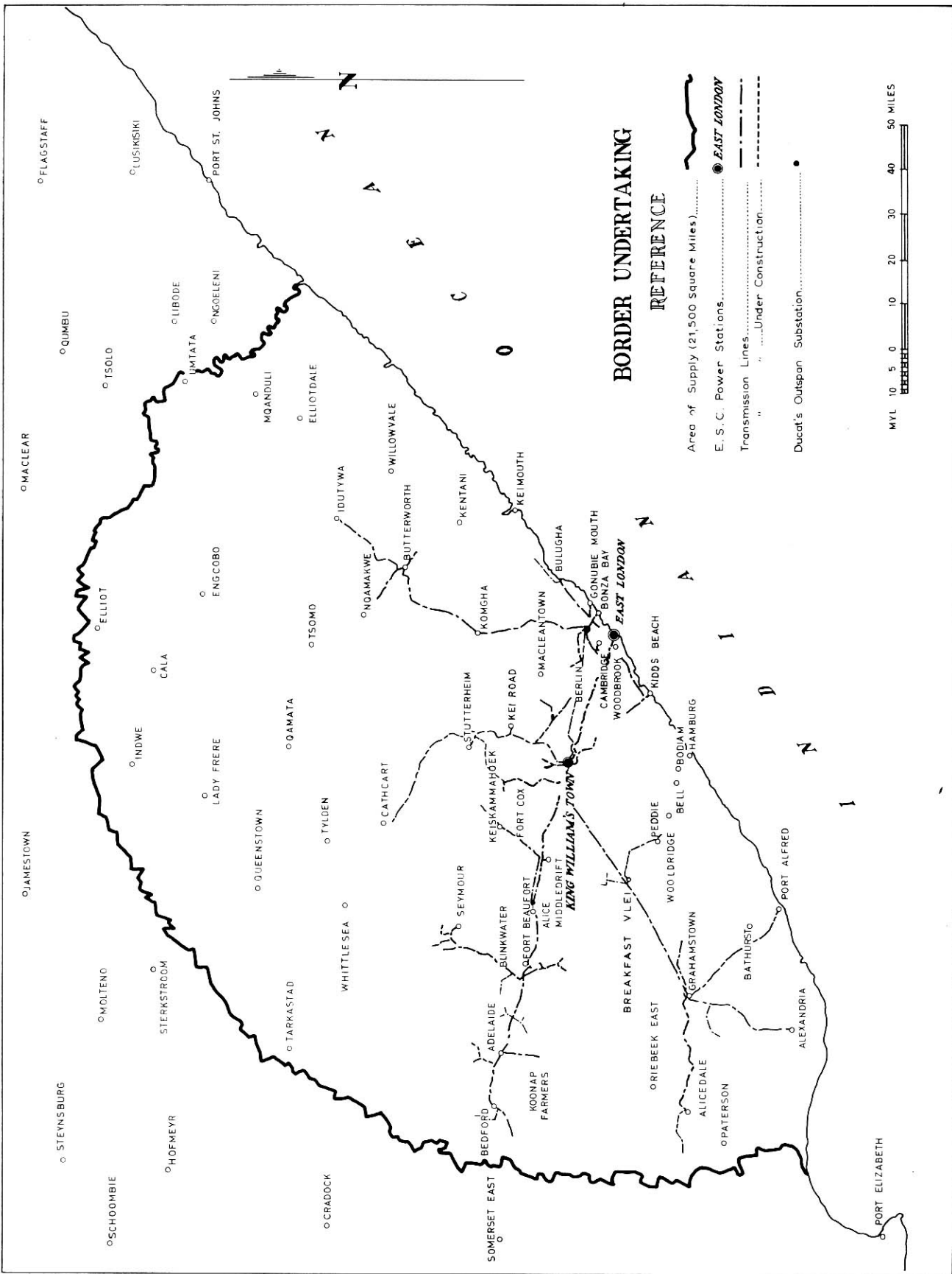
**CAPE EASTERN UNDERTAKING
REFERENCE**

- Area of Supply (3100 Square Miles)
- Border Undertaking
- Transmission Lines
- Transmission Lines Under Construction
- Substation Site

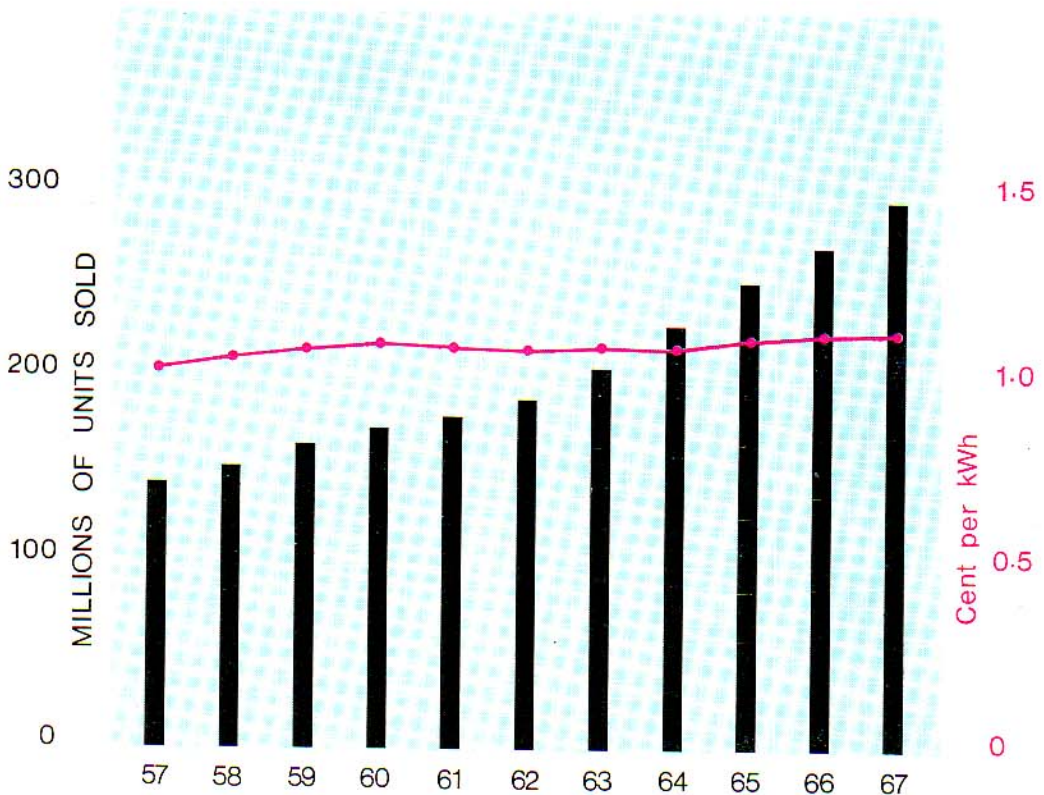


CAPE EASTERN UNDERTAKING

CONSUMER Class	Number		SALES			REVENUE FROM SALES		AVERAGE PRICE/U.S.	
	1967	1966	Units	% Change	R	R	c	c	
			1967	1966	1967	1966	1967	1966	
Traction	—	—	—	—	—	—	—	—	
Bulk	1	1	1 110 760	+ 13·654	21 000	20 000	1·9308	2·0898	
Mining	—	—	—	—	—	—	—	—	
Industrial	62	47	1 051 421	+ 33·326	38 000	28 000	3·6150	3·5384	
Domestic	292	218	1 025 637	+ 43·431	39 000	31 000	3·7863	4·2791	
Street Lighting	—	—	—	—	—	—	—	—	
Total	355	266	3 187 818	+ 28·489	98 000	79 000	3·0832	3·1813	
					1967		1966		Accumulated to 31/12/67
					R		R		R
					99 000		79 000		
					110 000		85 000		
					11 000		6 000		18 000
					229 000		139 000		817 000
Total Revenue									
Working Costs									
Surplus									
Deficit									
Capital Expenditure									



BORDER UNDERTAKING



Expansion of the Border Undertaking

The licensed area of supply of the Border Undertaking is shown on the map on page 32; and the growth of the Undertaking is shown on the graph above of units sold for the years 1958–1967. Sales increased from 152.9 million units in 1958 to 294.2 million units in 1967, an average annual increase of 7.5 per cent over this period.

The price of electricity is indicated by the red line on the graph, which shows the average price per unit sold. The average price per unit sold was 1.1304 cents, being an increase of 0.8 per cent over the 1966 figure.

Details for the year 1967 of the sales to the main classes of consumers, the revenue and working costs for the year and the statistics relating to the generation of electricity in the West Bank Power Stations are given on page 35.

Output and Sales

The total sales by the Undertaking amounted to 294,192,276 units, an increase of 8.0 per cent over the figure for the previous year, while the system maximum demand increased from 54,610 kW in 1966 to 58,900 kW in 1967.

Sales to the East London Municipality increased by 7.5 per cent to 221,880,500 units, and the maximum demand for this consumer increased by 11.6 per cent, from 42,990 kVA in 1966 to 48,000 kVA in 1967.

The net increase in the number of consumers during the year was 222, giving a total year end figure of 4,096. Four new large users were connected, and three small users increased their loading to become large

users. Two large users terminated their supplies. Forty-five farmers and 18 other rural consumers were connected.

West Bank Power Stations

Construction work proceeded in accordance with the programme. The 20 MW generator was placed in commission in June, 1967, and the 210,000 lb/hr boiler in August, 1967. The second brick chimney stack was placed in service in July, 1967.

The new water treatment plant for the production of de-mineralized make-up water for the boilers was commissioned in November, 1967.

Contracts were awarded for an additional 20 MW generator and a 210,000 lb/hr boiler, for commissioning towards the end of 1968, and early in 1969, respectively.

Both stations operated satisfactorily during the year, and the efficiency of the combined stations increased from 21.3 per cent in 1966 to 21.6 per cent in 1967. This was due to a smaller proportionate use being made of the less efficient plant in WestBank No.1 Power Station.

Coal supplies came forward regularly, except for a period at mid-year, when trouble was experienced with spontaneous combustion in the staith and it was necessary for deliveries to be held back to enable the affected sections to be cleared. The stock was maintained at a satisfactory level throughout the year, and even during the period mentioned above was well in excess of the minimum safe amount.

King William's Town Power Station

It was not necessary to operate this plant at any time during 1967.

Development of the Undertaking

The 11 kV line from Breakfastvlei Substation to the town of Peddie and the major portion of the reticulation system in Peddie were completed by June, 1967, 32 consumers having been connected at this stage. Further connections were given during the second half of the year, and the total number of consumers at the year end was 55.

The 66 kV transmission line from Ducats Substation (near East London) to King William's Town was completed and brought into service in June, 1967, by means of a temporary connection at Ducats Substation. The permanent connection was made in October, 1967, on completion of the 66 kV busbar extension at the substation.

Work was commenced on the foundations for the additional 12 MVA 11/66 kV step-up transformer at Gately substation. The transformer is due for commissioning in June, 1968. Preparatory work was also carried out at Ducats substation in connection with the installation of the 5 MVA 66/11 kV transformer, which is due for completion in May, 1968. The erection of the third 3 MVA 66/11 kV transformer at Grahams-town substation was in progress at the year end and is due for completion in April, 1968.

The conversion of the Alexandria 11 kV line to 22 kV operation, and the installation of the Kwaaihoek 22/11 kV step-down substation at Alexandria, and the corresponding step-up transformer at

Grahamstown were completed. However, the conversion of the Port Alfred line to 22 kV operation was delayed by defects in some of the equipment and it is now expected that the work will be completed during the first quarter of 1968.

The scheme to supply farmers in the Brakfontein/Lilyfontein area on the North Coast system was completed, 12 consumers being connected.

Increasing load on the King William's Town/Stutterheim/Cathcart 11 kV system made it necessary to strengthen this system. It was decided to convert the King William's Town/Mount Kempt 11 kV line to 22 kV and extend it 11 miles to a point near Stutterheim, where it will be connected to the 11 kV system through a 22/11 kV step-down substation (Kubusie Substation). Line construction was completed by the year end and negotiations for Kubusie substation site were reaching finality. It is planned to put the substation into service during the second half of 1968.

Financial

The total revenue for the year was R3,334,169, which is 9.1 per cent higher than the figure for 1966.

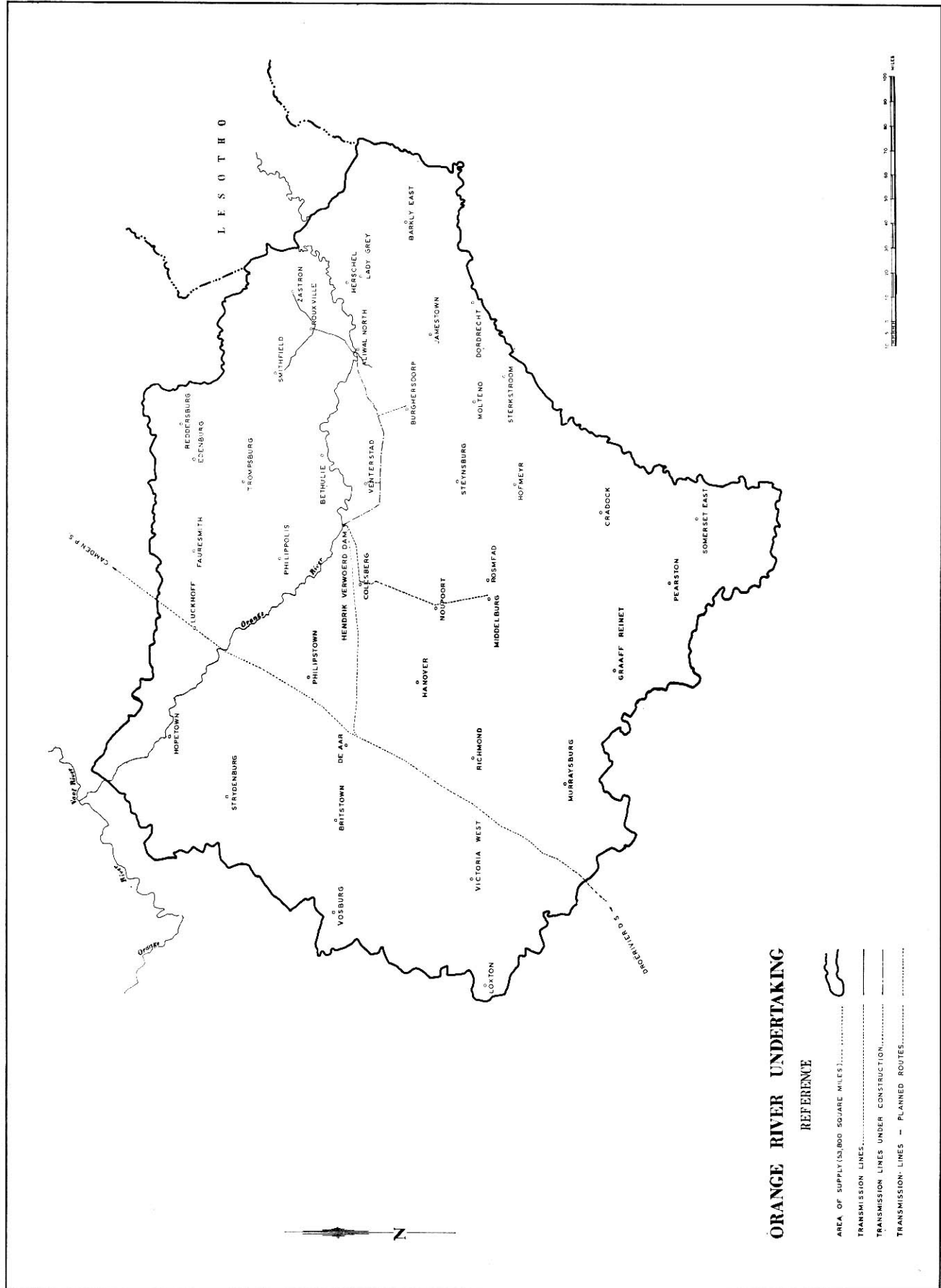
There was a deficit of R57,670 on the year's working, reducing the accumulated surplus to R29,291.

No change in the tariffs in force on the Undertaking took place during 1967, but an examination of the financial position indicated that with the existing tariffs, which had been in force since January, 1956, it would no longer be possible to maintain the necessary balance between revenue and expenditure in the years ahead, and a surcharge of 5 per cent has been imposed on the tariffs with effect from January, 1968.

BORDER UNDERTAKING

CONSUMER		Number		SALES			REVENUE FROM SALES		AVERAGE PRICE/U.S.	
		1967	1966	Units	1966	% Change	1967	1966	c	c
Traction	14	14	237 354 531	+ 7.173	+ 8.039	2 556 000	2 364 000	1.0050	0.9960	
Bulk	415	391	16 656 073	+ 17.577	+ 18.507	411 000	362 000	2.0982	2.1746	
Mining	3 655	3 456	17 815 103	+ 10.289	+ 9.870	344 000	313 000	1.7500	1.7539	
Industrial	12	13	581,396	- 2.874	+ 0.770	14 000	13 000	2.4579	2.3223	
Domestic	4 096	3 874	272 390 860	+ 8.004	+ 8.729	3 325 000	3 052 000	1.1304	1.1204	
Street Lighting										
Total										
									Accumulated to 31/12/67	
									R	
									R	
									29 000	
									17 573 000	

	East London—West Bank Nos. 1 & 2 Power Station		King William's Town Power Station (Steam)		King William's Town Power Station (Oil)	
	1967	1966	1967	1966	1967	1966
Electricity Units Sent Out	293 689 660	275 243 230	159 150	159 150		2 020
Maximum Demand k.w.S.O.	59 770	54 610	—	—		480
Load Factor %	62 700	58 400	—	—		500
Thermal Efficiency % S.O.	56.6	57.5	—	—		—
	21.6	21.3	—	—		—
FUEL:						
Coal Consumed—Tons	202 028	191 047	Not Operated	262	Not Operated	—
Average Per Unit Sent Out—lb.	1 376	1 388	Operated	—	Operated	—
Calorific Value B.Th.U./lb.	11 470	11 530		—		—
Total Cost—Rand	1073 000	997 000		1 000		—
Cost Per Ton—Rand	5.31	5.22		4.65		—
Fuel Oil Consumed—lb.	—	—		—		1 195
Fuel Oil Per Unit Sent Out—lb.	—	—		—		0.547



PROPOSED ORANGE RIVER UNDERTAKING

Area of Supply

The area of supply of the proposed Orange River Undertaking, as defined in the application to the Electricity Control Board dated the 15th December, 1966, is shown on the map on page 36.

