

A section of the 400 kV transmission line from the Eastern Transvaal to the Western Cape Province, crossing the Karoo near Beaufort West. The picture is a reproduction of an original oil painting by A. C. Mossman of Escom's Drawing Office at Escom Centre.

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ELECTRICITY SUPPLY COMMISSION

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

6th May, 1970

Sir,

As required by Section 19 of the Electricity Act, 1958, the Commission has the honour to present its forty-seventh Annual Report and Accounts covering its work for the financial year ended 31st December, 1969.

INTRODUCTION

One of the most significant events in power supply in South Africa since the establishment of Escom in 1922, took place on the 7th October, 1969, when electricity generated in the power stations on the Eastern Transvaal coalfields flowed into the Cape Western Undertaking System at the Droërivier Distribution Station near Beaufort West.

This was an important step towards the final stages of the establishment of a national grid.

This grid will in the early seventies be extended to Natal, the Eastern Cape, to Port Elizabeth and East London. Within the next ten years it will be developed into an international grid which will span the sub-continent of Southern Africa from Mozambique in the north to the Western Cape in the south including Lesotho and Swaziland in the centre.

A second event of far-reaching importance was the signing of the contracts, after negotiations extending over three years, for the building of the Cabora-Bassa hydro-electric scheme on the Zambesi River in Mozambique.

As a result of this collaboration, South Africa will for the first time in its history obtain power from a source outside its borders. The damming of the waters of the Zambesi at Cabora-Bassa will create a power potential of 4,000 MW of which Escom will take 680 MW in 1975 increasing to 1470 MW by 1980. This power will be purchased in accordance with a long-term contract, at a price comparable to that which Escom would incur in generating power in the Republic. Although the amount of power imported will be considerable it will represent less than 8 per cent of Escom's own generating capacity.

This policy of interstate co-operation in power generation was taken a stage further at discussions at Government level between the Republic and Lesotho in connection with the Ox-Bow project. Although the project will principally be a water supply scheme, small quantities of power could be generated and fed into the Natal system.

Of greater importance is the possibility of constructing a large steam power station on a coal field at Big Bend in Swaziland. This scheme would be economical if Escom is prepared to purchase the greater portion of the power generated.

As a result of its extensive coal fields the Eastern Transvaal has become the power region of South Africa. Here, Escom has in operation two power stations, Camden and Komati, with a combined capacity of 2,600 MW, while two more, Hendrina Power Station (2,000 MW) and the Arnot Power Station (2,100 MW), are under construction.

A contract has recently been placed for the supply of coal to a new power station, named Kriel Power Station, which will be constructed about halfway between Ogies and Bethal. This power station is being planned for a total installed capacity of 3,000 MW consisting of six turbo-generators of 500 MW each. The first set is to be in operation by September, 1975, with one set following each succeeding year.

The Camden Power Station near Ermelo was completed to its full complement of eight 200 MW sets in the record period of seven and a half years. In view of the fact that Escom's sales of electricity increased by 9.1 per cent during 1969 and that the average growth rate over the last three years exceeded 8.4 per cent per annum, Camden's contribution to Escom's power potential is of great importance. In addition, the first two turbo-generator sets at the Grootvlei Power Station between Balfour and Villiers came into operation on schedule during the second half of 1969.

South Africa's late entry into the nuclear power field is mainly due to the relatively cheap coal in the Eastern Transvaal. However, in the regions such as the Western Cape remote from these coal fields, due to the high cost of railage, coal costs are about five times those at a power station in the Eastern Transvaal making a nuclear power station feasible for these areas.

Escom is installing a high voltage transmission system to the Western Cape and by the end of the nineteen seventies this transmission system will be operating to its maximum safe capacity. When the costs of further extension of the transmission system are taken into account, the establishment of a nuclear power station becomes an economic proposition, and the first nuclear power station will probably be in operation by 1978 on a site to the north of Cape Town.

Suitable sites for other similar stations have been and are being investigated.

In the development of the Republic's hydro-electric resources, Escom has co-operated with the Department of Water Affairs in planning a number of hydro-electric power stations. The largest of these is the hydro station at present under construction at the Hendrik Verwoerd Dam, which is part of the Orange River irrigation project. This station is planned for an installed capacity of 160 MW but investigations are in hand to see whether this can be extended to 320 MW. Hydro power from the Republic's own water resources will, however, contribute only a small part of its power output.

Escom's proportion of the total units generated in the Republic amounted to 81 per cent during the year under review. Now that the future growth of the cities of Johannesburg and Port Elizabeth are to be provided for by Escom rather than by extensions to their own municipal power stations, this figure will increase.

South West Africa has been included in the development plans for the sub-continent. Escom, as official agents and consultants to the S.W.A. Water and Electricity Corporation (Pty.) Limited, is assisting with the establishment of an electricity undertaking in the territory.

A steam power station called Van Eck Power Station is being constructed three miles to the north of Windhoek. An interesting feature of this station is the use of the direct dry cooling system as compared to the indirect dry cooling system under construction at Grootvlei Power Station. Contracts have been placed for the construction of a 220 kV transmission system from this power station to Tsumeb in the north and Walvis Bay in the west. At a later date this power scheme will be reinforced by a 320 MW hydro-electric power station to be built on the Cunene River on the Angola Border at the site of the Ruacana Falls. The power potential of the Cunene River from the Ruacana Falls to the sea is considerable, being in excess of 2,000 MW. The harnessing of this source of power will act as a catalyst to the development of the country and its vast mineral resources. The linking of this scheme with the Republic's national grid is a possibility but no such plans have yet been formulated.