Development of the Undertaking

The 400 kV lines connecting the systems of the Rand and Orange Free State Undertaking and the Cape Western Undertaking will be tapped at Hydra Distribution Station near De Aar, where there will be transformation from 400 to 132 kV. Two 132 kV lines will connect Hydra Distribution Station with Ruigtevallei substation near the Hendrik Verwoerd Dam, and will be the means by which power from the Hendrik Verwoerd hydro-electric station will be fed into the 400 kV system. Pending completion of the hydro-electric station (scheduled for 1971), the lines will be used to bring in power from the 400 kV system for distribution to consumers in the Orange River Undertaking.

Contracts have been placed for the two 400 kV lines from Perseus Distribution Station (near Dealesville) to Hydra Distribution Station, and the first line is due to be placed in service early in 1969. Work has commenced on the erection of Hydra Distribution Station and Ruigtevallei substation, and both these stations are due for completion in the first quarter of 1969. The erection of the first 132 kV line will commence towards the middle of 1968, and will be completed early in 1969 also.

Provisional contracts of supply have been concluded with the Municipalities of Aliwal North, Rouxville, Smithfield, Zastron, Burgersdorp, Venterstad, Colesberg, Noupoot and Middelburg. Supply to the first six of these towns will be given by means of a 66 kV line from Ruigtevallei substation to Melkspruit substation (at Aliwal North), with stepdown substations and 22 kV spur lines to supply Venterstad and Burgersdorp. At Melkspruit also there will be transformation from 66 kV to 22 kV, and the supplies to Aliwal

North, Rouxville, Smithfield and Zastron will be given over 22 kV lines from Melkspruit.

In the interim, in order to avoid capital expenditure on extensions to local power stations, which would be redundant when the connection to Escom's main transmission system is completed, 22 kV lines have been erected between the towns of Aliwal North, Rouxville, Smithfield and Zastron and placed in service. Power is being purchased from Aliwal North Municipality on a temporary basis, thus enabling supplies to be given to Rouxville, Smithfield and Zastron, and to the S.A.B.C.-F.M. transmitter near Aliwal North.

The supply to Rouxville was connected in January, 1967, and Smithfield was given supply in April, 1967, and Zastron in June, 1967.

Work has commenced on the erection of the Ruigtevallei/Melkspruit 66 kV line, and this is due for completion early in 1969. The stepdown substations and 22 kV lines for supply to Burgersdorp and Venterstad are due to be placed in service in the first half of 1969.

Supply to Colesberg, Noupoot and Middelburg is to be given by means of a 66 kV line from Ruigtevallei substation, with a substation stepping down to 22 kV at each of the three towns. Construction work is planned to commence in the second quarter of 1968, and the programme provides for the supply to be connected to Colesberg in the first half of 1969, and to Noupoot and Middelburg in the second half of 1969.

Output and Sales

The total sales for 1967 amounted to 1,107,362 units. The system maximum demand was 510 kVA.

One million three hundred and seven thousand three hundred units were purchased from Aliwal North Municipality.

Financial

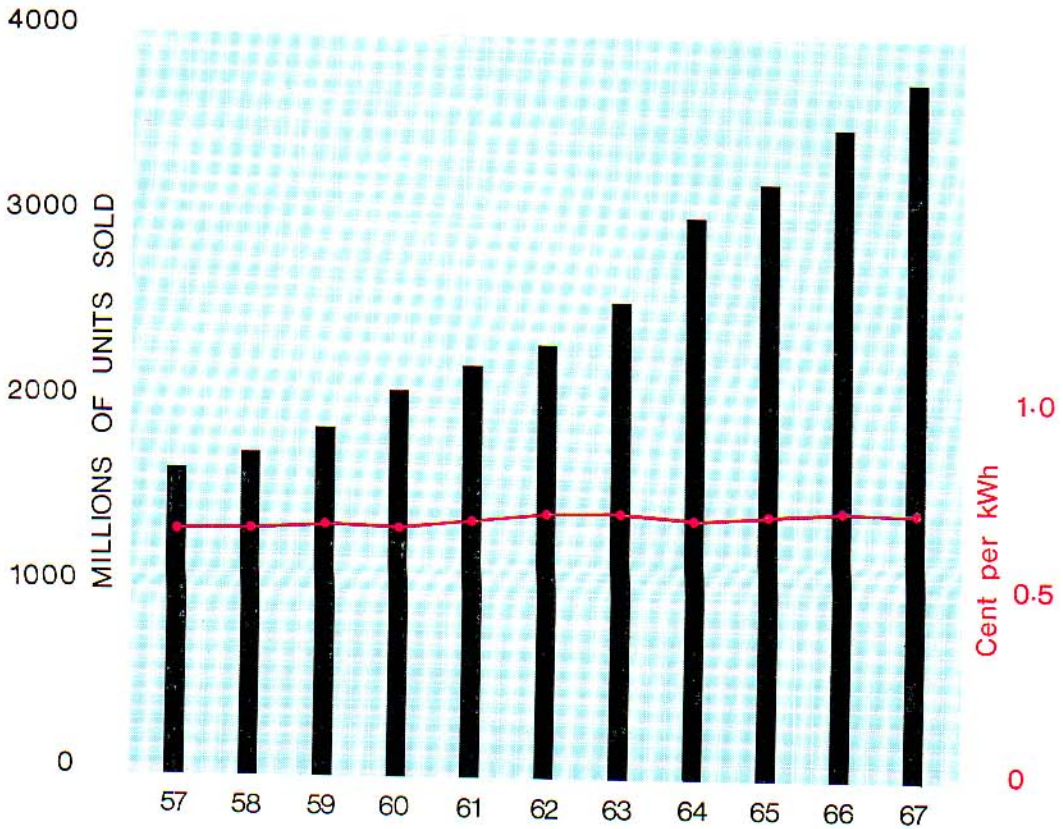
The revenue for the year amounted to R26,043. There was a surplus of R281 on the year's working.

ORANGE RIVER UNDERTAKING

CONSUMER		SALES				REVENUE FROM SALES*		AVERAGE PRICE/U.S.		
		Number		Units	% Change		R	R	c	c
Class	1967	1966	1967		1966	67/66	66/65	1967	1966	1967	1966
Traction	3	—	1 097 252	—	—	—	25 000	—	2.2451	—
Bulk	—	—	—	—	—	—	—	—	—	—
Mining	—	—	—	—	—	—	—	—	—	—
Industrial	1	—	10 110	—	—	—	1 000	—	13.9288	—
Domestic	—	—	—	—	—	—	—	—	—	—
Street Lighting	—	—	—	—	—	—	—	—	—	—
Total	4	—	1 107 362	—	—	—	26 000	—	2.3518	—
								Accumulated		
								1967		19...
								R		R
										31/12/67
Total Revenue										
Working Costs										
Surplus									26,043	
Deficit									25,762	
Capital Expenditure									*281	

*Net revenue credited to capital.

NATAL UNDERTAKING



Expansion of the Natal Undertaking

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

Expansion of the Undertaking over the period 1958–1967 is depicted in the diagram above, which shows the total units sold over these years. Total sales have increased from 1,720 million units in 1958 to 3,721 million units in 1967—an average increase of 9.0 per cent per annum in the last ten years, and an increase of 6.3 per cent over the previous year.

The red line imposed upon the graph shows the average price per unit sold, there being a slight decrease from 0.7322 to 0.7248 during 1967, due to an increase in the number of units generated at Ingagane Power Station. Details of units sold to the major classes of consumers, the revenue received and operating expenses during 1967, and the principal features of the generation of electricity in the Natal Power Stations appear in the tables on pages 43, and 44.

Output and Sales

Sales of electricity from the interconnected power stations of the Undertaking totalled 3,720,612,366 units and exceeded the sales for 1966 by 6.3 per cent. In addition 77,440 units were exported during the

year to the Rand and O.F.S. Undertaking through the 88 kV system at Platrand, and 26,240 units were imported over the same system.

The maximum demand sent out on an hourly basis rose from 613 MW to 660 MW—an increase of 7.6 per cent.

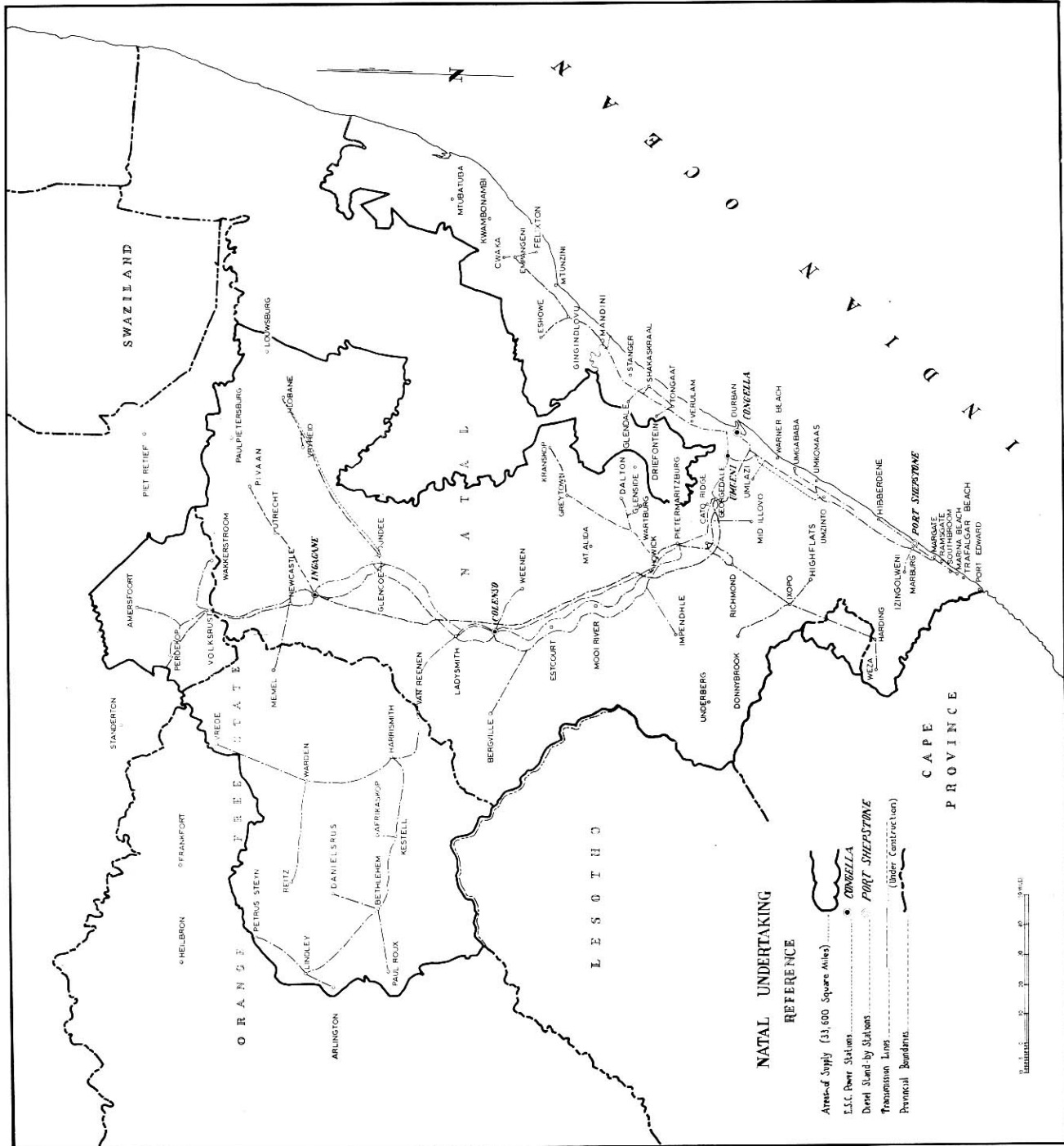
Supplies to four additional railway traction substations were taken at Reunion, Umlazi, Charlestown and Umbulwana during the year.

Forty new large power users were connected and four large power users terminated their supply during 1967. Increased supplies were made available to a further 26 large power users.

A further four large power users were converted to the ampere-demand tariff as the conditions of their usage were suitable for this change.

Power Station Operation and Maintenance

Due to the commissioning of the third 100 MW turbo-generator and its associated boiler on the 30th March, 1967, at Ingagane Power Station, the output increased by 26.8 per cent over the 1966 figure, with no change in thermal efficiency. As a result, the output from Congella Power Station decreased by 4.7 per cent and the output from Colenso Power Station decreased by 14.1 per cent. Umgeni Power Station showed an increase in output of 5.0 per cent. The



NATAL UNDERTAKING

REFERENCE

- Area of Supply (31,600 Square Miles)
- E.S.C. Power Stations ● DONGELLA
- Deep Water Stations ○ PORT SHEPSTONE
- Transmission Lines - - - - -
- Proposed Lines ······ (Under Construction)
- Provincial Boundaries —————



increased output from Umgeni Power Station was brought about by the load limitations on the 132 kV Umgeni/Georgedale lines Nos. 1 and 2. Colenso Power Station's thermal efficiency increased slightly from 17.5 per cent to 17.8 per cent, while the thermal efficiencies at Congella and Umgeni Power Stations showed no appreciable change.

Continued grit erosion in boilers Nos. 1 and 2 at Ingagane Power Station necessitated considerable maintenance and shielding of affected areas which included the economizers, fans and mechanical grit collectors.

Inspection of steam receivers Nos. 1 and 2 at Umgeni Power Station in November and December revealed serious cracks in the barrels of the receivers and bulging of the sides. Both receivers were taken out of commission, resulting in the loss to the system of the output of two turbo-generators and their associated boilers. New receivers are being manufactured and are expected early in 1968.

Following an internal inspection of boiler No. 8 at Colenso Power Station, the Inspector of Machinery required that the right-hand mud-drum be repaired or replaced. As repairs were not possible, it has been decided to replace the drum with a modified drum taken from a scrapped boiler at Vereeniging Power Station.

Construction at Power Stations

The erection and installation of the third 100 MW turbo-generator and its associated boiler at Ingagane was satisfactorily completed during the year and the erection of the fourth 100 MW turbo-generator and its boiler is progressing well.

The turbo-generator will be ready for commissioning early in the new year and the boiler about four weeks later. The block for turbo-generator No. 5, and the foundations for boiler No. 5 have been completed.

The construction of cooling towers Nos. 3 and 4 was completed during the year and both towers have been placed in satisfactory service. The only outstanding item on the cooling towers is the fitting of spray eliminators which will be done under contract during 1968.

Distribution System

An agreement has been reached for the sale of Masons Mill substation to the Pietermaritzburg Municipality. Work is well in hand with the construction of a new substation at Pentrich. This substation will provide bulk supplies to Pietermaritzburg and is to be commissioned by June, 1968.

Civil works for the new 275/132 kV substation at Klaarwater have commenced and the substation is due to be put into service in June, 1968. This substation is fed from Georgedale and will provide additional bulk supplies to the Municipality of Durban.

In central Natal a new substation went into operation early in the year to cater for the increased requirements of the Ladysmith Municipality, while the capacity of the Newcastle Substation was increased from 7.5 MVA to 15 MVA.

The transformer capacity supplying Dundee and Ballengeich has also been increased.

A new substation is to be constructed near Vryheid to supply coal mines in that area and to provide a standby supply for the Vryheid Municipality.

The second 88 kV transmission line between Craigside (near Dundee) and Boomlaer (near Vryheid), including tee lines to five traction substations for the electrification of the Glencoe/Vryheid line, will be completed early in 1968.

In the Orange Free State 11 kV supplies were extended to the slopes of the Drakensberg to supply the S.A. Bantu Trust at Witzieshoek and the National Parks Board at Golden Gate Highlands National Park. During 1967 attention was given to the building of a line necessary to provide for the future requirements of Harrismith and Bethlehem, as well as the electrification of the railway line between Harrismith and Kroonstad. The present plan is to build a transmission line from a point near Colenso via Kestell and Bethlehem to Arlington. The possibility of power generation at the Oxbow scheme in Lesotho has been kept in mind in designing this scheme.

At Howick the new 88/11 kV substation to provide increased supplies to the South African Rubber Works was commissioned.

The installation of the third 150 MVA 275/132 kV transformer at Georgedale substation near Cato Ridge was completed and the transformer has been placed on load.

On the North Coast of Natal and in Zululand it is planned to extend the transmission system to meet the anticipated demand in the Richards Bay area.

A new substation has been built to supply a new industrial area near Maidstone and the existing substations at Greytown and Mpolweni have been replaced with new substations of 2.5 MW.

The 11 kV system has been extended to the village of Kranskop beyond Greytown and the right to supply that village was taken over from a private company. A supply has been made available to the S.A.B.C.-F.M. transmitter at Ntumeni near Eshowe in Zululand.

Good progress has been made with the building of a 132 kV transmission line from Coedmore substation just outside Durban to Nkonka on the Natal South Coast.

This line is to be commissioned in 1968, and will be coupled into the existing 88 kV system at Umzinto reinforcing supplies to the Natal South Coast. This transmission line will eventually be extended to Marburg near Port Shepstone and provide for future development in Southern Natal and the north-eastern section of the Cape Province.

A new 33/11 kV substation is nearing completion at Umzimkulu and when completed will provide for rural consumers in these areas. The Natal Undertaking will then be supplying sections of all four provinces.

During 1967 good progress was made with projects in connection with railway electrification to the north and south of Durban. Orders have been placed for the supply of transmission tee lines to supply five traction substations between Duffs Road and Mandini on the North Coast. Three of these are to be ready during 1968.

Other traction tee lines under construction are for the South Coast electrification. The tee lines at Winkelspruit, Clansthal and Kelso will be completed in 1968.

During the year a total length of 280 miles of transmission and distribution lines and cables were installed and taken into service at 6·6 kV and higher voltages, while 35 miles were taken out of service and dismantled.

Rural Development

During the year 1,181 rural and large power users were quoted terms as compared with 1,034 in 1966. The total number of applications outstanding at the end of the year was 1,125 as compared with 1,048 in 1966.

A total of 375 additional rural consumers were connected and 70 received increased supplies.

The greatest concentration of new rural supplies was in schemes at Ntumeni and Mtunzini in Zululand, Umlaas Road in Natal and Bethlehem in the Orange Free State.

Supplies were given to the town of Kranskop,

consisting of 81 consumers, in April, 1967, and supplies to 57 consumers in Umzimkulu are expected to be available during 1968.

Construction work is in progress in connection with supplies to a sugar mill near the Umhlatuzi River, and development is taking place in the Mtunzini and Mandini areas. It is hoped to supply consumers in the Hluhluwe, Mtubatuba and Mkuze areas in the new year as well as the Pongola area.

Financial

Total revenue increased from R25,739,000 in 1966 to R27,100,000 in 1967, an increase of 5·2 per cent for the year.

There were no alterations to tariffs during the year.

A surplus of R219,000 was shown on the year's working as compared with a surplus of R792,000 for the year 1966. The accumulated surplus was thus increased to R2,064,000.