SALES OF ELECTRICITY

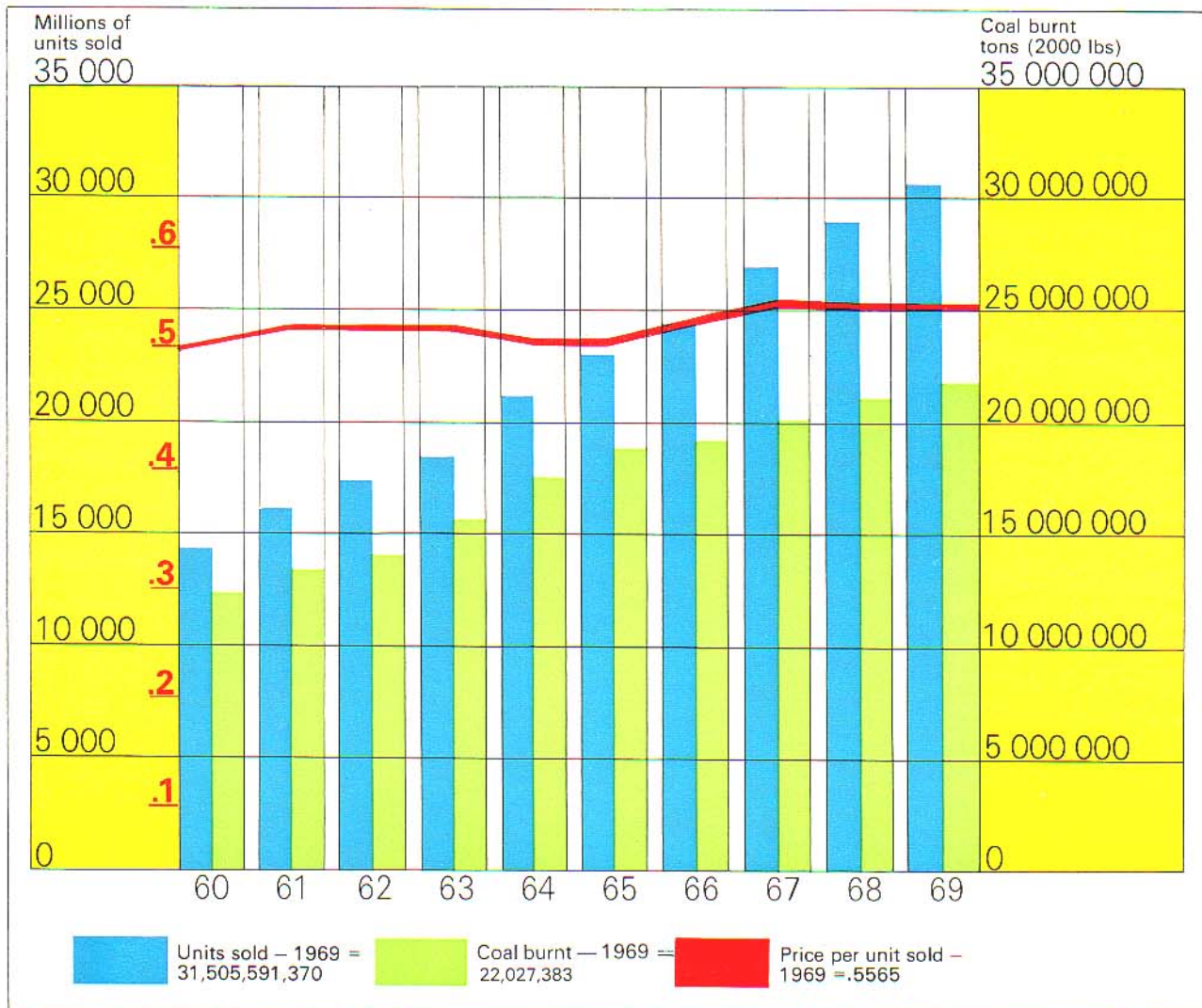
Escom's total sales of electricity during the year 1969 amounted to 31,506 million units reflecting an increase of 9.1 per cent for the year. This is higher than the growth rate of 8.4 per cent for the year 1968, or the ten-year average of 7.9 per cent. The average annual increase in units sold over the last five-year period amounted to 8.7 per cent per annum.

Although the mining industry continued to be the largest consumer purchasing 40.1 per cent of all units sold, the industrial sector reflected the greatest percentage increase and increase in units purchased,

sales to industrial consumers being 8,574 million units or 15.3 per cent higher than during 1968.

Bulk supplies to municipalities increased by 9.6 per cent. A considerable proportion of bulk supplies to municipalities is resold to industrial consumers in the municipal areas.

The growth of Escom's sales over the ten-year period from 1960 to 1969, inclusive, together with the total coal burnt and the average price per unit sold is depicted in the diagram below.



The average figure of 0.5565 cent per unit sold during 1969 is practically the same as the corresponding figure for 1968.

The cost per unit sold during the year 1969, amounted to 0.5566 cents per unit which compares

favourably with last year's costs.

The figures represented in the above diagram are the average for all undertakings. The prices for individual undertakings and for different classes of consumers in each undertaking are given in the section of this report relating to the undertakings.

SALES OF ELECTRICITY TO THE MAIN CONSUMER CATEGORIES

The total sales of electricity for the year 1969 in the main categories of supply, with the corresponding figures for 1968 and the rate of increase during the

year under review are shown in the following table:—
The final column reflects the average rate of growth over the ten-year period from 1960 to 1969.

	1968	1969	Increase %	Average Annual Increase in 10 Years %
<i>Bulk Supplies:</i>				
Municipalities	6 628 142 539	7 263 525 063	9·6	9·0
<i>Direct Supplies:</i>				
Traction	2 180 669 890	2 307 011 643	5·8	10·0
Mining	11 995 475 631	12 641 947 564	5·4	5·0
Industrial	7 438 860 906	8 573 769 566	15·3	12·1
Domestic	631 666 181	708 458 537	12·2	12·3
Street Lighting	10 193 398	10 878 997	6·7	7·2
Total	<u>28 885 008 545</u>	<u>31 505 591 370</u>	<u>9·1</u>	<u>7·9</u>

Growth of Industrial Activity

Industrial consumers maintained their high rate of growth during the year, sales increasing by 15.3 per cent above the 1968 level. These consumers maintained an average growth rate of 12.1 per cent during the whole of this decade.

Escom's figures for industrial supplies do not represent a complete picture, since they do not include either supplies of electricity furnished to industrial consumers by municipalities, or supplies generated by industrial undertakings themselves, but they do give a broad picture of industrial development.

While the mining industry remains the major consumer of electricity generated by Escom, its relative importance is constantly declining in favour

of industrial supplies as shown in the following table:—

Year	Percent of Total Sales	
	Mining	Industrial
1964	46.5	23.0
1965	44.5	24.6
1966	43.9	24.8
1967	42.9	25.2
1968	41.5	25.8
1969	40.0	27.0

The iron, steel and base metal industries as well as the building industry continue to show the highest rate of increase.

Sales by Escom to the main categories of industry (millions of units) are given in the table below:—

	Unit Sold (millions)				
	1965	1966	1967	1968	1969
Building and Cement (Including quarrying)	508	530	562	646	716
Chemical (Including pharmaceutical)	1 023	1 098	1 214	1 241	1 272
Engineering (Including the Motor Industry)	393	415	544	562	535
Foodstuffs, Consumer Goods and Commercial	751	935	1 022	1 111	1 088
Iron, Steel and Base Metals	2 326	2 435	2 680	2 967	3 672
Paper and Paper Products	267	416	469	493	542
Other	395	240	238	419	749
Total	<u>5 663</u>	<u>6 069</u>	<u>6 729</u>	<u>7 439</u>	<u>8 574</u>

Expansion of Mining Activity

Sales to all classes of mining consumers reflected an increase of 5·4 per cent during the year under review,

the increase in sales during the last five years being given in the following table:—

	Units Sold (millions)				
	1965	1966	1967	1968	1969
Gold Mining (Including Uranium)	9 345	9 490	9 946	10 339	10 646
Coal Mines	365	412	453	480	495
Diamond, Platinum and other Mines	634	910	1 024	1 176	1 500

Sales to the gold mines increased by only 3·0 per cent during the year as compared with 3·9 per cent during 1968.

This was partly due to the decrease in production in the old gold mining areas of the Witwatersrand, consumption of electricity decreasing by 6·2 per cent during the year.

A feature of the mining sales is the large increase in consumption of electricity by the platinum mines in the Rustenburg area. Sales to these consumers increased by 72 per cent during 1969 to 652 million units.

In the Eastern Transvaal the Chrome Mines of S.A. Ltd. reflected a large percentage increase while the largest consumer in this area, the Palabora Mining Company increased its consumption by 10 per cent to 282 million units during the year.

There have been considerable percentage increases in sales to diamond mines in the Cape Northern Undertaking, but sales in units to these mines are relatively small.

On the other hand, increase in production in the Klerksdorp district resulted in sales to these consumers rising by 9·6 per cent, while sales in the Barberton and Kinross/Leslie areas of the Eastern Transvaal increased by 5·3 per cent during 1969.

Sales to the gold mines in various areas over the last five-year period are given in the following table:—

Units Sold (millions)

**1968/1969
Increase**

1965

1966

1967

1968

1969

%

Witwatersrand	2 663	2 491	2 492	2 329	2 186	-6.2
Klerksdorp	1 560	1 702	1 851	1 987	2 177	9.6
Far West Rand	2 193	2 271	2 410	2 639	2 758	4.5
Orange Free State	2 534	2 538	2 700	2 804	2 913	3.9
Eastern Transvaal	389	430	493	580	611	5.3
Totals	9 339	9 432	9 946	10 339	10 645	3.0

Electrification of the Railways

Supplies purchased by the South African Railways for traction purposes increased by 5·8 per cent to 2,307 million units in 1969, as compared with an increase of 11·4 per cent during the previous year.

The main development took place in Natal Undertaking. Five additional traction substations were connected during the year in the Bethlehem area of the Orange Free State. On the north coast of Natal, two additional substations were brought into operation while five are planned in the Richards Bay area in the new year.

Supplies were also made available to the S.A.R. for four crude oil pumping stations in Natal.

Traction supplies in the Cape Northern Undertaking increased by 10·9 per cent during the year, the increased demand being due to a step-up in building and industrial activity.

The table headed Traction Sales in column two gives the sales to the South African Railways in each Undertaking.

TRACTION SALES

Undertaking	Units Sold (millions)		Per cent Increase
	1968	1969	
Cape Northern	161·8	179·5	10·9
Cape Western	391·3	397·0	1·5
Eastern Transvaal	269·9	270·2	0·1
Natal	580·1	667·9	15·1
Rand and O.F.S.	777·5	792·4	1·9

Purchases and Sales Outside the Republic

The following table lists the sales of electricity made across the borders of the Republic during the year:—

	1968	1969
Lesotho	4,121,054	7,275,983
Mozambique	—	114,600

A supply was made available to the Portuguese Border village of Ressano Garcia on the 29th July, 1969, while Escom continued to supply the Government of Lesotho at Maseru.