NATAL UNDERTAKING

CONSUMER		Number		SALES			REVENUE FROM SALES		AVERAGE PRICE/U.S.		
		1967	1966	Units	1966	% Change	R	R	c	c	
Class				1967	1966	67/66	66/65	1967	1966	1967	1966
Traction.....	9	9	496 790 749	509 642 702		- 2.587	- 9.121	4 015 000	3 974 000	0.7879	0.7999
Bulk.....	24	24	2 232 512 623	2 445 739 443		+ 9.551	- 8.625	16 123 000	14 926 000	0.6592	0.6686
Mining.....	27	25	107 419 512	120 460 138		- 12.140	- 29.055	989 000	910 000	0.8207	0.8475
Industrial.....	2 469	2 161	599 438 103	575 852 579		- 3.935	- 36.023	4 716 000	4 763 000	0.8190	0.7945
Domestic.....	13 616	12 895	60 372 872	66 971 012		- 10.929	- 10.179	1 088 000	1 011 000	1.6237	1.6740
Street Lighting.....	111	96	1 951 242	1 946 492		- 0.244	- 3.520	35 000	33 000	1.8100	1.7080
Total.....	16 256	15 210	3 498 485 101	3 720 612 366		+ 6.349	9.929	26 966 000	25 617 000	0.7248	0.7322
Total Revenue.....								1967		1966	
Working Costs.....								R		R	
Surplus.....								27 100 000		25 739 000	
Deficit.....								26 881 000		24 947 000	
Capital Expenditure.....								219 000		792 000	
								13 429 000		13 172 000	
										149 722 000	
										Accumulated to 31/12/67	
										R	
										2 064 000	
										149 722 000	
										Congella Power Station Nos. 1 & 2	
										1967	
										1966	
										1966	
										705 743 990	
										137 445	
										164 000	
										58.6	
										19.9	
										538 192	
										1.525	
										11 260	
										1 915 000	
										3.56	
										Congella Power Station Nos. 1 & 2	
										1967	
										1966	
										1966	
										705 743 990	
										137 445	
										164 000	
										58.6	
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										1966	
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										19.9	
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										538 192	
										1.525	
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										3.56	
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										1966	
										1966	
										705 743 990	
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										164 000	
										58.6	
										19.9	
										538 192	
										1.525	
										11 260	
										1 915 000	
										3.56	

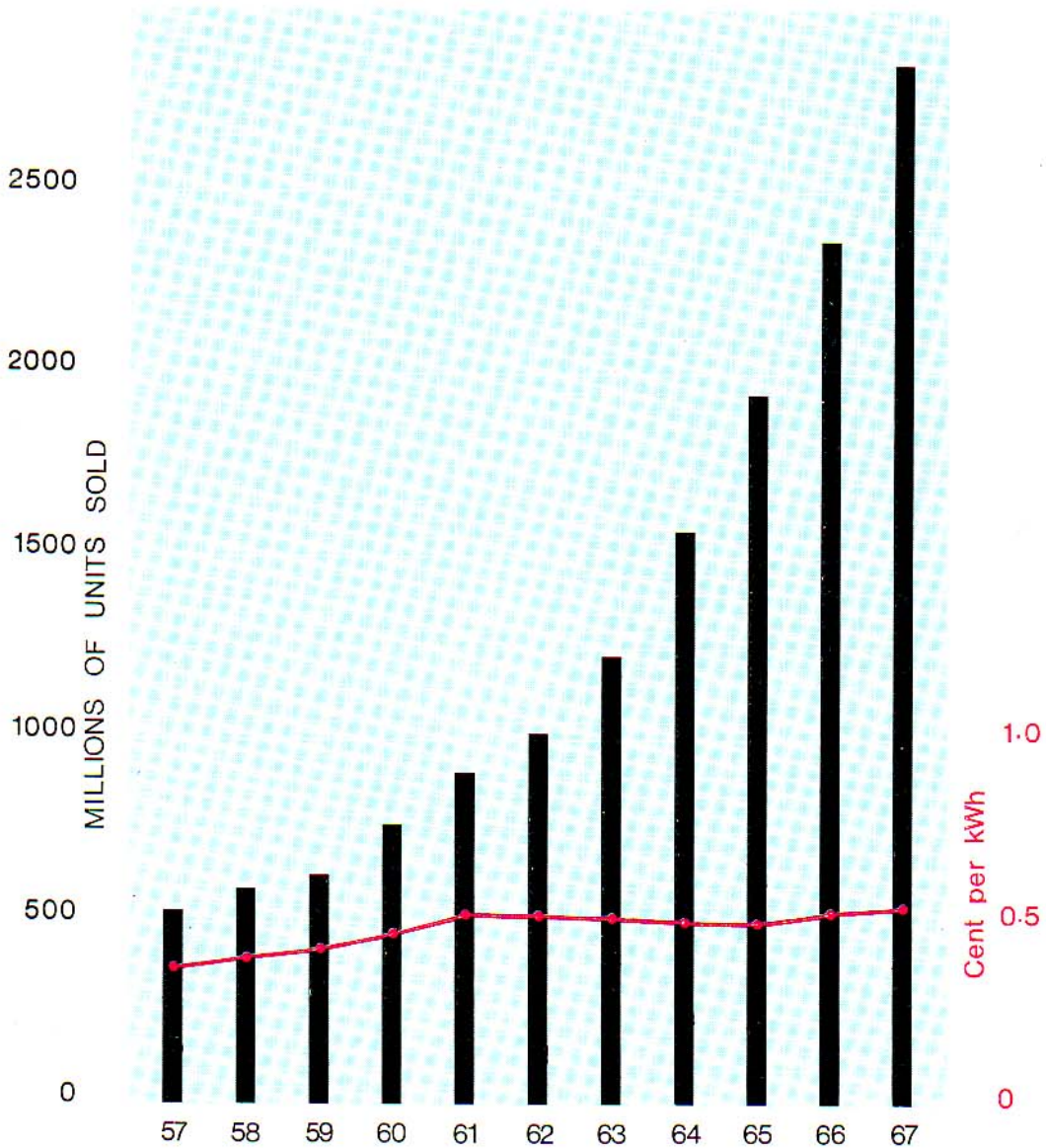
NATAL UNDERTAKING

	Umgeni Power Station		Ingagane Power Station	
	1967	1966	1967	1966
Electricity Units Sent Out				
Maximum } Half Hour	1 123 488 800	1 069 651 888	1 564 241 760	1 233 958 740
Demand kWS.O. } 2 Minute	222 800	224 800	266 800	192 800
Load Factor %	242 000	240 000	288 000	206 000
Thermal Efficiency % S.O.	57.1	54.3	66.4	73.1
	23.6	23.6	28.0	28.0
FUEL:				
Coal Consumed—Tons	683 634	661 422	866 726	697 516
Average Per Unit Sent Out—lb.	1.217	1.237	1.108	1.131
Calorific Value B.Th.U./lb.	11 880	11 710	10 990	10 790
Total Cost—Rand.	3 479 000	3 190 000	2 182 000	1 757 000
Cost Per Ton—Rand.	5.09	4.82	2.52	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)

	1967	1966
	10 620	22 779
	1 610	1 820
	1 780	2 100
	—	—
	—	—
	—	—
	—	—
	7 181	13 860
	0.676	0.608

EASTERN TRANSVAAL UNDERTAKING



Expansion of the Eastern Transvaal Undertaking

The tempo of expansion of the Eastern Transvaal Undertaking which serves the area shown on page 46, was again maintained during 1967.

Total sales of electricity rose to 2,829 million units in 1967, i.e. an increase of 17.5 per cent above the previous year. (These sales include 58 million units to the South African Railways for traction on the Germiston/Pretoria Section.)

The price of electricity is shown by the red line superimposed on the graph which reflects the average price per unit sold. During 1967 there was an increase from 0.5300 to 0.5437 cents per unit sold, due mainly to increases in the price of coal purchased for the pooled power stations.

Sales of Electricity

Details of units sold to the major classes of consumers, the revenue received and operating expenses during 1967 appear in the tables on page 48.

The greatest increase in units sold during 1967 was to industrial consumers, sales increasing by 203 million units or 9.2 per cent to 1,370 million units by the end of the year.

The increase in mining activity resulted in an increase of 142.3 million units sold or 16.0 per cent above the corresponding figures for 1966 for this class of consumer.

The Gold Mining Industry was responsible for the greatest increase in units sold for mining purposes while the Palabora Mining Company Limited increased its consumption by 41 million units to 235.1 million during 1967.

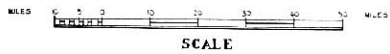
Supplies to municipal consumers reflected the largest percentage increase during 1967 having increased by 30 per cent above the corresponding figure for 1966. This increase was largely due to increased demands by the towns of Tzaneen and Nelspruit and to a lesser extent to Amsterdam, which was given a supply towards the end of the year.



EASTERN TRANSVAAL UNDERTAKING

REFERENCE

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



Power Stations

Units sent out by the Komati Power Station increased by 10·6 per cent during 1966 to 6,441 million units during 1967. This power station is now at its final designed capacity.

Transmission Lines

A very considerable amount of work was carried out during 1967 and more work has yet to be done to meet the rapidly increasing demand for electricity in the Eastern Transvaal.

The new substation to supply the town of Middelburg is complete to a capacity of 20 MVA, and a duplicate transmission line between Middelburg and Athlone is in operation. From Middelburg substation an 88 kV transmission line has been constructed to Roosenekal providing a supply for Ironstone Minerals (Pty) Ltd.

Good progress has been made in meeting the large power requirements of the Highveld Steel and Vanadium Corporation. Two 132 kV transmission lines have been built from Wilge Power Station to the Highveld Steel and Vanadium substation where 3×90 MVA transformers have been installed. Supply was made available on the 15th February, 1968.

As mentioned in last year's report the 66 kV system from Noordkaap via Princeton to Msauli mine was completed in April, 1967. The Princeton substation is almost complete and is due to be commissioned early in 1968. From this point a supply will be made available to Barberton.

Other towns to be given supplies during the year were Nelspruit and Amsterdam, while additional plant was installed to meet the increased loads of Ermelo and Groblersdal.

A 22 kV transmission line was built to supply the State Saw Mills at Elandshoek from the Sappi substation near Ngodwana, and a further line from this substation was built to provide a supply to the Kaapsehoop Asbestos Mine.

The increased demand of Fosfaat-Ontginnings-korporasie Beperk (Foskor) necessitated the building of a third 11 kV transmission line from the Wegsteek to the Foskor substation while equipment has been purchased to install a third 132 kV transmission line from Acornhoek to meet the increasing demands of Phalaborwa.

Additional transformer capacity has been installed at the Gold and Kinco Substations to provide additional supplies to the gold mines in the Kinross/Leslie area.

Preparatory work is in progress in the Piet Retief area for the provision of a supply to the Piet Retief Municipality and to the firm of Spaanderbord at Kemp.

Considerable extensions to the systems in the area surrounding the new Hendrina and Arnot Stations are in progress to provide construction supplies as well as supplies to the housing schemes and collieries associated with these power stations.

Rural Electrification

Good progress was made during the year with rural electrification and 250 miles of 22 kV and 11 kV as well as eight miles of low-voltage lines were constructed during the year. Supplies of electricity were made available to 165 farms and 79 other consumers in rural areas, and in addition 255 consumers in urban areas were connected up.

On the Highveld, the provision of a supply to Ironstone Minerals iron ore mine, situated near Roosenekal, made it possible to start a rural scheme in that area. A line has been built from the mine to a pumping station on the Mapogs River and several farmers have expressed interest in taking a supply from this line. In addition, a transmission line has been built from the mine to the town of Roosenekal, where nine consumers have been connected up. It is expected that approximately 40 houses will be supplied with electricity during next year.

No additional new schemes are contemplated on the Highveld, but existing schemes were extended, 166 urban and 69 rural supplies being provided in this area. The S.A.B.C.-F.M. transmitter near Dullstroom was connected up and three points of supply were provided for the Provincial Administration's radio network for their traffic department.

As was the case last year, the greatest development took place in the Lowveld. A new scheme near Komatipoort, begun at the end of last year, was extended to include 15 additional large and two small power users, while the existing network was extended to include 65 urban, 72 farms and 46 other consumers.

Five new schemes consisting of approximately 130 potential consumers are at present being considered.

Financial

Total revenue for the year amounted to R15,483,000 as compared with R12,856,000 for 1966.

A surplus of R550,000 was shown in the 1967 revenue accounts, making the accumulated surplus R1,716,000.

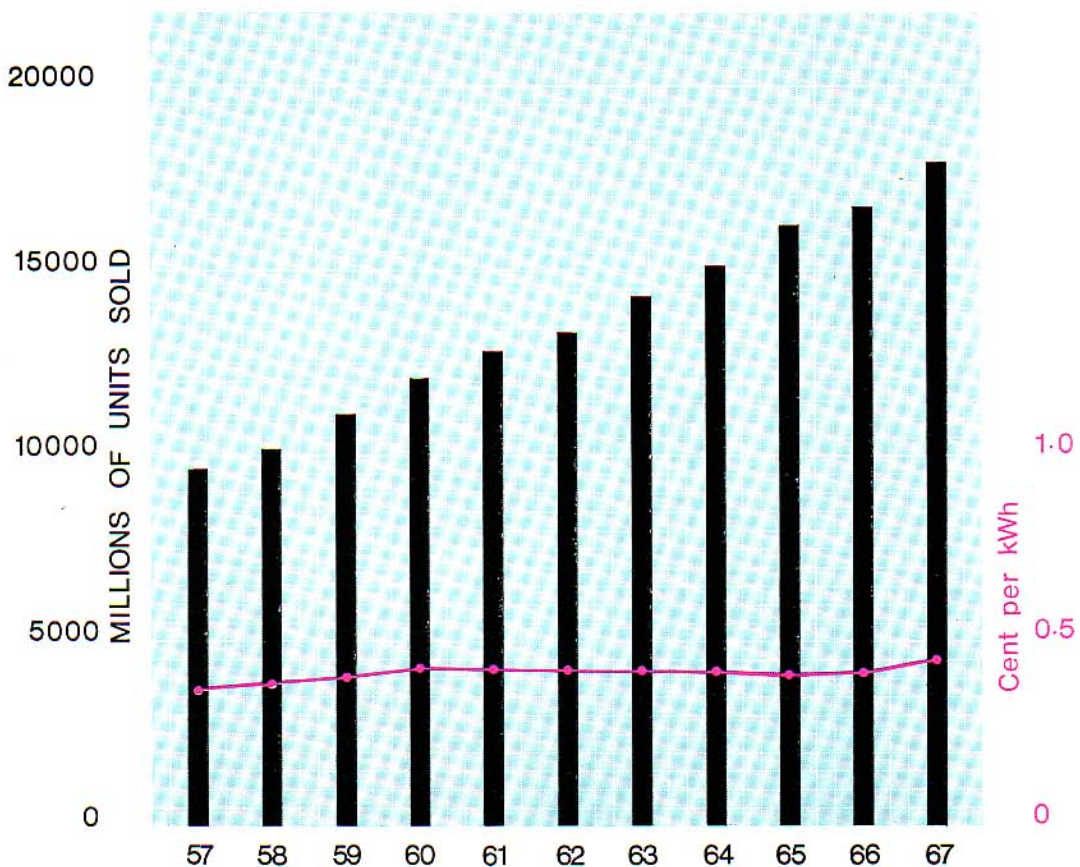
EASTERN TRANSVAAL UNDERTAKING

CONSUMER		Number			SALES			% Change			REVENUE FROM SALES		AVERAGE PRICE/U.S.																																																								
		1967	1966	Units	1966	67/66	66/65	1967	1966	R	1967	c	1966	c																																																							
Traction.....	7	7	214 971 314		+16.891	+90.029	1 910 000	1 474 000		0.7602		0.6855																																																									
Bulk.....	18	16	115 622 682		+30.033	-124.955	878 000	666 000		0.5840		0.5764																																																									
Mining.....	75	68	884 545 752		+16.084	+38.329	5 576 000	4 842 000		0.5431		0.5473																																																									
Industrial.....	1 585	1 403	1 167 489 619		+17.390	+9.257	6 521 000	5 339 000		0.4758		0.4573																																																									
Domestic.....	4 503	4 198	25 036 603		+20.116	+10.620	480 000	425 000		1.5948		1.6956																																																									
Street Lighting.....	23	23	566 890		+3.840	+20.920	20 000	18 000		3.4293		3.2602																																																									
Total.....	6 211	5 715	2 829 622 299	2 408 232 860	+17.498	-24.342	15 385 000	12 764 000		0.5437		0.5300																																																									
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FUEL:
 Coal Consumed—Tons.....
 Average Per Unit Sent Out—lb.....
 Calorific Value B.Th.U./lb.....
 Total Cost—Rand.....
 Cost Per Ton—Rand.....

Station on caretaker basis used in emergencies only.

RAND AND ORANGE FREE STATE UNDERTAKING



Expansion of the Rand and Orange Free State Undertaking

The above graph depicts the expansion of the Rand and Orange Free State Undertaking, which serves the area shown on page 50, in terms of the units sold over the years 1958 to 1967.

Sales for the year 1967 reflect an increase in the tempo of economic development over the 1966 level. There were increases in sales to all classes of consumers, except the supplies to the South African Railways for traction, which remained static.

The growth of supplies to industrial consumers, which fell to a figure of only 2.4 per cent in 1966, increased to a more normal figure of 10.1 per cent in 1967.

The inhibiting effect of water restrictions during 1966 was not apparent this year, and sales to the Rand Water Board for pumping purposes rose to normal levels.

The increase in supply to the Mining Industry amounted to 5.2 per cent, as against 2.2 per cent for 1966. Kloof Gold Mine came into production towards the end of 1967. A temporary supply for shaft sinking was made available to the new Vaal Reef Mine south of the Vaal River, pending completion of the new substation; and a permanent supply was provided to the Elsburg Gold Mine. There was a large increase in the demand by the Rustenburg platinum mines;

and gold mines generally increased their demands for electricity during 1967.

It is anticipated that the new Bernina Distribution Station will be ready for service at the end of 1968. This distribution station will supply the Kloof and Elsburg mines as well as other mines in the area.

Sales to bulk consumers increased by 13.7 per cent, while figures for domestic consumption reflected an increase of 22.3 per cent above the 1966 level.

Over the ten years represented by the above graph the total units sold increased from 10,047 million units in 1958 to 17,755 million units during 1967, an increase of 6.3 per cent over this period. The increase in 1967 was 7.2 per cent above sales for 1966.

The price per unit sold is depicted by the red line superimposed on the graph. The increase of 7.3 per cent in 1967 reflects the tariff adjustment made in that year.