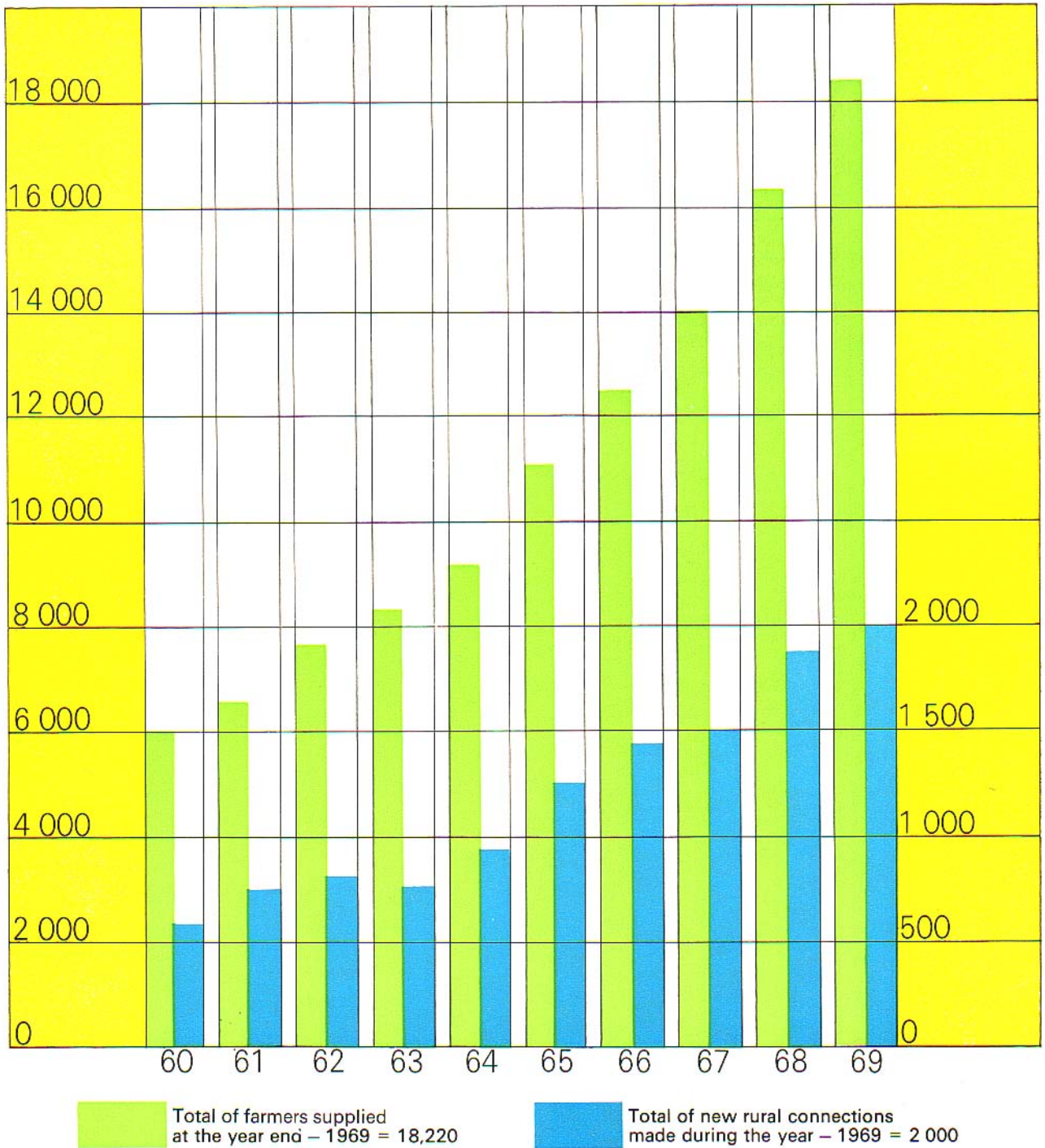
It is expected that sales across the borders will increase and with the development of Cabora Bassa and the electricity schemes in Lesotho and Swaziland, Escom will purchase considerable quantities of electricity from neighbouring territories in the future.

SALES BY UNDERTAKING

The total sales by each Undertaking with the corresponding figures for 1968, and the percentage increase for the year and over the last ten-year period are given in the table on page 13. The Cape Eastern and Orange River Undertakings have only recently come into operation, therefore no figures are available for the increase over the last ten-year period.

	1968	1969	1968/1969 Increase %	Average Annual Increase in 10 years %
Cape Western	1 666 222 419	1 824 333 711	9.49	7.79
Cape Northern	609 612 704	657 860 386	7.91	14.40
Cape Eastern	4 098 388	5 719 118	39.55	—
Border	310 497 578	330 521 872	6.45	7.19
Natal	4 121 451 847	4 636 693 454	12.50	9.58
Eastern Tvl.	3 191 367 930	3 824 413 840	19.84	19.70
Rand & O.F.S..	18 979 329 732	20 218 068 013	6.53	6.24
Orange River Undertaking	2 427 947	7 980 976	228.71	—
Total	28 885 008 545	31 505 591 370	9.07	7.90

Supplies to farmers



SUPPLIES TO FARMERS

The steady expansion of Escom's rural networks, year by year, is shown in the diagram on page 13.

A record number of 2,000 farms were given a supply during the year, exceeding the figure for last year by 5·3 per cent.

Increases in the cost of labour and equipment are, however, making it more and more difficult for Escom to maintain farming tariffs at their present level. Escom is not permitted, in accordance with the Electricity Act to supply electricity at below cost and it is unavoidable that the increased cost of new schemes now being planned will be passed on to the farmers.

It should be pointed out, however, that by making maximum use of electricity to carry out as many tasks as possible, the farmer can assist in keeping the overall unit cost as low as possible. The following

table shows the increase in the number of farms connected in Escom's various Undertakings during the last decade:—

	Number of Farms connected at the end of the year		
	1959	1964	1969
Cape Western	3,632	4,297	5,269
Natal	1,397	2,036	3,347
Rand and O.F.S.	408	1,322	5,147
Cape Northern	257	957	1,531
Border	106	264	501
Cape Eastern	—	39	368
Eastern Tvl.	223	875	2,057
	<hr/>	<hr/>	<hr/>
	6,023	9,790	18,220
	<hr/>	<hr/>	<hr/>

NEW AREAS OF SUPPLY

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

Rand and Orange Free State Undertaking

The application was approved during the year for the extension of the Rand Extension Licence to include the Grootvlei Power Station, the Hendrina Power Station and the hydro station being constructed at the site of the Hendrik Verwoerd Dam.