Operation of the Pooled Power Stations

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 Stations of the Eastern Transvaal Undertaking, are operated as a single system of pooled stations.

Considerable progress was made during the year with the Camden Power Station near Ermelo. By the



**RAND AND ORANGE FREE STATE UNDERTAKING
REFERENCE**

- Area of Supply (11,000 Square Miles)
- E.S.C. Power Stations ● KLP ● GEORUYLH (Under construction)
- Transmission Lines
- Transmission Lines under construction



end of the year three boilers and four 200 MW turbo-generators were in service, while the fourth boiler was completed early in 1968. During the first year of commercial operation Camden Station produced 2,202 million units at a cost of approximately 0.3 cent/unit. This cost will be reduced substantially when the station is working at full capacity.

The output of the pooled power stations in 1967 was 22,561 million units, being an increase of 12.2 per cent over the output for 1966. The maximum simultaneous demand on these stations was 3,373,383 kW, being an increase of 328,478 (or 12 per cent) over 1966.

Output from the pooled power stations was re-

stricted during 1966 on account of the restrictions imposed on power stations drawing water from the Vaal catchment area, it being necessary to purchase 625.8 million units from the Johannesburg and Pretoria Municipalities. Purchases from these sources amounted to only 31.2 million units during 1967.

Total output, including purchases, amounted to 22,592 million units for 1967 as against 20,742 million units for 1966, representing an increase of 8.9 per cent, which is in keeping with the anticipated load growth.

The supplies taken by the four Undertakings which drew their power either wholly or in part from the pooled system were as follows:—

	Maximum demand in the year	Total Units (millions)
Rand and Orange Free State Undertaking	2,862,978	19,133,930,869
Eastern Transvaal Undertaking	424,745	2,871,800,106
Cape Northern Undertaking	102,176	555,671,130
Natal Undertaking	1,640	26,240

Sales of Electricity

The sales of electricity to consumers of the Rand and Orange Free State Undertaking increased to a total 17,755 million units as compared with 16,524 million units in 1966. This represents an increase of 7.2 per cent.

There were no sales of compressed air during 1967, the compressed air system on the Central Rand having been shut down on the 23rd July, 1966.

The increase in units sold to the Mining Industry

(5.2 per cent) showed a considerable rise over the comparative figures for recent years (3.5 per cent for 1965 and 2.2 per cent for 1966). The only mining area which did not reflect an increase was the old area of the Witwatersrand. As was the case last year, Klerksdorp showed the greatest increase (8 per cent) followed by the Orange Free State (6.5 per cent) and the Far West Rand (6.0 per cent).

The following table shows the units sold in the main mining areas:—

	Units Sold (in millions)			
	1964	1965	1966	1967
Witwatersrand	2,716	2,663	2,491	2,492
Klerksdorp	1,488	1,560	1,702	1,851
Far West Rand	2,040	2,193	2,271	2,410
Orange Free State	2,449	2,534	2,538	2,700

The growth of supplies to industrial consumers, which only amounted to 2.4 per cent in 1966 increased to 10.1 per cent in the current year. It should be noted, however, that these figures are to some extent misleading, due to the inhibiting effect of water restrictions and in particular the decrease in units required by the Rand Water Board for pumping purposes in 1966. (The growth rate for 1966 was 5.9 per cent if the pumping figures are excluded.) During 1967 33 new industrial supplies were commenced, the

largest being that to Elektrode Maatskappy van S.A. Beperk where a substation comprising two 15 MVA transformers was installed.

As was the case in 1966, a large percentage increase is shown in the supplies to domestic users, this increase being due to the continued expansion of the Undertaking's rural networks. Sales to these users increased by 22.4 per cent over 1966.

The units sold to the main groups of consumers were as follows:—

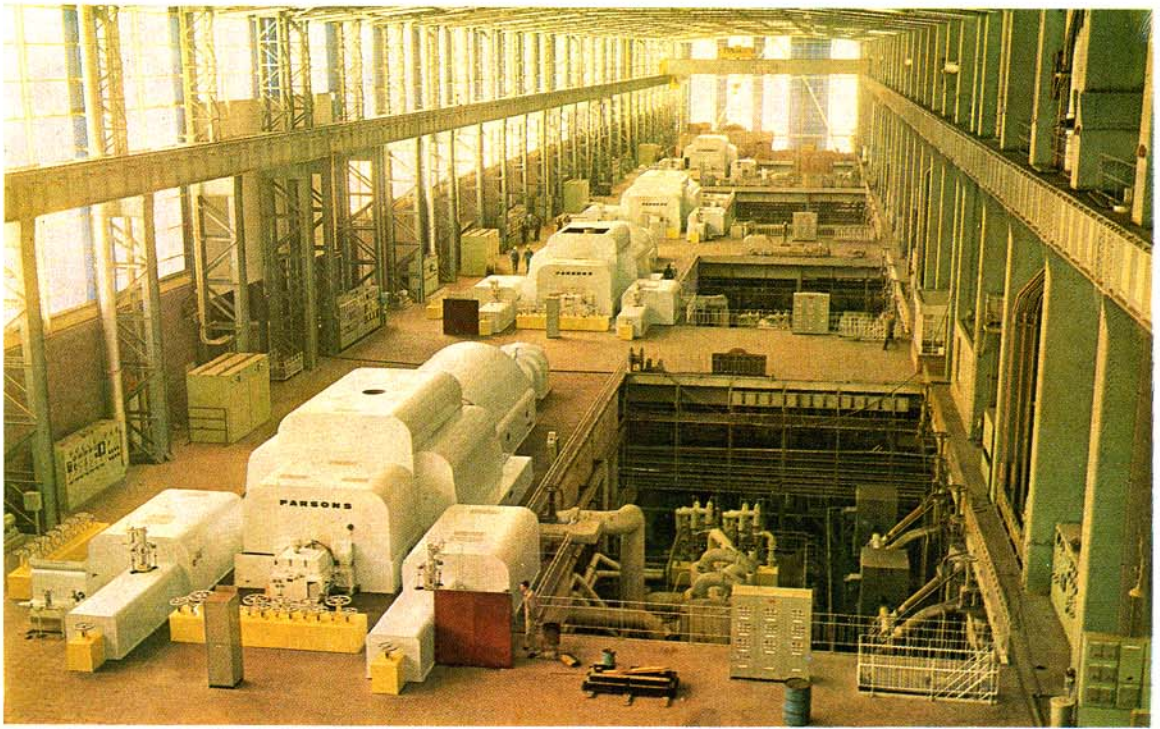
	Units Sold (in millions)			
	1964	1965	1966	1967
Building and Cement (including quarrying)	305	335	353	388
Chemical (including pharmaceutical)	491	594	637	673
Engineering (including the Motor Industry)	343	375	340	437
Foodstuffs, Consumer Goods and Commercial	501	570	464	502
Iron, Steel and Base Metals	1,356	1,452	1,509	1,690
Paper and Paper Products	212	255	281	302

Major Transmission Lines

The first Camden/Atlas 400 kV transmission line was commissioned in March, 1967, followed by the second line in July and the third in December of this year.

The second 400 kV line is being operated at 275 kV pending the installation of further transformers at

Atlas. The capacity of the Atlas Distribution Station is limited at present to 500 MVA from the 400 kV network due to faulty design of the one 720 MVA transformer installed at this substation. Two further units are being modified by the makers and are expected to be installed in 1968. This will enable the unit at present in service to be released for modification.



The generating room in the Camden Power Station, showing four of the eight 200 MW sets which will be installed in this station.

The development of the transmission system to serve the Northern Transvaal is proceeding. The section of 275 kV line operated at 132 kV between Esselen and Eerste Fabriek, as well as the 132 kV substation at Warmbad is complete, and the permanent supply to Warmbad was commissioned during February, 1968. During the same month a temporary supply was made available via a 132 kV line between Warmbad and Potgietersrus to the Municipality of Pietersburg at Potgietersrus. The target date for completion of the permanent installation is July, 1968.

The 132 kV transmission line at Potgietersrus is being extended to Louis Trichardt and a supply is to be given to that municipality during the second half of the year.

Due to the rapid increase in the demand in the Rustenburg area, it has been decided to build a second 132 kV transmission line from Doornfontein to the Trident substation serving that area. Completion is scheduled for July, 1968.

The supply to Brits Municipality was taken over from the Pretoria Municipality in May, 1967.

Two Bantu townships, Sebokeng and Tembisa, as well as the town of Tweeling, were given a supply during the year.

An agreement has been reached for the supply of electrical power to Lesotho. An 88 kV transmission line has been built from Ladybrand to Maseru for this purpose. This was completed about the middle of April, 1968.

Rural Electrification

During 1967 a total of 612 miles of transmission lines for voltages of 22 kV and below were constructed, as well as 33 miles of low-voltage lines.

Supply was given to 795 farmers and also to 1,755 other consumers on smallholdings (not classified as

farmers) and in peri-urban areas. There was no slackening in the demand for supplies in the rural areas both in existing schemes and in undeveloped areas. The rapid development in the peri-urban areas around Johannesburg continued, and considerable reinforcement of the distribution system became necessary.

In the scheme for the supply to farmers in the Brits area, that was commenced in 1966, 174 new consumers were connected during the year. A further 95 connections were given in the areas between Johannesburg and Vereeniging and 100 consumers were connected in the areas north of Benoni.

A large scheme to supply the rural areas south and east of Potchefstroom was commenced with 47 consumers connected at the year end.

Other schemes which were inaugurated included the Luipaardsvlei/Doornkop area (near Randfontein), the area around Val, Balfour/Greylingstad, Wolwehoek/Sasolburg and Garthdale Agricultural Holdings near Meyerton.

Terms have been accepted in several additional schemes involving 360 potential consumers. Construction of these will commence in due course.

Financial

Tariff adjustments were made from January, 1967, by reducing the general discount in the Rand Licence area from 8 per cent to 2 per cent. A corresponding adjustment was made in the Extension Areas.

The total revenue from the sales of electricity increased from R69,432,000 in 1966 to R79,417,000 in 1967.

A deficit of R301,000 was shown on the year's working, and the accumulated deficit of R939,000 on last year's working was thus increased to an accumulated deficit of R1,240,000 at the end of 1967.

RAND AND ORANGE FREE STATE UNDERTAKING

CONSUMER	Number		Units		% Change		REVENUE FROM SALES		AVERAGE PRICE/U.S.																																																									
	1966		1966		66/65		1966		1966																																																									
	1967	1966	1967	1966	67/66	66/65	R	R	c	c																																																								
Traction	2	2	724 063 987	724 386 112	- 0.044	+ 1.306	3 899 000	3 615 000	0.5385	0.4990																																																								
Bulk	117	111	2 656 674 607	2 336 120 888	+ 13.722	+ 7.942	12 728 000	10 435 000	0.4791	0.4467																																																								
Mining	103	107	10 078 483 593	9 580 135 984	+ 5.202	+ 2.205	42 331 000	37 416 000	0.4200	0.3906																																																								
Industrial	1 621	1 434	4 094 417 679	3 718 401 151	+ 10.112	+ 2.439	17 486 000	14 784 000	0.4271	0.3976																																																								
Domestic	17 587	15 051	201 665 846	164 790 125	+ 22.377	+ 16.548	2 214 000	1 772 000	1.0979	1.0757																																																								
Street Lighting	6	5	109 790	84 090	+ 30.562	- 46.506	2 000	2 000	1.8622	2.1641																																																								
Total.....	19 436	16 710	17 755 415 502	16 523 918 350	+ 7.453	+ 3.119	78 660 000	68 024 000	0.4430	0.4172																																																								
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RAND AND ORANGE FREE STATE UNDERTAKING

	Vaal Power Station		Vereeniging Power Station	
	1967	1966	1967	1966
Electricity Units Sent Out				
Maximum	2 002 274 858	2 026 163 771	512 997 155	474 693 730
Demand kW.S.O. } Hour	289 154	290 753	135 435	130 774
Load Factor %	79.0	79.6	43.2	41.4
Thermal Efficiency % S.O.	20.9	21.0	14.2	13.7
FUEL:				
Coal Consumed—Tons	1 972 974	1 987 207	719 365	686 064
Average Per Unit Sent Out—lb.	1.971	1.962	2.805	2.891
Calorific Value B.Th.U./lb.	8 200	8 200	8 410	8 420
Total Cost—Rand	2 287 000	2 168 000	927 000	905 000
Cost Per Ton—Rand	1.16	1.09	1.29	1.32

	Vierfontein Power Station		Wilge Power Station	
	1967	1966	1967	1966
Electricity Units Sent Out				
Maximum	1 695 876 479	1 686 650 616	1 134 709 795	1 556 174 400
Demand kW.S.O. } Hour	339 074	331 494	212 069	217 904
Load Factor %	57.1	58.1	61.1	81.5
Thermal Efficiency % S.O.	22.1	22.3	23.8	24.3
FUEL:				
Coal Consumed—Tons	1 444 516	1 442 514	844 386	1 146 012
Average Per Unit Sent Out—lb.	1.704	1.711	1.488	1.473
Calorific Value B.Th.U./lb.	8 780	8 690	9 520	9 530
Total Cost—Rand	2 390 000	2 425 000	1 109 000	1 248 000
Cost Per Ton—Rand	1.65	1.68	1.31	1.09

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 to enlarge existing undertakings were as follows:—

New Schemes

Extensions

TRANSVAAL:

Delmas
Johannesburg
Louis Trichardt (2)

ORANGE FREE STATE:

Cornelia
Dealesville

Bothaville
Frankfort
Koffiefontein
Trompsburg
Villiers

CAPE:

Graaff-Reinet
Kakamas
Klawer
Knysna
Lusikisiki
Paarl
Petrusville
Pofadder
Upington (2)

NATAL:

Mooi River (2)

SOUTH WEST AFRICA:

Otjiwarongo
Outjo
Usakos and Karibib
Walvis Bay

Up to the 31st December, 1967, a total of 1,912 reports on municipal supply schemes had been submitted by the Commission. Of these, 302 were in respect of new schemes, 982 in respect of extension schemes and 628 were reports on tenders.

NEW DEVELOPMENTS IN ESCOM'S UNDERTAKINGS

Camden Power Station

The official opening of Camden Power Station near Ermelo was performed by the Prime Minister, the Honourable B. J. Vorster, on the 12th October, 1967.

This power station, which is the latest addition to the Pooled Power Stations in the Eastern Transvaal, will comprise 8×200 MW steam-driven turbo-generators. The first set was started up on 21st December, 1966, and by the end of the year three boilers and four 200 MW turbo-generators were in operation. The fourth boiler was taken into service on 5th February, 1968.

Camden is also the starting point of the new 400 kV transmission system which will supply power to the Cape, and eventually to Natal also; and the first of the 400 kV lines between Camden and Atlas Distribution Station (near Vereeniging) was energized

on 1st March, 1967. Three of these high voltage lines are now in service.

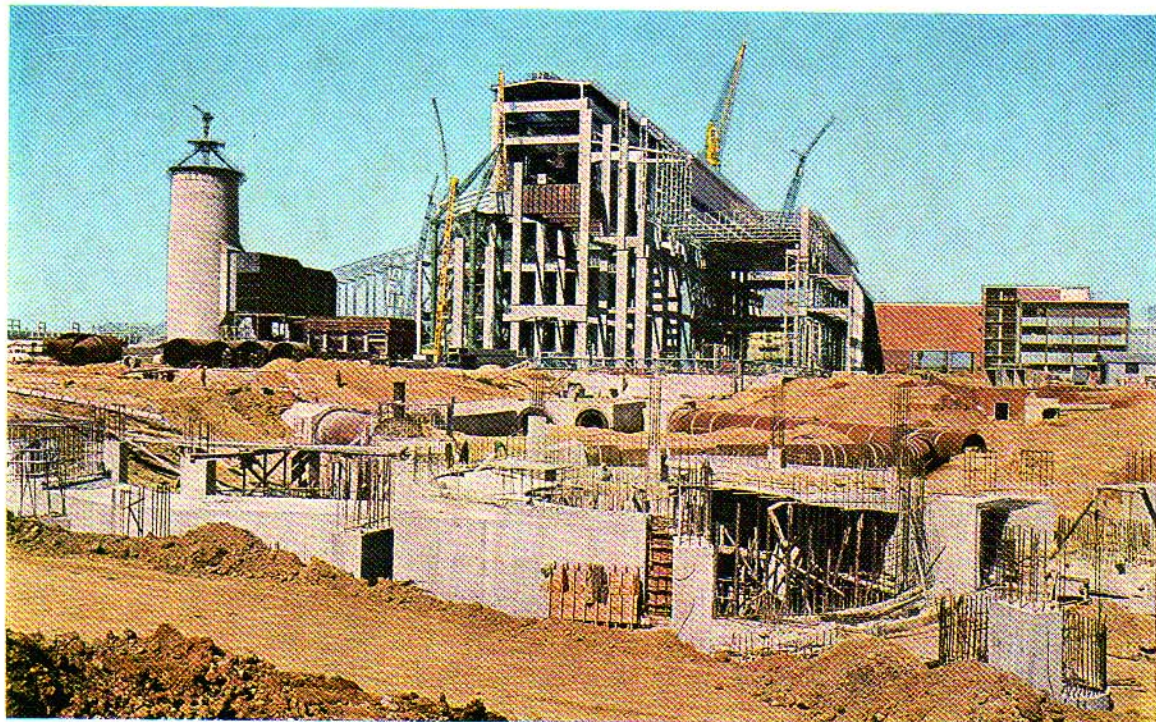
During its first year of operation, some 2,202 million units of electricity were generated at Camden Station: and considerable progress has been made in the construction of the remaining four boilers and sets.

Grootvlei Power Station

Progress with the construction of the Grootvlei Power Station continued satisfactorily during 1967. Of the three 200 MW turbo-generators ordered, two are to be delivered in 1969 and one in 1970. During 1967 a further similar turbo-generator was ordered, to be in service by the end of March, 1971. As was mentioned in last year's Report, this fourth set will employ the so-called "dry" cooling method, which represents a major contribution towards water conservation. With this type of design the amount of water used for cooling purposes is reduced to about 10 to 15 per cent of the amount required by the conventional "wet" cooling tower.

While the "dry" cooling tower is less efficient than the conventional type resulting in somewhat higher generating costs, these higher costs will be offset by a saving in the amount of water required. Escom believes that as soon as the experience gained at

Grootvlei makes it possible to decide on the most satisfactory design and method of operation, this type of construction will play an important part in Escom's future plans.



THE GROOTVLEI POWER STATION

In the foreground are the foundations for the circulating-water pumphouse, which is being built to a new design evolved by Escom engineers.

Hydro-Electric Stations

The hydro-electric station at the Hendrik Verwoerd Dam has been planned for 80 MW sets at average head, and contracts have been awarded for the two water turbines. Maximum utilisation of the water supply will be secured by operating this station with the thermal stations of the Rand and Orange Free State Undertaking: but power will be supplied from this source to users in the vicinity, and to 400 kV transmission system which is being constructed from the Transvaal to the Western Cape.

Atomic Power Stations

During the year Escom has collaborated with the Atomic Energy Board in feasibility and economic studies to determine the part which atomic power stations are to play in the generation of electricity in Escom's networks.

It is clear that the establishment of a high voltage network which will make it possible to co-ordinate the flow of power between Escom's Undertakings is a condition precedent to the introduction of atomic power stations of economic size. On present knowledge and present costs, the commissioning of the first atomic power station in the Western Cape will not be justified earlier than about 1978. But if such a station is required in ten years' time, a great deal of preparatory work will have to be done; and with this in mind, a site, which will be adequate for one or more atomic power stations in the Western Cape,

has been secured by the purchase of the farm Duyenfontein, near Melkbosstrand.

Hendrina Power Station

Construction of the Hendrina Power Station is well under way. Civil works and preparation for foundations are progressing, and the circulating water ducts for four sets are complete.

Work is in progress on the cooling towers, chimney and coal staiths. The steelwork for the first set is half complete, and work is in progress on the Switch Operating Block, Workshop and Stores. The main storage reservoirs have been built. This station has been planned for ten 200 MW turbo-generator sets, four of which have been ordered.

Part of the construction personnel is being accommodated in the temporary housing at Komati Power Station. It is anticipated that twenty-five permanent houses will be ready by April, 1968, and additional houses will be completed at the rate of sixteen per month.

Arnot Power Station

This station has been planned for a total of six 350 MW turbo-generator sets, the first of which is to be in operation in March, 1971.

Work at site commenced on the 1st March, 1967, and construction of the circulating water ducts and switch operating block is in progress. The option for the third turbo-generator set and boiler has been taken up and the order has been placed for delivery of this plant in September, 1972.

WATER SUPPLIES

The quantities of water (omitting sea water) used by the Commission's Undertakings are published in the usual form in Statement 7 on page 100 of this report. In times of severe drought public attention is inevitably drawn to the use of water for power production: and a broad picture of the sources from which this water is obtained is given in the following table:—

It will be noted that the quantity of water drawn from the Vaal River decreased from 36.3 m.g.d. in 1966 to 34.0 m.g.d. in 1967. This reduction was achieved without any decrease in units generated by stations which use Vaal River water, and it reflects the

efforts which have been directed into reducing the burden carried by this water source. It is hoped that the installation of acid treatment plant at the power stations which use water drawn from the Vaal River will result in permanent reductions in the amount of water used in the cooling towers. Other measures which have been adopted are re-use of sewerage effluent from Escom properties at Taaibos and Highveld Stations and the use of cooling tower blowdown for ashing and other uses.

The units generated in power stations which are not dependent on the Vaal River increased from 8,457 million units in 1966 to 11,005 million units in 1967, an increase of 30 per cent.

	Water drawn from Rivers	Other Sources	Sea Water (circulated)
	(millions of gallons)		
<i>Cape Western Undertaking</i>			
Cape Town Municipality	91	—	
Worcester Municipality	387	—	
Sea Water (estimated)	—	—	55,000
	<u>478</u>	<u>—</u>	<u>55,000</u>
<i>Border Undertaking</i>			
East London Municipality	32	—	—
Sea Water (estimated)	—	—	18,300
	<u>32</u>	<u>—</u>	<u>18,300</u>
<i>Natal Undertaking</i>			
Durban Municipality	927	—	—
Sea water (estimated)	—	—	50,142
Tugela River	596	—	—
Ngagane River	1,094	—	—
	<u>2,617</u>	<u>—</u>	<u>50,142</u>
<i>Rand and O.F.S. Undertaking and Eastern Transvaal Undertaking</i>			
Vaal River	12,229	—	—
Olifants River	890	—	—
Bronkhorstspuit	1,364	—	—
Komati River	4,468	—	—
Usutu complex	1,745	—	—
Other	—	5	—
	<u>20,696</u>	<u>5</u>	<u>—</u>
TOTAL—ALL UNDERTAKINGS	<u>28,823</u>	<u>5</u>	<u>123,442</u>

ANNEXURES

The Commission submits for the year 1967 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.

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—Natal Undertaking.

Account No. 8—Eastern Transvaal Undertaking.

Account No. 9—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, 1967.

Statement No. 2—Summary of principal plant and equipment in course of installation or on order as at 31st December, 1967.

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

Statement No. 4—Units sold and number of consumers, 1967.

Statement No. 5—Power Station Statistics, 1967.

Statement No. 6—Power purchased, 1967.

Statement No. 7—Water consumed by power stations, 1967.

Statement No. 8—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 1967.

Statement No. 9—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,
22nd April, 1968

Gentlemen,

We have completed the audit of the books and accounts of the Commission for the year ended 31st December, 1967.

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, 30, 41, 48, 57, 59 and 62 which were raised outside the Republic.

In the records of the Commission the Fund is divided into sections corresponding to its Undertakings. The Commission has invested the moneys accruing to each section of the Fund in the investments prescribed in the Schedule to the Act, and in valuing the Fund at 31st December, 1967, we have taken into account the market value of the investments at that date. The value of the Fund at 31st December, 1967, 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 portion 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. 55 and 56 commenced at 1st May and 1st November, 1967, respectively. 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, 1967.

Overseas Loans

Repayments of capital, in respect of Loans Nos. 20, 24 and 30, 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.

Loan No. 41, raised in Switzerland, is repayable by ten annual instalments, the first of which was

paid during 1965. Provision is being made for repayment by setting aside amounts over the period of the loan, i.e. 15 years from February, 1959.

Loans Nos. 48 and 59 from the International Bank of Reconstruction and Development 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. At 31st December, 1967, U.S. \$14,688,000 (R10,542,000) had been received in respect of Loan No. 59. The balance of U.S. \$5,312,000 (R3,858,000) is to be taken up before 30th June, 1968.

Loan No. 57 raised in the Federal Republic of Germany is repayable by ten annual instalments from 1971 to 1980. Provision is being made for repayment by setting aside amounts over the period of the loan, i.e. 15 years from October, 1965.

Loan No. 62 was raised by the Commission on 15th June, 1967, by the issue of 15,000 7 per cent bonds of U.S. \$1,000 each in Luxembourg. The bonds are repayable in ten equal annual instalments, the first repayment being due on 15th June, 1968. Provisions for repayment are being charged to Revenue Accounts of Undertakings on a 19 year sinking fund basis.

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 all Undertakings in Commercial operation.

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 1966 and 1967:—

	Surplus + Deficit —		Amounts set aside to Reserve Fund	
	1966	1967	1966	1967
Cape Western.....	— 275,000	— 524,000	726,000	726,000
Cape Northern.....	+ 58,000	— 20,000	224,000	300,000
Cape Eastern.....	— 6,000	— 11,000	1,000	1,000
Border.....	+ 101,000	— 58,000	135,000	150,000
Natal.....	+ 792,000	+ 219,000	1,550,000	1,600,000
Eastern Transvaal.....	+ 433,000	+ 550,000	1,230,000	1,695,000
Rand and O.F.S.	— 2,086,000	— 301,000	3,870,000	5,440,000
	<u>— R983,000</u>	<u>— R145,000</u>	<u>R7,736,000</u>	<u>R9,912,000</u>
Brought forward from previous year		3,282,000		
Net Accumulated Surplus at end of year as detailed in Balance Sheet.....		<u>R3,137,000</u>		

Operations during the year resulted in surpluses at Natal and Eastern Transvaal Undertakings and deficits at the other Undertakings. The deficit at Cape Northern Undertaking reduced the accumulated surplus at that Undertaking from R1,136,000 to R1,116,000. In the cases of Cape Western, Cape Eastern and Rand and Orange Free State Undertakings accumulated deficits brought forward were increased. The discounts to consumers at Cape Western Undertaking were reduced in October, 1967, and tariffs were increased at Cape Eastern and Border Undertakings in January, 1968.

During the year the Commission supplied electricity to certain consumers in the Northern Transvaal outside the area covered by the Greater Rand Extension licence. The extension of the Greater Rand Extension licence to include these consumers, which was applied for on 11th November, 1965, was granted on 4th March, 1968.

Electricity was also supplied to certain consumers in the area covered by the proposed Orange River Undertaking. The Electricity Control Board has not yet granted a licence for this Undertaking.

General

As a result of our audit of the books and accounts of the Commission for the year 1967 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 Commission

Established under the

Electricity Act, 1922

BALANCE SHEET AT

31st DECEMBER, 1967.

1966		R834,295,000
R749,619,000	Loans Outstanding (Schedule No. 3)	
74,545,000	Loans Repaid Less Assets Sold or Scrapped	92,588,000
92,350,000	Loans repaid (Schedule No. 3)	R116,685,000
17,805,000	Less: Cost of Assets sold proceeds credited to Redemption Fund	24,097,000
198,114,000	Redemption Fund (Account No. 1)	208,413,000
68,270,000	Reserve Fund (Account No. 2)	79,892,000
3,282,000	Balance on Revenue Accounts (Accounts Nos. 3 to 9)	3,137,000
Dr. 6,000	Cape Western Undertaking	Dr. 530,000
1,136,000	Cape Northern Undertaking	1,116,000
Dr. 7,000	Cape Eastern Undertaking	Dr. 18,000
87,000	Border Undertaking	29,000
1,845,000	Natal Undertaking	2,064,000
1,166,000	Eastern Transvaal Undertaking	1,716,000
Dr. 939,000	Rand & Orange Free State Undertaking	Dr. 1,240,000
45,506,000	Creditors and Provisions	50,759,000
31,725,000	Creditors	34,883,000
8,061,000	Interest accrued on loans	9,382,000
5,720,000	Provisions including provisions for repayment of overseas loans	6,494,000
18,832,000	Temporary Borrowings	33,601,000
18,832,000	Amount due to Bankers less Cash on Current Accounts and on hand	4,824,000
—	Revolving Credits	28,777,000
R1,158,168,000		R1,302,685,000

The Notes to the Balance Sheet appear on page 62

Johannesburg,
29th March, 1968.

R. L. STRASZACKER, *Chairman.*
J. A. BOTHMA, *Chief Accountant.*

	R950,863,000	1966 R840,782,000
Capital Expenditure at Cost (Schedule No. 1)		
Land and Rights	R9,846,000	8,834,000
Buildings and Civil Works	184,279,000	145,783,000
Machinery and Plant	652,693,000	559,596,000
Total amount in commission	846,818,000	714,213,000
Amount under Construction	104,045,000	126,569,000
Stores and Movable Plant	43,451,000	38,449,000
Stores and Materials at cost	38,336,000	33,610,000
Movable plant and equipment at cost less depreciation	5,115,000	4,839,000
Investment of Redemption Fund (Schedule No. 2)	208,182,000	196,225,000
Nominal Value Market Value		
1966 R197,945,000 R175,101,000		
1967 R210,679,000 R188,357,000		
Investment of Reserve Fund	78,671,000	66,382,000
Stocks of Electricity Supply Commission, Republic of South Africa and Municipalities, including Interest Accrued		
Nominal Value Market Value		
1966 R66,998,000 R59,477,000		
1967 R79,600,000 R72,195,000		
Sundry Investments	5,479,000	4,482,000
Electricity Supply Commission Loan Bonds including Interest accrued		
Swiss Loan	232,000	678,000
Nominal Value Market Value		
1966 R662,000 R681,000		
1967 R223,000 R230,000		
Luxembourg Loan	570,000	—
1967 R589,000 R570,000		
Entire Share Capital of the Rand Mines Power Supply Company Limited	1,000	1,000
Housing Loans to Employees secured by First Mortgage	4,676,000	3,803,000
Debtors and Payments in Advance	16,039,000	11,848,000
Debtors	13,637,000	11,259,000
Payments in advance	2,402,000	589,000
	R1,302,685,000	R1,158,168,000

Referred to in our Report of 22nd April, 1968.

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

NOTES TO THE BALANCE SHEET

1. In addition to the liabilities shown above, the Commission is committed in the following matters:—
 - (a) Expenditure of approximately R406,000,000 on Capital account, R2,700,000 chargeable against Reserve Fund, and R313,000 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:—
 - (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.
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.
3. No account has been taken of the reduction in liabilities resulting from the devaluation of the British Pound during November, 1967.

Electricity Supply Commission

SCHEDULE No. 1

Schedule of Capital Expenditure at 31st December, 1967.

UNDERTAKING	IN COMMISSION			UNDER CON- STRUCTION	TOTAL
	Land and Rights	Buildings and Civil Works	Machinery and Plant		
Cape Western	R951,000	R16,176,000	R74,039,000	R3,411,000	R94,577,000
Cape Northern	177,000	788,000	16,311,000	628,000	17,904,000
Cape Eastern	10,000	33,000	466,000	308,000	817,000
Border	152,000	2,806,000	13,647,000	968,000	17,573,000
Natal	1,255,000	31,535,000	99,974,000	16,958,000	149,722,000
Eastern Transvaal	1,494,000	29,752,000	103,416,000	2,352,000	137,014,000
Rand & O.F.S.	4,584,000	98,375,000	344,840,000	76,008,000	523,807,000
Head Office	1,223,000	4,814,000			6,037,000
	9,846,000	184,279,000	652,693,000	100,633,000	947,451,000
Expenditure not yet allocated				3,412,000	3,412,000
Totals at 31st December, 1967	R9,846,000	R184,279,000	R652,693,000	R104,045,000	R950,863,000
Totals at 31st December, 1966	8,834,000	145,783,000	559,596,000	126,569,000	840,782,000
Capital expenditure during 1967	R1,012,000	R38,496,000	R93,097,000	Cr. R22,524,000	R110,081,000

J. A. BOTHMA, *Chief Accountant.*

Johannesburg,
29th March, 1968.

Electricity Supply Commission

SCHEDULE No. 2

Schedule of Investments of the Redemption Fund at 31st December, 1967

INVESTMENTS			Nominal Value	Book Value
LOCAL REGISTERED STOCKS				
Electricity Supply Commission				
3¼ per cent	1965/70	.....	R1,498,000	R1,424,000
3 per cent	1967/73	.....	2,710,000	2,442,000
3 per cent	1968/74	.....	2,386,000	2,307,000
3¾ per cent	1968/73	.....	13,689,000	13,531,000
3½ per cent	1969/74	.....	2,519,000	2,200,000
3¾ per cent	1969/74	.....	226,000	204,000
3¾ per cent	1964/68	.....	711,000	667,000
5 per cent	1966/68	.....	1,554,000	1,534,000
5 per cent	1967/69	.....	1,446,000	1,424,000
5 per cent	1968/70	.....	2,473,000	2,424,000
5 per cent	1967/70	.....	7,407,000	7,239,000
5 per cent	1971/74	.....	2,667,000	2,586,000
5 per cent	1971/75	.....	3,566,000	3,504,000
4¾ per cent	1975/80	.....	9,793,000	9,742,000
4¾ per cent	1975/80	.....	8,172,000	8,113,000
5½ per cent	1976/81	.....	4,891,000	4,802,000
5½ per cent	1977/82	.....	1,020,000	1,000,000
5½ per cent	1976/82	.....	3,940,000	3,882,000
5½ per cent	1977/83	.....	10,087,000	9,991,000
5½ per cent	1978/83	.....	3,861,000	3,810,000
5½ per cent	1979/84	.....	5,092,000	5,058,000
5½ per cent	1979/84	.....	7,031,000	6,873,000
5½ per cent	1979/85	.....	6,023,000	5,914,000
5½ per cent	1980/85	.....	7,121,000	6,996,000
5½ per cent	1980/86	.....	5,035,000	4,904,000
5¾ per cent	1981/86	.....	7,388,000	7,332,000
6¼ per cent	1981/86	.....	6,185,000	6,121,000
6¼ per cent	1982/87	.....	6,299,000	6,243,000
5¼ per cent	1982/87	.....	6,418,000	6,335,000
5 per cent	1983/88	.....	10,303,000	10,210,000
5 per cent	1980/83	.....	6,300,000	6,123,000
5 per cent	1982/84	.....	3,665,000	3,561,000
5½ per cent	1982/84	.....	3,129,000	3,058,000
5¾ per cent	1983/85	.....	10,102,000	9,919,000
6½ per cent	1983/85	.....	6,599,000	6,418,000
6½ per cent	1989/91	.....	9,118,000	8,869,000
6½ per cent	1991	.....	4,863,000	4,656,000
6¾ per cent	1992	.....	5,845,000	5,590,000
6½ per cent	1992	.....	3,644,000	3,331,000
6¾ per cent	1992	.....	1,535,000	1,469,000
Republic of South Africa				
3 per cent	1958/68	.....	30,000	30,000
3 per cent	1959/69	.....	200,000	188,000
3 per cent	1960/70	.....	687,000	659,000
5½ per cent	1979	.....	300,000	300,000
6 per cent	1985	.....	500,000	499,000
<i>Carried forward</i>			R208,028,000	R203,482,000

		Nominal Value	Book Value	
<i>Brought forward</i>		R208,028,000	R203,482,000	
Municipal — Johannesburg				
3¼ per cent	1965/70	.....	588,000	567,000
3 per cent	1967/77	.....	60,000	60,000
5¾ per cent	1974/79	.....	194,000	193,000
Municipal — Cape Town				
3 per cent	1976	.....	200,000	190,000
5¾ per cent	1980/85	.....	300,000	296,000
Municipal — Durban				
3¼ per cent	1962/72	.....	231,000	180,000
3½ per cent	1965/75	.....	90,000	82,000
3¼ per cent	1966/76	.....	100,000	100,000
3 per cent	1967/77	.....	668,000	635,000
5¾ per cent	1974/79	.....	120,000	118,000
Municipal — Bloemfontein				
5¾ per cent	1975/80	.....	80,000	79,000
Municipal — Germiston				
5¾ per cent	1985	.....	20,000	20,000
		<u>R210,679,000</u>	<u>R206,002,000</u>	
Interest Accrued			2,180,000	
			<u>R208,182,000</u>	
Market Value		R188,357,000		

ALLOCATION OF INVESTMENTS TO UNDERTAKINGS

	Nominal Value	Book Value including Interest accrued
Cape Western Undertaking	R19,541,000	R19,431,000
Cape Northern Undertaking	4,146,000	4,093,000
Cape Eastern Undertaking	34,000	33,000
Border Undertaking	4,478,000	4,415,000
Natal Undertaking	33,372,000	32,813,000
Eastern Transvaal Undertaking	17,213,000	16,883,000
Rand and Orange Free State Undertaking	122,751,000	121,348,000
Undertaking which has been sold	6,500,000	6,526,000
Head Office	2,644,000	2,640,000
		<u>R210,679,000</u>
		<u>R208,182,000</u>

Johannesburg,
29th March, 1968.