Cape Northern and Orange River Undertakings

An area including the towns of Hopetown, Luckhoff

Faurcsmith, Jagersfontein and Petrusville was transferred from the Cape Northern Undertaking licence area to that of the Orange River Undertaking.

Cape Western Undertaking

Extensions to the Cape Western Undertaking licence includes the Clanwilliam area.

Natal Undertaking

An application to include the magisterial districts of Mahlabatini, Kokstad and Ingwavuma in the Natal Southern and the magisterial district of Babanango in the Natal Central licensed areas of supply is being considered by the Electricity Control Board.

GENERATION OF ELECTRICITY

The total units generated in all Escom's Undertakings during the year 1969 amounted to 35,967 million units which represent an increase of 8·8 per cent over the corresponding figures for 1968.

Purchases from outside sources amounted to 8·0 million units which is nearly the same as last year's figure. Approximately six million of these units were purchased from the Port Elizabeth Municipality at Aloes and Loerie for sale in the Cape Eastern Undertaking, which has no generating plant.

The figures for units generated, purchased and sent out for all Undertakings were as follows:—

	1968	1969
Units generated	33,061,234,965	35,966,956,724
Units purchased	7,911,573	7,969,311
Units sent out	30,843,479,863	33,598,182,607

The installed generating capacity in the power stations of Escom's Undertakings as at the end of 1969 was as follows:—

	Total at end of 1969 MW
Pooled power stations of the Rand and O.F.S. Undertaking and Eastern Transvaal Undertaking	5,303
Natal Undertaking	1,111
Cape Western Undertaking	450
Border Undertaking	120
	6,984

The corresponding figure for 1968 was 6,345 MW.

HOURLY MAXIMUM DEMAND (MW SENT OUT) OF ESCOM'S UNDERTAKINGS OVER THE LAST FIVE YEARS

Undertaking	1965	1966	1967	1968	1969
Border	51·5	54·6	58·9	64·9	67·7
Cape Eastern		1·1	1·5	1·7	2·0
Cape Northern	69·4	79·2	102·2	117·5	127·3
Cape Western		257·5	276·6	298·6	326·8
Eastern Transvaal	290·5	368·4	424·7	485·2	575·5
Natal Undertaking	564·5	613·3	660·0	712·0	794·0
Orange River					7·6
Rand and Orange Free State	2 573·7	2 644·4	2 863·0	3 114·7	3 277·1

PLANT CAPACITY

Major items of power station equipment taken into service during 1969 and under construction or on

order as at the 31st December, 1969, are given in the following table. Principal equipment installed is detailed in Annexure B of this report.

	Plant taken into service 1969		Plant under construction or on order	
	Boilers 1000lb/hr	Generators MW	Boilers 1000lb/hr	Generators MW
Border Undertaking				
West Bank Power Station	210	20	Nil	Nil
Natal Undertaking				
Ingagane Power Station		100	Nil	Nil
Pooled Power Stations of the R. & O.F.S. and the E.T.U. Undertaking				
Camden Power Station	3 600	400		
Grootylei Power Station	3 400	400	5 100	600
Hendrina Power Station			11 900	1 400
Arnot Power Station			15 900	2 100
Hendrik Verwoerd				160

POWER STATION OPERATION

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 Komati Power Station of the Eastern Transvaal Undertaking, operate as a single system of pooled power stations. The Rand Extension Licence was amended during the year to include the Hendrina and

Grootvlei Power Stations in the Eastern Transvaal as well as the Hendrik Verwoerd Hydro Power Station.

This pooled system contains 76 per cent of Escom's generating capacity.

The total units generated in all Escom's power stations during 1969 amounted to 81 per cent of the total units generated in the Republic.

Pooled Power Stations: Rand and Orange Free State and Eastern Transvaal Undertakings.

These power stations generated 28,477 million units during the year which represents an increase of 8.5 per cent above the units generated during 1968.

The following Undertakings obtained their supplies either wholly or partially from these power stations:—

	Maximum Demand (MW)		Total Units (millions)		
	1969	1968	1969	1968	Increase
Rand & Orange Free State Undertaking	3 277	3 115	21 791	20 514	6.23
Eastern Transvaal Undertaking	575	485	3 916	3 252	20.42
Cape Northern Undertaking	127	117	717	656	9.30
Natal Undertaking	5	4	2	0.75	—
Cape Western Undertaking	86	—	118	—	—
Orange River Undertaking	8	—	8	—	—

The Cape Western Undertaking obtained supplies for the first time from the pooled power stations in October, 1969, total imports of power being 118 million units with a maximum demand of 85.7 MW.

Supplies to the Orange River Undertaking commenced during the same month, this Undertaking purchasing 7.6 million units from the pooled stations at a maximum demand of 7.6 MW.