J. A. BOTHMA, *Chief Accountant.*

Electricity Supply Commission

SCHEDULE No. 3

Loans at 31st December, 1967

Loan No.	Loans Nos. 1 and 2 R16,000,000 repaid out of subsequent loans Local Registered Stocks	Outstanding	Repaid
3	R1,000,000 4½ per cent 1953/63		R1,000,000
4	R5,000,000 4½ per cent 1953		5,000,000
5	R13,500,000 3¾ per cent 1954/64		13,500,000
6	R5,000,000 3½ per cent 1959/64		5,000,000
7	R4,000,000 3¼ per cent 1956/66		4,000,000
8	R4,000,000 3½ per cent 1957/67		4,000,000
9	R4,000,000 3¾ per cent 1959/64		4,000,000
10	R3,000,000 3¾ per cent 1960/65		3,000,000
11	R4,000,000 3¼ per cent 1961/66		4,000,000
12	R5,000,000 3¼ per cent 1965/70	R5,000,000	
13	R6,000,000 3 per cent 1967/73	6,000,000	
14	R6,000,000 3 per cent 1968/74	6,000,000	
15	R30,000,000 3½ per cent 1968/73	30,000,000	
16	R6,000,000 3½ per cent 1969/74	6,000,000	
17	R6,000,000 3¾ per cent 1969/74	6,000,000	
18	R10,500,000 3¾ per cent 1965/67		10,500,000
19	R6,000,000 3¾ per cent 1964/67		6,000,000
21	R10,000,000 3¾ per cent 1964/68	10,000,000	
22	R9,000,000 4¼ per cent 1964/67		9,000,000
23	R10,000,000 5 per cent 1964/67		10,000,000
25	R7,000,000 5 per cent 1966/68	7,000,000	
26	R8,000,000 5 per cent 1967/69	8,000,000	
27	R8,500,000 5 per cent 1968/70	8,500,000	
29	R16,000,000 5 per cent 1967/70	16,000,000	
31	R16,000,000 5 per cent 1971/74	16,000,000	
32	R20,000,000 5 per cent 1971/75	20,000,000	
33	R16,000,000 4¾ per cent 1975/80	16,000,000	
34	R16,000,000 4¾ per cent 1975/80	16,000,000	
35	R16,500,000 5½ per cent 1976/81	16,500,000	
36	R20,000,000 5½ per cent 1977/82	20,000,000	
37	R22,000,000 5½ per cent 1976/82	22,000,000	
38	R24,000,000 5½ per cent 1977/83	24,000,000	
39	R24,000,000 5¾ per cent 1978/83	24,000,000	
40	R22,000,000 5¾ 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 6½ per cent 1982/87	18,000,000	
50	R22,000,000 5¼ 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 6½ per cent 1983/85	38,000,000	
58	R30,000,000 6½ 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	4,050,000	
64	R12,000,000 6½ per cent 1992	10,784,000	
65	R37,000,000 6¾ per cent 1992	31,344,000	
67	R11,000,000 6½ per cent 1969	11,000,000	
	R871,000,000 Carried forward	R784,178,000	R79,000,000

*Payable in full not later than 29th February, 1968, in terms of the Prospectus.

Loan No.	Description	Outstanding	Repaid
	R871,000,000 Brought forward	R784,178,000	R79,000,000
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT			
20	R21,465,000 \$30,000,000 4 per cent. Repayable by half-yearly instalments 1954/70	4,908,000	16,557,000
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
			<u>R2,822,000</u>
48	R6,248,000 \$14,000,000 5¾ per cent. Repayable by half-yearly instalments 1963/71 Less repaid out of local loans		R10,012,000 3,764,000
			<u>R6,248,000</u>
59	R14,400,000 \$20,000,000 6½ per cent. Repayable by half-yearly instalments 1968/76 To be taken up before 30/6/68 Amount received	10,542,000	—
EXPORT-IMPORT BANK OF WASHINGTON			
24	R14,017,000 \$19,600,000 4 per cent. Repayable by half-yearly instalments 1956/70	3,506,000	10,511,000
COMMONWEALTH DEVELOPMENT FINANCE COMPANY LIMITED			
30	R4,000,000 5 per cent. Repayable by half-yearly instalments 1954/68	360,000	3,640,000
SWISS LOAN			
41	R8,274,000 Swiss Francs 50,000,000 5 per cent. Repayable by annual instalments 1965/74	5,792,000	2,482,000
GERMAN LOAN			
57	R8,921,000 German Marks 50,000,000 6½ per cent. Repayable by annual instalments 1971/80	8,921,000	
LUXEMBOURG LOAN			
62	R10,776,000 \$15,000,000 7 per cent. Bonds repayable by ten equal instalments 1968/77	10,776,000	
		<u>R961,923,000</u>	<u>R834,295,000</u>
	Sundry Loans		737,000
			<u>R116,685,000</u>

J. A. BOTHMA, Chief Accountant.

Electricity Supply Commission

Redemption Fund Account for the

Year Ended 31st December, 1967

<u>1966</u>		
R17,000,000	Repayment of Local Registered Stock	R20,500,000
	3½ per cent 1957/67 (Loan No. 8).....	R4,000,000
	3½ per cent 1965/67 (Loan No. 18).....	10,500,000
	3½ per cent 1964/67 (Loan No. 19).....	6,000,000
4,000,000	3½ per cent 1956/66 (Loan No. 7).....	
4,000,000	3½ per cent 1961/66 (Loan No. 11).....	
9,000,000	4½ per cent 1964/67 (Loan No. 22).....	
198,114,000	Balance as per Balance Sheet	208,413,000
20,102,000	Cape Western Undertaking.....	19,532,000
3,440,000	Cape Northern Undertaking.....	4,189,000
21,000	Cape Eastern Undertaking.....	37,000
3,977,000	Border Undertaking.....	4,482,000
30,227,000	Natal Undertaking.....	32,817,000
13,358,000	Eastern Transvaal Undertaking.....	16,885,000
118,061,000	Rand and Orange Free State Undertaking.....	121,399,000
2,428,000	Head Office.....	2,572,000
6,500,000	Original Cost of an Undertaking which has been sold.....	6,500,000
R215,114,000		R228,913,000

Johannesburg,
29th March, 1968.

J. A. BOTHMA, *Chief Accountant*

			<u>1966</u>
	Balance brought forward	R198,114,000	R187,534,000
	Cape Western Undertaking.....	R20,102,000	20,556,000
	Cape Northern Undertaking.....	3,440,000	2,797,000
	Cape Eastern Undertaking.....	21,000	8,000
	Border Undertaking.....	3,977,000	3,417,000
	Natal Undertaking.....	30,227,000	28,783,000
	Eastern Transvaal Undertaking.....	13,358,000	10,627,000
	Rand and Orange Free State Undertaking.....	118,061,000	112,018,000
	Head Office.....	2,428,000	2,828,000
	Assets Sold.....	6,500,000	6,500,000
	Amounts Contributed During the Year as per Revenue Accounts	20,025,000	17,480,000
	Cape Western Undertaking.....	2,339,000	1,898,000
	Cape Northern Undertaking.....	540,000	481,000
	Cape Eastern Undertaking.....	14,000	12,000
	Border Undertaking.....	410,000	342,000
	Natal Undertaking.....	3,266,000	2,908,000
	Eastern Transvaal Undertaking.....	3,237,000	2,837,000
	Rand and Orange Free State Undertaking.....	10,219,000	9,002,000
	Other Contributions	140,000	121,000
	Proceeds of Sales of Fixed Property	126,000	351,000
	Profit on Redemption of Investment	243,000	230,000
	Interest Earned on Investments	10,265,000	9,398,000
		R228,913,000	R215,114,000

We hereby certify that we are satisfied as to the correctness of the Accounts and Books of the Redemption Fund and as to the maintenance of the Fund at the amount required by the Schedule to the Electricity Act, 1958, subject to the remarks contained in our report dated 22nd April, 1968.

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

Electricity Supply Commission

Reserve Fund Account for the Year

Ended 31st December, 1967

<u>1966</u>		
R1,998,000	Expenditure during the year on Replacements and Betterment	R2,437,000
41,000	Cape Western Undertaking	R1,202,000
17,000	Cape Northern Undertaking	37,000
1,000	Cape Eastern Undertaking	—
292,000	Border Undertaking	68,000
631,000	Natal Undertaking	340,000
111,000	Eastern Transvaal Undertaking	23,000
905,000	Rand and Orange Free State Undertaking	767,000
68,270,000	Balance as per Balance Sheet	79,892,000
6,508,000	Cape Western Undertaking	6,424,000
1,754,000	Cape Northern Undertaking	2,124,000
1,000	Cape Eastern Undertaking	3,000
684,000	Border Undertaking	807,000
9,079,000	Natal Undertaking	10,889,000
5,636,000	Eastern Transvaal Undertaking	7,675,000
44,608,000	Rand and Orange Free State Undertaking	51,970,000
R70,268,000		R82,329,000

		<u>1966</u>
Balance brought forward	R68,270,000	R59,093,000
Cape Western Undertaking	R6,508,000	5,500,000
Cape Northern Undertaking	1,754,000	1,459,000
Cape Eastern Undertaking	1,000	1,000
Border Undertaking	684,000	801,000
Natal Undertaking	9,079,000	7,713,000
Eastern Transvaal Undertaking	5,636,000	4,184,000
Rand and Orange Free State Undertaking	44,608,000	39,435,000
Amounts set aside during the year as per revenue accounts	9,912,000	7,736,000
Cape Western Undertaking	726,000	726,000
Cape Northern Undertaking	300,000	224,000
Cape Eastern Undertaking	1,000	1,000
Border Undertaking	150,000	135,000
Natal Undertaking	1,600,000	1,550,000
Eastern Transvaal Undertaking	1,695,000	1,230,000
Rand and Orange Free State Undertaking	5,440,000	3,870,000
Interest earned on investments	4,144,000	3,431,000
Profit on redemption of investments	3,000	8,000
	R82,329,000	R70,268,000

Johannesburg,
29th March, 1968

J. A. BOTHMA, *Chief Accountant.*

Electricity Supply Commission

Cape Western

Undertaking

Revenue Account for the Year

Ended 31st December, 1967

1966		
R6,076,000	Generation	R6,998,000
	Operation—	
4,749,000	Fuel.....	R5,525,000
108,000	Water and Stores.....	118,000
462,000	Salaries and Wages.....	550,000
90,000	Other Expenses.....	96,000
	Maintenance—	
74,000	Stores.....	78,000
506,000	Salaries and Wages.....	525,000
87,000	Other Expenses.....	106,000
202,000	Purchase of Electricity	161,000
1,059,000	Distribution	1,231,000
	Operation and Maintenance—	
99,000	Stores.....	138,000
778,000	Salaries and Wages.....	887,000
182,000	Other Expenses.....	206,000
1,436,000	General Expenses	1,679,000
485,000	Local Administration and Technical Management.....	527,000
733,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.).....	925,000
123,000	Head Office Administration Expenses.....	118,000
95,000	Head Office Engineering Expenses.....	109,000
6,068,000	Capital Charges	7,260,000
3,273,000	Interest.....	4,016,000
1,898,000	Redemption Fund.....	2,339,000
171,000	Instalments and Provision for Repayment of Overseas Loans.....	179,000
726,000	Reserve Fund.....	726,000
R14,841,000		R17,329,000
R275,000	Balance brought down.....	R524,000
R275,000	Balance brought forward.....	6,000
		R530,000

		1966
Sales of Electricity	R16,732,000	R14,523,000
Traction Supplies.....	R3,911,000	3,676,000
Bulk Supplies.....	3,016,000	2,672,000
Industrial Supplies.....	6,410,000	5,183,000
Domestic and Lighting Supplies.....	3,395,000	2,992,000
Other Revenue	73,000	43,000
Balance carried down.....	16,805,000	14,566,000
	524,000	275,000
	R17,329,000	R14,841,000
Balance brought forward.....	—	R269,000
Balance as per Balance Sheet.....	R530,000	6,000
	R530,000	R275,000

Johannesburg,
29th March, 1968

J. A. BOTHMA, *Chief Accountant.*

Referred to in our Report of 22nd April, 1968.

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

Electricity Supply

Commission

ACCOUNT No. 4

Cape Northern

Undertaking

Revenue Account for the Year

Ended 31st December, 1967

1966		R2,200,000
R1,856,000	Generation	
1,493,000	Proportion of Pooled Costs of Rand and Orange Free State and Eastern Transvaal Undertakings.....	R1,954,000
198,000	Proportion of Transmission Costs charged by Rand and Orange Free State Undertaking.....	246,000
52,000	Operation—	
8,000	Fuel.....	
53,000	Water and Stores.....	
10,000	Salaries and Wages.....	
1,000	Other Expenses.....	
38,000	Maintenance—	
3,000	Stores.....	
157,000	Salaries and Wages.....	
28,000	Other Expenses.....	
92,000	Distribution	252,000
37,000	Operation and Maintenance—	
222,000	Stores.....	42,000
79,000	Salaries and Wages.....	165,000
78,000	Other Expenses.....	45,000
37,000	General Expenses	250,000
28,000	Local Administration and Technical Management.....	94,000
1,587,000	General Expenses (including Stores Expenses, Rates, Insurances, Pension Fund Contributions, etc.).....	94,000
882,000	Head Office Administration Expenses.....	32,000
481,000	Head Office Engineering Expenses.....	30,000
224,000	Capital Charges	1,881,000
3,822,000	Interest.....	1,041,000
58,000	Redemption Fund.....	540,000
	Reserve Fund.....	300,000
	Balance carried down.....	4,583,000
R3,880,000		R4,583,000
—	Balance brought down.....	R20,000
R1,136,000	Balance as per Balance Sheet.....	1,116,000
R1,136,000		R1,136,000

Johannesburg,
29th March, 1968.

J. A. BOTHMA, *Chief Accountant.*

	R4,554,000	1966 R3,871,000
Sales of Electricity		
Traction Supplies.....	R998,000	428,000
Bulk Supplies.....	851,000	811,000
Mining Supplies.....	1,953,000	1,893,000
Industrial Supplies.....	542,000	538,000
Domestic and Lighting Supplies.....	210,000	201,000
Other Revenue	9,000	9,000
Balance carried down.....	20,000	—
	R4,583,000	R3,880,000
Balance brought forward.....	R1,136,000	R1,078,000
Balance brought down.....	—	58,000
	R1,136,000	R1,136,000

Referred to in our Report of 22nd April, 1968.

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

Electricity Supply Commission

Cape Eastern

Undertaking

Revenue Account for the Year

Ended 31st December, 1967

<u>1966</u>		
R25,000	Electricity Purchased.....	R32,000
8,000	Distribution.....	17,000
1,000	Operation and Maintenance—	
4,000	Stores.....	R2,000
3,000	Salaries and Wages.....	10,000
	Other Expenses.....	5,000
11,000	General Expenses.....	12,000
4,000	Local Administration and Technical Management.....	3,000
6,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund, Contributions, etc.).....	8,000
1,000	Head Office Administration Expenses.....	1,000
41,000	Capital Charges.....	49,000
28,000	Interest.....	34,000
12,000	Redemption Fund.....	14,000
1,000	Reserve Fund.....	1,000
<u>R85,000</u>		<u>R110,000</u>
R6,000	Balance brought down.....	R11,000
1,000	Balance brought forward.....	7,000
<u>R7,000</u>		<u>R18,000</u>

Johannesburg,
29th March, 1968.

J. A. BOTHMA, *Chief Accountant*

		<u>1966</u>
Sales of Electricity.....	R98,000	<u>R79,000</u>
Bulk Supplies.....	R21,000	20,000
Industrial Supplies.....	38,000	28,000
Domestic Supplies.....	39,000	31,000
Other Revenue.....	1,000	—
	<u>99,000</u>	<u>79,000</u>
Balance carried down.....	11,000	6,000
	<u>R110,000</u>	<u>R85,000</u>
Balance as per Balance Sheet.....	R18,000	R7,000
	<u>R18,000</u>	<u>R7,000</u>

Referred to in our Report of 22nd April, 1968.

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

Electricity Supply Commission

Border Undertaking

Revenue Account for the Year

Ended 31st December, 1967

1966		R1,539,000
R1,436,000	Generation	R1,539,000
	Operation—	
998,000	Fuel.....	R1,073,000
13,000	Water and Stores.....	17,000
202,000	Salaries and Wages.....	217,000
18,000	Other Expenses.....	20,000
	Maintenance—	
43,000	Stores.....	42,000
139,000	Salaries and Wages.....	150,000
23,000	Other Expenses.....	20,000
166,000	Distribution	196,000
	Operation and Maintenance—	
16,000	Stores.....	18,000
118,000	Salaries and Wages.....	142,000
32,000	Other Expenses.....	36,000
237,000	General Expenses	301,000
98,000	Local Administration and Technical Management.....	118,000
115,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.).....	138,000
14,000	Head Office Administration Expenses.....	24,000
10,000	Head Office Engineering Expenses.....	21,000
1,116,000	Capital Charges	1,356,000
639,000	Interest.....	796,000
342,000	Redemption Fund.....	410,000
135,000	Reserve Fund.....	150,000
2,955,000		3,392,000
101,000	Balance carried down.....	—
R3,056,000		R3,392,000
R14,000	Balance brought down.....	R58,000
87,000	Balance as per Balance Sheet.....	29,000
R101,000		R87,000

	R3,325,000	1966 R3,052,000
Sales of Electricity	R3,325,000	R3,052,000
Bulk Supplies.....	R2,556,000	2,364,000
Industrial Supplies.....	411,000	362,000
Domestic and Lighting Supplies.....	358,000	326,000
Other Revenue	9,000	4,000
Balance carried down.....	58,000	—
	R3,392,000	R3,056,000
Balance brought down.....	—	R101,000
Balance brought forward.....	R87,000	—
	R87,000	R101,000

Johannesburg,
29th March, 1968

J. A. BOTHMA, *Chief Accountant.*

Referred to in our Report of 22nd April, 1968.