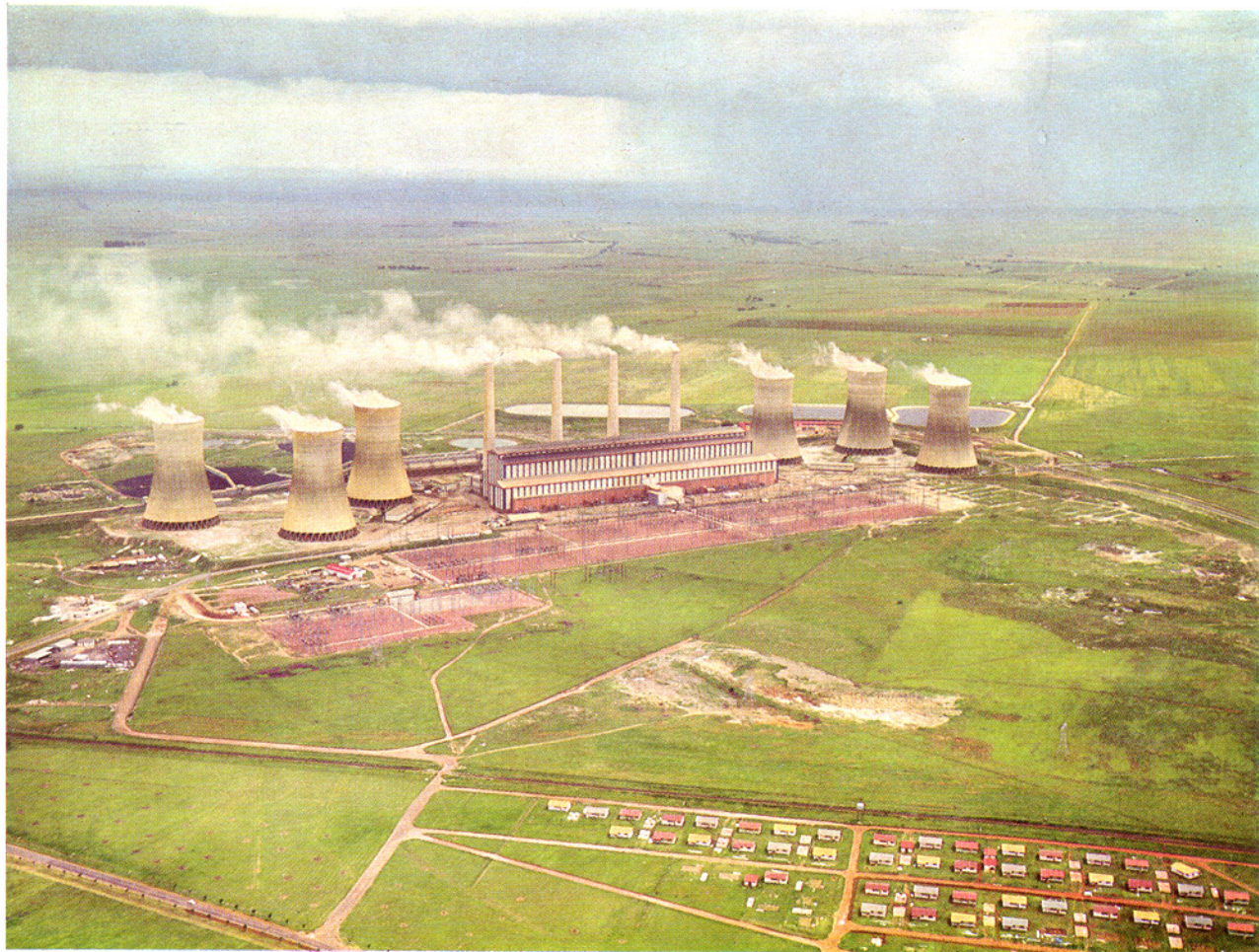
The final two 200 MW sets at the Camden Power Station came into operation during the year, output of this station increasing by 32.9 per cent to 7,905 million units during 1969.

With the commissioning of the first two 200 MW sets at the Grootvlei Power Station, 746 million units

were generated.

On 30th September, 1969, the Vereeniging Power Station which has been in operation since 1912 was finally shut down. This power station was acquired by Escom in 1948 when it took over the assets of The Victoria Falls and Transvaal Power Company Limited.

It is intended to shut down the Witbank Power Station in March, 1970. This power station was commissioned during 1926 and supplied the Witwatersrand area via a distribution station at Brakpan. The line from the power station to Brakpan was the first 132 kV transmission line to be in operation in the British Empire at that time.



The Camden Power Station in the Eastern Transvaal, starting point of the 400 kV transmission system to the Western Cape, has now been completed to its full complement of eight 200 MW sets.

Natal Undertaking

The Natal Undertaking generated 5,178 million units during the year.

More than half of these units were generated at Ingagane Power Station in Northern Natal.

With the commissioning of the fifth and final turbo-generator set in January, Ingagane increased its output by 23·8 per cent during the year. The system maximum demand of 794 MW was met without difficulty there being adequate generation capacity on the system.

Cape Western Undertaking

As a result of the import of electricity from the Pooled Stations of the Rand and Orange Free State Undertaking, units generated in Salt River (at Cape Town) and Hex River (at Worcester) Power Stations increased only slightly on the 1968 figure. Approximately 78 per cent of these units were generated at the Salt River 2 Power Station, which increased its output by 8 per cent during the year.

Very little use was made of the old plant in the Salt River 1 Power Station during the year while the Hex River Power Station has for some years been used for regulating purposes.

Border Undertaking

The second 20 MW set, which is the last to be

installed at the West Bank Power Station at East London, was placed into service during March, 1969. This enabled increased use to be made of the more efficient plant in No. 2 Power Station with a resultant improvement in the station thermal efficiency.

WATER SUPPLIES

The quantities and source of water used in the power stations in the Commission's Undertakings are shown in the table on the next page.

Water drawn from the Vaal River decreased from 34·2 million gallons per day in 1968 to 33·8 million gallons per day during 1969 in spite of an increase of 4·1 per cent in the units generated by the power stations that derive their cooling water from this source.

The reason for this is two-fold, first, a portion of these units were generated at the Grootvlei Power Station which is more economical in the use of water, but mainly the saving is due to the installation of acid treatment and clarification plant which has reduced considerably the necessity to blow down the cooling tower ponds.

The saving in water due to the installation of this plant amounted to more than 900 million gallons during 1969.