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

Electricity Supply Commission

Natal

Undertaking

Revenue Account for the Year

Ended 31st December, 1967

1966		R12,438,000
R11,780,000	Generation	
	Operation—	
8,997,000	Fuel	R9,359,000
288,000	Stores	306,000
952,000	Salaries and Wages	1,028,000
234,000	Other Expenses	250,000
	Maintenance—	
387,000	Stores	465,000
859,000	Salaries and Wages	894,000
63,000	Other Expenses	136,000
18,000	Electricity Purchased	7,000
1,000	Electricity Supplied by Rand and Orange Free State Undertaking	
1,313,000	Distribution	1,288,000
	Operation and Maintenance—	
298,000	Stores	254,000
750,000	Salaries and Wages	779,000
265,000	Other Expenses	255,000
1,615,000	General Expenses	1,821,000
565,000	Local Administration and Technical Management	672,000
687,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	783,000
206,000	Head Office Administration Expenses	191,000
157,000	Head Office Engineering Expenses	175,000
10,220,000	Capital Charges	11,327,000
5,459,000	Interest	6,146,000
2,908,000	Redemption Fund	3,266,000
303,000	Instalments and Provision for Repayment of Overseas Loans	315,000
1,550,000	Reserve Fund	1,600,000
24,947,000	Balance carried down	26,881,000
792,000		219,000
R25,739,000		R27,100,000
R1,845,000	Balance as per Balance Sheet	R2,064,000
R1,845,000		R2,064,000

	R26,966,000	1966 R25,617,000
Sales of Electricity		
Traction Supplies	R4,015,000	3,974,000
Bulk Supplies	16,123,000	14,926,000
Mining Supplies	989,000	910,000
Industrial Supplies	4,716,000	4,763,000
Domestic and Lighting Supplies	1,123,000	1,044,000
Other Revenue	134,000	122,000
Balance brought forward	R27,100,000	R25,739,000
Balance brought down	R1,845,000	R1,053,000
	219,000	792,000
	R2,064,000	R1,845,000

Johannesburg,
29th March, 1968.

J. A. BOTHMA, *Chief Accountant.*

Referred to in our Report of 22nd April, 1968.

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

Electricity Supply Commission

Eastern Transvaal

Undertaking

Revenue Account for the Year

Ended 31st December, 1967

<u>1966</u>		<u>R8,998,000</u>
R7,478,000	GENERATION	R8,998,000
7,474,000	Proportion of Pooled Costs.....	R8,993,000
	(Statement attached)	
	Other Operation and Maintenance Costs—	
	Operation—	
2,000	Salaries and Wages.....	2,000
1,000	Other Expenses.....	1,000
	Maintenance—	
1,000	Salaries and Wages.....	2,000
275,000	Electricity supplied by Rand and Orange Free State Undertaking.....	299,000
547,000	Distribution	692,000
	Operation and Maintenance—	
69,000	Stores.....	83,000
354,000	Salaries and Wages.....	435,000
124,000	Other Expenses.....	174,000
531,000	General Expenses	638,000
315,000	Local Administration and Technical Management.....	383,000
555,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.).....	648,000
170,000	Head Office Administration Expenses.....	186,000
129,000	Head Office Engineering Expenses.....	172,000
1,169,000		1,389,000
638,000	Less charged to Pooled Costs.....	751,000
3,592,000	Capital Charges	4,306,000
6,340,000	Interest.....	7,175,000
2,837,000	Redemption Fund.....	3,237,000
722,000	Instalments and Provision for Repayment of Overseas Loans.....	710,000
1,230,000	Reserve Fund.....	1,695,000
11,129,000		12,817,000
7,537,000	Less Charged to Pooled Costs.....	8,511,000
12,423,000		14,933,000
433,000	Balance carried down.....	550,000
<u>R12,856,000</u>		<u>R15,483,000</u>
R1,166,000	Balance as per Balance Sheet.....	R1,716,000
<u>R1,166,000</u>		<u>R1,716,000</u>

Johannesburg,
29th March, 1968.

J. A. BOTHMA, *Chief Accountant.*

<u>1966</u>		<u>R15,385,000</u>
R12,764,000	Sales of Electricity	R15,385,000
1,474,000	Traction Supplies.....	R1,910,000
666,000	Bulk Supplies.....	878,000
4,842,000	Mining Supplies.....	5,576,000
5,339,000	Industrial Supplies.....	6,521,000
443,000	Domestic and Lighting Supplies.....	500,000
92,000	Other Revenue	98,000
158,000	Other Revenue.....	182,000
66,000	Less Credited to Pooled Costs.....	84,000
<u>R12,856,000</u>		<u>R15,483,000</u>
R733,000	Balance brought forward.....	R1,166,000
433,000	Balance brought down.....	550,000
<u>R1,166,000</u>		<u>R1,716,000</u>

Referred to in our Report of 22nd April, 1968.

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

Electricity Supply Commission

Rand and Orange Free State Undertaking

Revenue Account for the Year Ended 31st December, 1967

1966		1966
R54,842,000	Generation	R60,995,000
54,474,000	Proportion of Pooled Costs (Statement attached)	R60,995,000
85,000	Other Operation and Maintenance Costs—	
22,000	Operation—	
112,000	Fuel	
2,000	Water and Stores	
18,000	Salaries and Wages	
127,000	Other Expenses	
2,000	Maintenance—	
3,046,000	Stores	3,122,000
692,000	Salaries and Wages	725,000
2,451,000	Other Expenses	2,569,000
197,000		175,000
3,340,000		3,469,000
96,000	Less charged to:—	
198,000	Pooled Costs (Interconnector)	101,000
	Cape Northern Undertaking	246,000
1,392,000		
1,060,000	General Expenses	1,599,000
1,989,000	Local Administration and Technical Management	1,282,000
365,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	2,302,000
279,000	Head Office Administration Expenses	480,000
3,693,000	Head Office Engineering Expenses	442,000
2,301,000		4,506,000
12,238,000	Capital Charges	14,002,000
15,334,000	Interest	18,103,000
9,002,000	Redemption Fund	10,219,000
2,880,000	Instalments and Provision for Repayment of Overseas Loans	3,308,000
3,870,000	Reserve Fund	5,440,000
31,086,000		37,070,000
18,848,000	Less Charged to Pooled Costs	23,068,000
<u>R71,518,000</u>		<u>R79,718,000</u>
R2,086,000	Balance brought down	R301,000
<u>R2,086,000</u>	Balance brought forward	939,000
		<u>R1,240,000</u>

Johannesburg,
29th March, 1968.

J. A. BOTHMA, *Chief Accountant.*

1966		1966
R68,024,000	Sales of Electricity	R78,660,000
3,615,000	Traction Supplies	R3,899,000
10,435,000	Bulk Supplies	12,728,000
37,416,000	Mining Supplies	42,331,000
14,784,000	Industrial Supplies	17,486,000
1,774,000	Domestic and Lighting Supplies	2,216,000
1,079,000	Revenue from Air and Steam	414,000
69,103,000	Electricity Supplied to Undertakings	79,074,000
276,000	Eastern Transvaal Undertaking	299,000
275,000	Natal Undertaking	—
1,000	Other Revenue	44,000
255,000	Other Revenue	326,000
202,000	Less Credited to Pooled Costs	282,000
69,432,000	Balance carried down	79,417,000
2,086,000		301,000
<u>R71,518,000</u>		<u>R79,718,000</u>
R1,147,000	Balance brought forward	—
939,000	Balance as per Balance Sheet	R1,240,000
<u>R2,086,000</u>		<u>R1,240,000</u>

Referred to in our Report of 22nd April, 1968.

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

Electricity Supply Commission

Rand and Orange Free State and

Eastern Transvaal Undertakings

Statement of Pooled Costs and Allocation

for the Year Ended 31st December, 1967

1966		R36,857,000
R32,559,000	Generation	R36,857,000
	Operation—	
23,318,000	Fuel	R26,531,000
590,000	Water and Stores	891,000
3,153,000	Salaries and Wages	3,520,000
481,000	Other Expenses	473,000
	Maintenance—	
1,741,000	Stores	1,780,000
3,153,000	Salaries and Wages	3,518,000
123,000	Other Expenses	144,000
1,730,000	Electricity Purchased	113,000
96,000	Interconnector	101,000
	Operation and Maintenance—	
19,000	Stores	20,000
71,000	Salaries and Wages	76,000
6,000	Other Expenses	5,000
2,939,000	General Expenses	3,658,000
821,000	Local Administration and Technical Management	923,000
1,567,000	General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	1,944,000
551,000	Head Office Administration and Engineering Expenses	791,000
26,385,000	Capital Charges	31,579,000
13,134,000	Interest	15,127,000
7,076,000	Redemption Fund	7,937,000
3,338,000	Instalments and Provision for Repayment of Overseas Loans	3,750,000
2,837,000	Reserve Fund	4,765,000
<u>R63,709,000</u>		<u>R72,308,000</u>

Johannesburg,
29th March, 1968.

J. A. BOTHMA, *Chief Accountant.*

	R366,000	1966 R268,000
Sundry Revenue	R366,000	R268,000
Allocation	71,942,000	63,441,000
Rand and Orange Free State Undertaking	R60,995,000	54,474,000
Eastern Transvaal Undertaking	8,993,000	7,474,000
Cape Northern Undertaking	1,954,000	1,493,000
	<u>R72,308,000</u>	<u>R63,709,000</u>

Referred to in our Report of 22nd April, 1968.

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

Electricity Supply Commission

ANNEXURE B

POWER STATIONS: PRINCIPAL EQUIPMENT INSTALLED AS AT 31st DECEMBER, 1967

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 Thousand 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		6	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				
		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			
		3 320.0	330.3	18		12		1		
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 Thousand 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	2 700.0	300.0	3	900.0	3	100.0			
	Congella Nos. 1 & 2	Steam		36.0				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			
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		0.7			1	0.7				
			2.0			2	1.0				
Total.....			2.7			3					
Natal	Total.....		9 900.0	913.7	53		29				
Orange River (53 800) Orange River	Total	No Generating Plant									
Cape Northern (23 200) Cape Northern	Total	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			
160.0			8.0	2	80.0			1	8.0		
Total.....		1 560.0	128.0	22		6		1			
Sabie Gorge.....	Hydro		1.35			3	0.45				
Eastern Transvaal	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 Thousand lb./hr.	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Rand & O.F.S. (73 200)	Camden	Steam	5 400.0	800.0	3	1 800.0	4	200.0		
	Highveld	Steam	4 400.0	480.0	8	550.0	8	60.0		
	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	810.0 60.0 1 080.0	60.0 90.0	18 1 6	45.0 60.0 180.0	3 3 3	20.0 30.0		
	Total		1 950.0	150.0	25		6			
	Vierfontein	Steam	3 990.0	360.0	19	210.0	12	30.0		
Wilge	Steam	500.0		4	125.0					
		1 600.0 580.0	60.0 180.0	4 1	400.0 580.0	2 3	30.0 60.0			
Total		2 680.0	240.0	9		5				
Rand & O.F.S.	Total		30 980.0	3 252.0	115		64		7	7.0
	E.T.U. + R. & O.F.S.U. Total		41 540.0	4 381.35	148		82		8	
	Total all Escom	Oil Hydro Steam Steam		2.7			3			
			57 395.0	5 784.0 57.3	243		3 134		9	
			57 395.0	5 845.35	243		140		9	

MAJOR ITEMS OF PLANT COMMISSIONED IN 1967

Undertaking	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb./hr.	Generators MW	No.	Continuous Maximum Rating Each Thousand lb./hr.	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Border	West Bank No. 2 . . .	Steam			1	210.0	1	20.0		
Cape Western	Salt River No. 2 . . .	Steam			4	260.0	2	60.0		
Natal	Ingagane	Steam			1	900.0	1	100.0		
Rand & O.F.S.	Camden	Steam			3	1,800.0	4	200.0		

**TRANSMISSION LINES AND CABLES: CIRCUIT MILES (EXCLUDING SERVICE CONNECTIONS
ON RETICULATION SYSTEMS) AT 31st DECEMBER, 1967.**

(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	150.94 61.06	658.21 114.61	—	4.97	—	98.20	1,120.02
Cape Eastern.....	—	150.00	603.83	—	317.36	—	—	163.70	763.61	—	—	—	30.00	175.67
Cape Northern.....	—	—	507.11	—	706.88	—	150.27	397.96	2,292.87	310.97	—	—	1,176.40	2,028.50
Cape Western.....	—	—	595.89	468.77	133.53	—	—	1,262.75	1,335.39	39.88	8.40	47.47	183.60	5,542.46
Eastern Transvaal.	—	332.03	321.11	980.49	—	—	343.52	34.07	2,610.51	288.86	1.55	0.95	451.86	4,327.84
Natal.....	—	—	—	—	—	—	—	76.73	—	—	—	—	—	5,364.95
Orange River.....	370.72	629.11	1,371.11	3,096.00	—	1,414.16	—	348.22	2,658.47	274.19	—	—	605.65	76.73
Rand & O.F.S.....	370.72	1,363.30	3,399.05	4,545.26	1,329.77	1,414.16	529.49	2,495.43	10,433.67	913.90	14.92	48.42	2,545.71	10,767.63
Totals.....														29,403.80

(b) UNDERGROUND CABLES

Border.....	—	—	—	—	—	—	—	0.01	27.59	—	2.34	—	7.81	37.75
Cape Eastern.....	—	—	—	—	—	—	—	—	1.58	—	—	—	9.39	9.39
Cape Northern.....	—	—	9.66	—	24.04	—	69.58	—	163.86	6.38	2.40	—	6.40	7.98
Cape Western.....	—	—	—	—	—	—	—	25.34	22.04	1.57	1.04	—	225.40	501.32
Eastern Transvaal.	—	—	—	1.17	—	—	4.89	—	91.22	8.12	0.32	0.11	85.05	135.15
Natal.....	—	—	—	—	—	—	—	—	88.74	237.64	—	0.01	44.93	150.66
Orange River.....	—	—	—	—	—	19.91	—	88.31	—	—	—	0.06	98.47	—
Rand & O.F.S.....	—	—	9.66	1.17	24.04	19.91	74.47	113.66	395.03	253.71	6.10	0.18	477.45	1,375.38
Totals.....														

CAPACITY OF TRANSFORMERS IN SERVICE AT 31st DECEMBER, 1967

Undertaking	Number	M.V.A.
Border.....	665	127.040
Cape Eastern.....	310	6.695
Cape Northern.....	1,332	867.750
Cape Western.....	5,685	1,580.918
Eastern Transvaal.....	3,719	2,840.892
Natal.....	4,018	2,946.510
Orange River.....	7	2.380
Rand & Orange Free State.....	9,184	20,219.149
Compressor Stations, Rand.....	43	336.720
TOTALS.....	24,963	28,928.054

STATEMENT No. 2

POWER STATIONS: PRINCIPAL EQUIPMENT ON ORDER AS AT 31st DECEMBER, 1966

Undertaking	Electric Power Station	Type	INCREASE IN STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousands lb./hr.	Generators MW	No.	Continuous maximum rating each. Thousands lb./hr.	No.	Normal rating each MW	No.	Normal rating each MW
Natal	Ingagane.....	Steam	900.0	100.0	2	900	2	100.0		
Rand & O.F.S.	Camden.....	Steam	9,000.0	800.0	5	1,800	4	200.0		
	Grootvlei.....	Steam	7,110.0	800.0	1	1,830	4	200.0		
					3	1,760				
	Hendrina.....	Steam	6,800.0	800.0	4	1,700	4	200.0		
	Arnot.....	Steam	7,932.0	1,050.0	3	2,644	3	350.0		
Border	Westbank No. 2.....		210.0	20.0	1	210	1	20.0		
Cape Western	Salt River No. 2.....		780.0	120.0			1	60.0		
Total.....			32,732.0	3,690.0		32,732		3,690.0		

UNITS SOLD BY UNDERTAKINGS TO ALL CONSUMERS DURING THE PAST FORTY 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	557.0	171.5	170.5			6.9		1,688.0
1937				94.0	684.5	1,349.9	210.6	189.4			7.2		2,535.6
1938				98.8	768.1	1,666.9	234.9	209.5			7.2		2,985.5
1939				106.5	767.7	2,193.2	266.2	233.7			6.4		3,573.7
1940				119.8	853.3	2,566.5	281.1	242.7			6.7		4,070.2
1941				136.2	862.6	2,675.9	302.4	270.3			6.6		4,254.0
1942				151.8	873.4	2,707.8	307.7	273.7			6.3		4,520.8
1943				145.7	849.1	2,669.1	312.4	293.4			5.9		4,275.6
1944				158.7	889.2	2,703.6	336.0	321.6			6.7		4,415.8
1945				165.9	830.7	2,643.0	333.2	348.8			6.6		4,706.1
1946				184.6	896.9	2,614.3	347.0	369.7			7.4	377.9	5,002.4
1947	56.2			198.6	887.7	2,547.2	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		2,185.7	7.3	435.1	5,576.9
1949	68.7			249.5	358.2		371.8	513.0		4,653.9	7.0		6,222.2
1950	79.9		53.9	271.9	378.5		406.5	561.8		5,151.8	6.3		6,910.6
1951	88.1		58.5	303.5	386.8		433.4	617.0		5,563.2	6.1		7,456.5
1952	97.7		61.3	341.2	425.0		454.0	655.6		6,039.6	6.1		8,080.6
1953	107.8		67.1	375.5	409.9		492.3	713.2		6,559.9	6.4		8,732.2
1954	118.2		70.7	436.2	270.5		532.5	777.7		7,465.2	5.6		9,676.6
1955	130.8		73.2	427.1	394.6		546.4	870.8		8,416.3	5.7		10,964.0
1956	139.1		78.7	585.1	505.9		595.4	957.7		9,151.6	6.0		12,019.5
1957	143.1		86.1	698.6	536.6		621.7	1,018.7		9,652.5	5.9		12,763.1
1958	152.9		115.2	826.0	584.1		616.1	1,104.1		10,200.6	3.0		13,602.2
1959	165.0		171.4	861.8	633.3		629.4	1,228.6		11,034.8			14,724.5
1960	172.3		185.2	871.6	762.0		649.3	1,409.0		12,044.8			16,094.1
1961	178.8		191.3	860.0	901.5		684.0	1,497.5		12,700.0			17,013.2
1962	188.6		224.9	945.0	1,012.2		731.0	1,589.5		13,429.8			18,121.0
1963	204.9		264.9	1,051.4	1,212.1		779.0	1,764.6		14,223.1			19,500.0
1964	228.8	0.4	311.4	1,163.9	1,553.6		—	—	2,922.1	15,067.3			21,247.5
1965	250.5	1.6	393.2	1,267.4	1,936.8		—	—	3,182.5	16,117.7			23,149.8
1966	272.4	2.5	442.4	1,367.0	2,408.2		—	—	3,498.5	16,566.6			24,557.6
1967	294.2	3.2	519.9	1,533.1	2,829.6		—	—	3,720.6	17,755.4	1.1		26,657.1