(Millions of Gallons)

Undertakings	Potable Water		Crude River Water		Water from other Sources including Boreholes, Dams and Sewage		Sea Water Circulated (Estimated)	
	1969	1968	1969	1968	1969	1968	1969	1968
Cape Western								
Cape Town Municipality	80	76	80	76				
Worcester Municipality	309	307	309	307				
Sea Water (estimated)							74 000	69 000
	389	383	389	383			74 000	69 000
Border								
East London Municipality	25	28	25	28				
Sea Water (estimated)							20 900	19 300
	25	28	25	28			20 900	19 300
Natal								
Durban Municipality	847	886	847	886				
Sea Water (estimated)							53 951	54 000
Tugela			438	645				
Ngagane			1 855	1 514				
	847	886	3 140	3 045			53 951	54 000
Rand & O.F.S. and Eastern Transvaal								
Vaal River	204	182	12 350	12 485				
Olifants River	11	12	625	806				
Bronkhorstspuit			1 493	1 414				
Komati			4 752	4 377				
Usutu Complex			4 571	3 487				
Other	—	14			1	11		
	215	208	23 791	22 569	1	11		
Total—All Undertakings	1 476	1 505	27 345	26 025	1	11	148 851	142 300

COAL SUPPLIES

The cost of coal at R47·4 million in 1969 represents 27·1 per cent of Escom's working costs. It is Escom's constant endeavour therefore that the cost of coal per unit of electricity sent out should be kept as low as possible.

The cost of coal per unit sent out in 1965 was 0·1426 cents and in 1969 0·1412 cents. This control of the cost of coal per unit has been achieved by building larger and more efficient power stations located on the coalfields. In physical terms the success of these endeavours is shown by a 12·8 per cent reduction from 1·5026 lbs. of coal per unit sent out in 1965 to 1·3112 lbs. of coal in 1969, and by the increase from 66 per cent to 75 per cent in the proportion of the coal consumed at pithead stations. The results are also reflected in the slower rate of increase in coal consumption between 1965 and 1969 of 4·5 per cent per year compared to the 8·3 per cent per year increase in the number of units sent out.

The electrical interconnection with the Western Cape is also a step towards control of costs by reducing the amount of coal railed to remote power stations. This policy will be fully implemented when the new high voltage power lines connecting Cape Town, Natal, Port Elizabeth and East London with the pithead power stations in the Eastern Transvaal are completed. Another step to contain coal costs is the very close liaison which is being maintained with coal suppliers in order to even out seasonal fluctuations and by planning for a steady increase in demands during the commissioning of new power stations. The closing down of Verceniging Power Station presented an opportunity to reallocate the coal supplies to the Klip, Vaal and Grootvlei Power Stations; these arrangements resulted in considerable savings in the cost of coal at these stations.

Recent investigations have emphasized that the coal supplies of the Republic are not unlimited, and

Escom has continued to give full attention to the need for conservation of the nation's resources. Power stations can contribute much to the conservation of coal resources, because plant can be designed to burn coal not acceptable for metallurgical or industrial purposes. This is reflected in the average calorific value of the coal consumed by Escom power stations of 9,500 BThU's per lb. compared to the commercial demand of about 12,000 BThU's/lb. Escom is thus burning coal which could not normally be used by Industry. Every opportunity is also being taken to encourage suppliers to carry out systematic trials of mining methods, whenever a change might lead to a greater recovery of "in situ coal". Open cast mining at Optimum Colliery and pillar extraction at other collieries supplying Escom power stations are examples of what is being done. Where practical, the calorific value of the coal supplied to Escom is being regulated to ensure maximum recovery of *in situ* coal. The need to wash coal for power station use is also being carefully reconsidered. In some conditions ash is pumped underground for filling worked out areas, with the object of stabilizing these areas, thus making

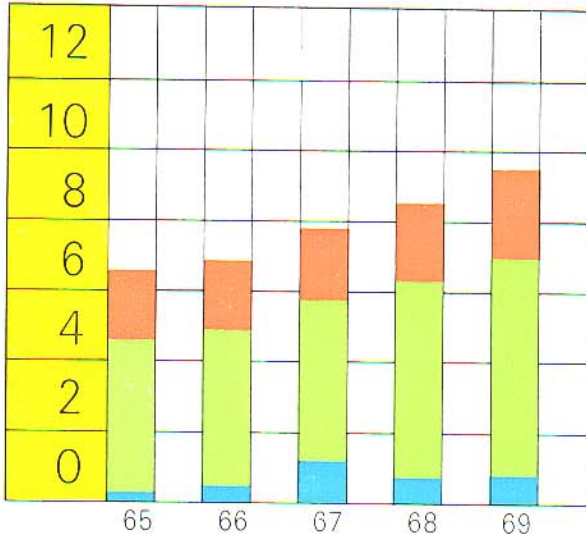
it possible to achieve a higher recovery of *in situ* coal. This practice reduces the amount of ash to be disposed of on the surface, and may also create suitable conditions for the future mining of coal seams not worked at this stage.

The most notable changes in coal supplies during 1969 were the closing down of Vereeniging (150 MW) and Witbank (128 MW) Power Stations, thus terminating contracts with coal suppliers which have lasted since 1914 and 1924 respectively; and the placing of a new coal contract to supply the new Kriel Power Station, which will have a final installed capacity of 3,000 MW.

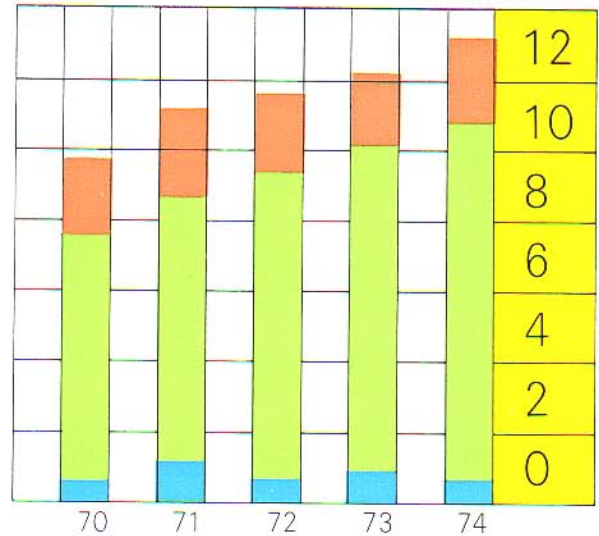
Tenders for the new power station were received in June, 1969, and in January, 1970, the contract was awarded to the Anglo-American Corporation's Kriel coalfield situated between Bethal and Witbank. This colliery will ultimately produce over 8 million tons per year of low-grade coal. At the stage of completing the station this colliery will supply about 25 per cent of Escom's coal requirements, and will rank amongst the largest collieries in the world.