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, 1967

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.....	—	—	—	254,379,076	4.264	14	—	—	—
Cape Eastern.....	—	—	—	1,110,760	0.019	1	—	—	—
Cape Northern.....	104,586,562	5.341	3	122,019,250	2.045	10	215,715,163	1.885	62
Cape Western.....	368,452,295	18.817	7	334,333,722	5.604	33	—	—	—
Eastern Transvaal.....	251,281,605	12.834	7	150,348,145	2.520	18	1,026,816,317	8.974	75
Orange River.....	—	—	—	1,097,252	0.019	3	—	—	—
Natal.....	509,642,702	26.028	9	2,445,739,443	40.996	24	120,460,138	1.053	27
Rand & O.F.S.....	724,063,987	36.980	2	2,656,674,607	44.533	117	10,078,483,593	88.088	103
Total Electricity.....	1,958,027,151	100.000	28	5,965,702,255	100.000	220	11,441,475,211	100.000	267
Per cent of Total.....		7.345			22.379			42.921	

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	
19,583,687	0.291	415	20,229,513	3.594	3,667	294,192,276	1.103	4,096
1,051,421	0.016	62	1,025,637	0.182	292	3,187,818	0.012	355
65,175,334	0.968	290	12,406,132	2.205	2,137	519,902,441	1.951	2,502
602,466,782	8.953	4,992	227,819,095	40.476	41,247	1,533,071,894	5.751	46,279
1,370,514,505	20.367	1,585	30,661,727	5.448	4,526	2,829,622,299	10.614	6,211
10,110	0.001	1	—	—	—	1,107,362	0.005	4
575,852,579	8.557	2,469	68,917,504	12.245	13,727	3,720,612,366	13.957	16,256
4,094,417,679	60.847	1,621	201,775,636	35.850	17,593	17,755,415,502	66.607	19,436
6,729,072,097	100.000	11,435	562,835,244	100.000	83,189	26,657,111,958	100.000	95,139
	25.243			2.112			100.000	

Cape.....	456,378,237	23.308	9	735,734,724	12.333	58	214,850,523	1.877	58
Natal.....	476,900,206	24.356	7	2,392,441,923	40.103	18	120,460,138	1.053	27
O.F.S.....	50,195,287	2.563	2	349,940,645	5.866	51	2,791,692,926	24.400	19
Transvaal.....	974,553,421	49.773	10	2,487,584,963	41.698	93	8,314,471,624	72.670	163
Total.....	1,958,027,151	100.000	28	5,965,702,255	100.000	220	11,441,475,211	100.000	267

687,582,265	10.218	5,743	260,681,977	46.316	47,206	2,355,227,726	8.835	53,074
568,639,975	8.451	2,139	59,767,902	10.619	11,009	3,618,210,144	13.573	13,200
205,871,709	3.059	241	11,275,778	2.003	1,808	3,408,976,345	12.788	2,121
5,266,978,148	78.272	3,312	231,109,587	41.062	23,166	17,274,697,743	64.804	26,744
6,729,072,097	100.000	11,435	562,835,244	100.000	83,189	26,657,111,958	100.000	95,139

POWER STATION OPERATING

STATISTICS YEAR 1967

ELECTRICITY GENERATION

1—1 STEAM ELECTRIC Stations at 31/12/67—The number of Stations, those with separate Turbine Houses (i.e. not under same roof) are counted as two e.g. S.R.I.S. & 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	Nil	Nil	Station was	not operated	during 1967
West Bank Nos. 1 & 2	309,845,070	293,689,660	59,770	62,700	56.6
Total	309,845,070	293,689,660	59,770	62,700	56.6
Cape Western Undertaking					
Hex River	548,773,300	520,020,380	115,300	121,000	51.5
Salt River No. 1	87,837,710	82,235,380	65,200	70,000	14.4
Salt River No. 2	1,063,575,600	1,014,446,000	190,600	210,000	60.8
Total	1,700,186,610	1,616,701,760	—	—	—
Natal Undertaking					
Colenso Nos. 1 & 2	577,899,280	539,048,270	123,550	141,000	49.4
Congella Nos. 1 & 2	727,465,800	672,264,070	141,185	160,000	53.9
Ingagane	1,668,975,900	1,564,241,760	266,800	288,000	66.4
Umgeni	1,192,053,100	1,123,488,800	222,800	242,000	57.1
Total	4,166,394,080	3,899,042,900	—	—	—
Eastern Transvaal Undertaking					
Komati	6,913,998,980	6,440,819,201	919,853	—	79.9
Witbank	656,251,633	604,413,036	122,072	—	56.5
Total	7,570,250,613	7,045,232,237	—	—	—
Rand/O.F.S. Undertaking					
Arnot	2,202,417,369	2,057,158,945	572,169	—	(57.6)
Camden	—	—	—	—	—
Grootvlei	—	—	—	—	—
Hendrina	—	—	—	—	—
Highveld	3,249,226,440	3,043,922,147	463,861	—	74.9
Klip	2,218,838,857	2,058,717,905	398,743	—	58.9
Taaibos	3,248,684,665	3,010,538,824	457,737	—	75.1
Vaal	2,135,471,772	2,002,274,858	289,154	—	79.0
Vereeniging	560,418,381	512,997,155	135,435	—	43.2
Vierfontein	1,827,570,103	1,695,876,479	339,074	—	57.1
Wilge	1,232,359,264	1,134,709,795	212,069	—	61.1
Total	16,674,986,851	15,516,196,108	—	—	—
Total E.T.U. + R & O.F.S.U.	24,245,237,464	22,561,428,345	—	—	—
Total B.U. & C.W.U. + N.U.	6,176,425,760	5,809,434,320	—	—	—
Grand Total	30,421,663,224	28,370,862,665	—	—	—

Coal Burnt Tons (2,000 lb.)	LB OF COAL		Calorific Value of Coal B.Th.U. As Received (Wt. Avg.)	B.Th.U. PER UNIT		OVERALL THERMAL EFFICIENCY %	
	Per Unit Generated	Per Unit Sent Out		Generated	Sent Out	Gen.	Sent Out
202,028	1.304	1.376	11,470	14,960	15,780	22.8	21.6
202,028	1.304	1.376	11,470	14,960	15,780	22.8	21.6
312,948	1.14	1.20	11,320	12,905	13,584	26.4	25.1
35,442	1.68	1.82	11,626	19,532	21,159	17.47	16.13
588,718	1.04	1.09	11,626	12,091	12,672	28.22	26.93
937,108	Above corrected for interconnection		—	—	—	—	—
450,605	1.559	1.672	11,460	17,870	19,160	19.1	17.8
510,251	1.403	1.518	11,370	15,950	17,260	21.4	19.8
866,726	1.039	1.108	10,990	11,420	12,180	29.9	28.0
683,634	1.147	1.217	11,880	13,630	14,460	25.1	23.6
2,511,216	—	—	—	—	—	—	—
3,823,257	1.106	1.187	10,260	11,350	12,180	30.1	28.0
663,204	2.021	2.195	10,430	21,730	23,600	15.7	14.5
4,486,461	—	—	—	—	—	—	—
1,155,872	(1.050)	(1.124)	9,990	—	—	—	—
1,944,739	1.197	1.278	8,690	11,200	11,960	30.4	28.5
1,869,015	1.685	1.816	9,080	15,770	17,000	21.6	20.1
2,093,122	1.289	1.391	8,830	12,120	13,080	28.2	26.1
1,972,974	1.848	1.971	8,200	15,340	16,360	22.3	20.9
719,365	2.567	2.865	8,410	22,030	24,070	15.5	14.2
1,444,516	1.581	1.704	8,780	14,310	15,420	23.8	22.1
844,386	1.370	1.488	9,520	13,180	14,310	25.9	23.8
12,043,989	—	—	—	—	—	—	—
16,530,450	—	—	—	—	—	—	—
3,650,352	—	—	—	—	—	—	—
20,180,802	—	—	—	—	—	—	—

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.....	17,300	17,100	750	775	—	—	—
Sabie Falls.....	Nil		Nil		—	—	—
Totals.....	17,300	17,100	750	775	—	—	—

1.3 DIESEL ELECTRIC

Power Stations	Units Generated	Units Sent Out	Maximum Demands kW		Fuel Consumed		Lub. Oil Gal.
			½ Hour	2 Mins.	Total Lb.	Per kWh Sent Out	
King William's Town.....	Nil	Nil					
Port Shepstone.....	10,939	10,620	1,610	1,780	7,181	0.676	Nil
Totals.....	10,939	10,620	1,610	1,780	7,181	0.676	—

(3) GENERATION SUMMARY

	Units Generated	Units Sent Out	Coal Burnt
Electricity Total Units.....	30,421,663,224	28,370,862,665	20,180,802
	17,300	17,100	—
	10,939	10,620	—
Grand Total 1967.....	30,421,691,463	28,370,890,385	20,180,802
Total for 1966.....	27,395,479,555	25,528,081,820	18,720,084
Change on 1966 (Units or Tons).....	3,026,211,908	2,842,808,565	1,460,718
Per cent.....	11.05	11.14	7.80

POWER PURCHASED FROM OUTSIDE SOURCES IN 1967

Undertaking	Purchased from	Maximum demands	Units
Natal.....	Durban Navigation Collieries.....	248	512,208
Cape Western.....	Cape Town Municipality.....	34,500	32,892,650
Orange River.....	Aliwal North Municipality.....	510	1,307,300
Cape Eastern.....	Port Elizabeth Municipality (Aloes)....	1,280	3,623,533
	Port Elizabeth Municipality (Loerie) ...	192	90,152
Rand & O.F.S.....	Johannesburg Municipality.....	60,000	2,893,293
	Pretoria Municipality.....	34,000	28,285,375
Total units purchased			69,604,511
Total units sold—			26,657,111,958
Purchased as % of sales			2.61%

STATEMENT No. 7

WATER (OTHER THAN SEA WATER) CONSUMED BY POWER STATIONS FOR THE YEAR 1967

(Millions of Gallons)

Undertakings	Potable Water		Crude River Water		Water from Other Sources Including Boreholes, Dams and Sewerage	
	1966	1967	1966	1967	1966	1967
Border.....	27	32	—	—	—	—
Cape Northern.....	28	—	—	—	—	—
Cape Western.....	462	478	—	—	—	—
Natal Undertaking.....	883	927	1,317	1,690	—	—
Rand (including Komati and Witbank Power Stations).....	199	189	20,573	20,696	154	5

NOTE: Those figures include water blown down from cooling tower ponds and returned to source of supply.

STATEMENT No. 8

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 1967.

(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.....	R160,615.10
Servitudes acquired—capitalized payments amounting to.....	R3,978.88

Cape Northern Undertaking

Immovable property acquired for considerations amounting to.....	R50.00
Servitudes acquired—capitalized payments amounting to.....	R2,326.76

Cape Eastern Undertaking

Immovable property acquired for considerations amounting to.....	R14,300.00
Servitudes acquired—capitalized payments amounting to.....	NIL

Natal Undertaking

Immovable property acquired for considerations amounting to.....	R62,593.05
Servitudes acquired—capitalized payments amounting to.....	R26,394.14

Eastern Transvaal Undertaking

Immovable property acquired for considerations amounting to.....	R75,552.00
Servitudes acquired—capitalized payments amounting to.....	R1,456.20

Sabie

Immovable property acquired for considerations amounting to.....	R22,150.00
	(€11,075 0 0)

Border Undertaking

Immovable property acquired for considerations amounting to.....	R549,000.00
Servitudes acquired—capitalized payments amounting to.....	R212.00
Leases acquired for Annual Rentals amounting to.....	R73.20

Rand and O.F.S. Undertaking

Immovable property acquired for considerations amounting to.....	R306,717.58
Servitudes acquired—capitalized payments amounting to.....	R221,745.17
Leases acquired for Annual Rentals amounting to.....	R537,446.53

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

Power Station	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Brakpan.....	R 1.65	R 1.73	R 1.93	R 1.70	R 1.77	R 1.82	R 1.83	R —	R —	R —	R —
Colenso.....	2.87	2.97	3.17	3.12	3.11	3.36	3.48	3.37	3.77	3.91	3.90
Congella.....	3.43	3.58	3.82	3.79	3.75	3.91	3.59	3.25	3.42	3.56	3.64
Hex River.....	4.17	4.54	4.70	4.68	4.76	4.93	5.21	5.17	5.33	5.57	5.79
Highveld.....	—	—	1.33	1.45	1.60	1.53	1.55	1.66	1.62	1.64	1.77
Ingagane.....	—	—	—	—	—	—	2.27	2.26	2.46	2.52	2.52
Kimberley Central.....	3.40	3.59	3.83	3.78	3.75	3.90	4.12	4.10	4.07	4.24	—
Klip.....	1.73	1.79	1.82	2.09	2.14	2.13	2.04	2.02	2.17	2.49	2.64
King William's Town.....	4.84	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
Rosherville.....	1.87	1.92	2.04	1.86	1.90	2.08	2.13	2.15	2.19	2.49	—
Salt River.....	4.38	4.57	4.86	4.83	4.85	5.03	5.36	5.32	5.42	5.65	5.95
Taaibos.....	0.76	0.84	0.93	1.83	1.98	1.75	1.70	1.58	1.56	1.65	1.78
Umgeni.....	3.49	3.72	4.05	4.04	4.01	4.28	4.37	4.32	4.54	4.82	5.09
Vaal.....	0.73	0.73	0.74	0.79	0.93	0.95	1.03	1.04	1.04	1.09	1.16
Vereeniging.....	0.92	0.98	0.91	0.87	0.96	1.02	1.07	1.05	1.06	1.32	1.29
Vierfontein.....	1.10	1.23	1.23	1.50	1.56	1.46	1.43	1.42	1.55	1.68	1.65
West Bank.....	4.17	4.39	4.66	4.61	4.59	4.77	5.02	5.01	5.10	5.22	5.31
Wilge.....	0.89	0.91	0.97	0.90	0.94	0.97	0.95	0.96	0.99	1.09	1.31
Witbank.....	1.03	1.05	1.11	1.06	1.05	1.14	1.15	1.16	1.27	1.37	1.36
Camden.....	—	—	—	—	—	—	—	—	—	—	1.81

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								
1926		61.35					1,376.4			
1927		121.35					1,516.9			
1928	1,399,678	175.65	1,422.2	2,109.6	1,934.9	67.4	1,694.2	633	1,411.4	
1929	1,575,492	194.65	1,516.7	2,300.1	2,086.1	66.0	1,807.4		1,560.5	
1930	16,167,114	215.65	1,766.3	2,453.7	2,166.4	72.0	2,126.8	688	1,632.4	
1931	16,591,164	215.65	1,857.4	N.A.	2,237.2	—	N.A.	688	1,689.5	
1932	16,823,332	227.65	2,028.7	N.A.	2,388.0	—	N.A.	645	1,814.2	
1933	17,275,780	247.65	2,246.4	2,946.6	2,542.0	76.2	2,462.2	678	1,929.0	
1934	18,786,190	287.65	2,525.9	3,308.6	2,831.3	76.3	2,853.9	706	2,140.3	
1935	22,980,968	307.65	2,848.4	3,772.5	3,152.3	75.5	3,246.2	778	2,414.9	
1936	27,103,556	486.843	3,406.7	4,602.9	3,584.3	74.0	3,767.9	862	2,820.6	
1937	30,563,380	519.843	3,980.6	5,336.0	3,844.2	74.6	4,361.3	1,024	3,238.5	
1938	34,296,968	623.346	4,452.8	5,933.0	4,176.4	75.1	4,898.2	1,097	3,639.7	
1939	36,645,076	737.656	4,740.7	6,574.3	4,409.2	72.1	5,453.4	1,100	4,095.6	
1940	38,661,664	770.631	5,098.3	7,167.8	4,626.0	71.1	6,121.9	1,189	4,516.9	
1941	40,808,068	771.300	5,444.9	7,592.1	4,254.0	71.7	6,504.7	N.A.	4,833.5	
1942	43,762,646	770.551	5,798.5	7,798.5	5,111.9	71.0	6,767.7	N.A.	4,920.0	
1943	46,573,506	795.456	5,404.0	7,699.8	4,977.6	70.2	6,638.4	1,238	4,795.8	
1944	48,036,044	796.856	5,597.8	8,042.9	5,164.2	69.6	6,919.7	1,328	4,970.5	
1945	49,913,496	862.856	5,748.7	8,328.5	5,309.2	69.0	7,142.4	1,531	5,101.1	
1946	52,852,490	975.690	5,895.6	8,556.9	5,321.9	68.9	7,338.3	1,836	5,218.8	
1947	57,649,694	1,033.190	6,035.9	8,787.8	6,000.3	68.7	7,493.6	2,169	5,341.7	
1948	90,815,886	1,385.071	6,553.5	9,480.7	6,126.0	69.1	8,089.2	2,692	5,787.0	
1949	100,234,082	1,411.985	7,075.3	10,013.3	6,365.6	70.7	8,829.0	8,764		
1950	115,128,520	1,439.895	7,773.6	11,187.0	6,970.4	69.5	9,749.8	9,352		
1951	137,283,154	1,520.590	8,326.6	11,895.0	7,344.8	70.0	10,473.9	10,336		
1952	176,559,102	8,778.0	8,778.0	12,517.0	7,841.1	70.1	8,080.6	10,889		
1953	218,739,074	1,806.070	9,442.0	13,744.0	8,150.3	68.7	8,732.2	11,518		
1954	270,621,248	2,051.010	10,651.9	15,184.0	8,846.0	70.2	9,676.6	12,317		
1955	304,341,966	2,377.721	12,214.5	17,172.0	9,920.5	71.1	10,964.0	12,490		
1956	342,068,024	2,734.871	13,578.4	18,535.0	10,679.8	73.2	12,019.5	12,977		
1957	377,265,178	2,826.700	14,388.1	19,954.0	11,266.2	73.4	12,763.1	13,421		
1958	417,700,898	3,036.550	15,582.6	20,133.0	11,887.4	77.4	13,602.2	14,312		
1959	453,130,370	3,289.450	16,926.5	21,165.0	12,730.3	80.0	14,724.5	13,947		
1960	491,471,208	3,408.950	18,543.3	22,561.0	13,792.8	82.2	16,094.1	14,654		
1961	529,565,151	3,558.950	19,575.4	24,365.0	14,544.8	79.7	17,013.2	15,441		
1962	581,579,266	3,758.950	20,805.5	26,105.0	15,383.3	79.7	18,121.0	16,467		
1963	637,076,261	4,175.950	22,312.4	27,828.0	16,227.2	80.2	19,500.0	16,804		
1964	679,192,772	4,499.600	24,353.3	30,422.0	17,256.3	80.1	21,247.5	17,172		
1965	741,109,317	4,624.750	26,440.4	32,772.0	18,438.1	80.7	23,143.3	17,851		
1966	840,781,679	4,806.350	27,395.5	34,759.0	18,720.1	78.8	24,554.3	18,579		
1967	930,862,731	5,845.350	30,421.7	37,869.0	20,180.8	80.3	26,657.1	19,817		