Capacity of Escom's Power Stations

Expansion over the last five years
Thousands of MW



Planned expansion over the next five years
Thousands of MW



Installed Capacity

65	4625	125	6565
66	4806	181	6725
67	5845	1039	7822
68	6345	500	8515
69	6985	640	9105

70	7585	600	9855
71	8782	1,197	11,112
72	9332	550	11,692
73	10,130	798	12,490
74	10,880	750	13,240

 Installed during the year by Escom (Nett MW)

 Total MW by Escom

 Total MW Republic

DEVELOPMENT OF ESCOM'S POWER STATIONS

Considerable progress was made during the year with the construction of Escom's new power stations.

In addition, a contract has been placed for coal supplies to a new 3000 MW power station, which has been named Kriel, to be constructed about half way between Ogies and Bethal. This power station is being planned for a total installed capacity of 3000 MW consisting of six reheat turbo-generators of 500 MW each, to operate under steam conditions of 2320 p.s.i. and 950/950°F.

Camden Power Station

This power station is now complete, the last two 200 MW sets having been commissioned during the year, one in February and the second in October. The final installed capacity is 1600 MW.

Camden generated 7,905 million units during 1969 with a maximum output of 1158 MW.

Grootvlei Power Station

Grootvlei Power Station, being constructed between Balfour and Villiers in the Orange Free State has been designed for six turbo-generators each with a capacity of 200 MW, to operate under steam conditions of 1500 p.s.i. and 1000°F on a non-reheat cycle.

The first two of these sets were commissioned on due date during the year under review, the first set in June and the second in October, while the third is planned for March, 1970.

The dates on which these sets were to be commissioned were decided in the planning stages four years ago.

Units generated during the year at Grootvlei amounted to 747 million, the maximum output being 374 MW.

The set designed to operate with a dry cooling tower, is at present under construction and is planned for completion by March, 1971; it will be the first of its kind in operation in the Republic.

Experience gained with the operation of this set will assist in deciding Escom's future policy regarding the use of this type of cooling.

When it is realized that with dry cooling towers the consumption of water is only fifteen per cent of the consumption using the conventional wet type of cooling tower, the importance of this development in the saving of water can be appreciated.

Hendrina Power Station

This power station which is being constructed near Hendrina in the Eastern Transvaal, has been designed for ten 200 MW turbo-generator sets operating under steam conditions of 1500 p.s.i. and 1000°F on a non-reheat cycle.

It is planned that the first set should be in operation by May, 1970, with the second set following in September, 1970.

These commissioning dates were decided in the early planning stages five years ago and present indications are that they will be met.

The main power station building is complete so as to accommodate four of these ten sets and the shells of three of the eight cooling towers have been built.

Arnot Power Station

Arnot Power Station is being built about twelve miles south west of Wonderfontein Railway Station. This power station has been designed to accommodate six reheat turbo-generators and associated boilers, each with a capacity of 350 MW and operating under steam conditions of 2300 p.s.i. and 950/950°F on a reheat cycle. The main power station building is complete for two of these sets and construction of the first is to commence early in 1970. Work is in progress simultaneously with three cooling towers, the shell of the first tower being complete.

Ingagane Power Station

With the completion of the fifth 100 MW set, the Ingagane Power Station has now reached its final design capacity of 500 MW. This power station generated 2,819 million units during 1969 with a maximum output of 420 MW. This was more than 50 per cent of the units sold in the Undertaking.

West Bank Power Station

The second 20 MW set was completed at the West Bank Power Station during March, 1969, and this power station has now reached its final capacity of 117 MW.

It is at present not intended to install further generating capacity in the Border Undertaking, future needs being provided for from the national 400 kV transmission system.

Hydro-Electric Power Stations

Considerable progress was made with the Hendrik Verwoerd hydro-electric power station being constructed at the Hendrik Verwoerd Dam on the Orange River. The main power station buildings are half complete and installation of the equipment will commence early in 1970. It is planned that the two 80 MW sets that have been ordered will be in operation by mid 1971. Housing and other facilities for the construction staff will be provided by the Department of Water Affairs. Consideration is being given to the possible installation of an additional two 80 MW sets.

Investigations show that the probable installed capacity at the Van der Kloof hydro power station which will be constructed at the P.K. le Roux Dam will be 120 MW consisting of two 60 MW sets located in an underground chamber. A final decision regarding the equipment to be installed is still to be made.

The power to be generated at these two hydro electric power stations as well as that being constructed at the Hendrik Verwoerd Dam will be fed into the 400 kV transmission system near De Aar.

NUCLEAR POWER

In May, 1968, the Atomic Energy Board submitted a report to the Minister of Mines and Planning on the introduction of Nuclear Power in the Republic of South Africa. This report was prepared by the Board's Nuclear Power Committee, the Chairman of which



Work is proceeding apace on Escom's hydro station (in the coffer dam in the foreground) at the Hendrik Verwoerd dam. Installation of equipment at this station commenced earlier this year.

was the late Dr. van Eck. Escom was represented thereon by its Chief Engineer (Electrical) and Chief Engineer (Mechanical) and contributed fundamentally to the preparation thereof. The conclusion reached was that, if natural uranium only were considered as a fuel, a nuclear power station having heavy water moderated and cooled reactor and an electrical output of 350 MW would be viable in the Western Cape by 1978. The report also indicated that to have a nuclear power station in operation by that date requires careful planning, and the Board and the Commission therefore critically reviewed where the responsibility for the construction of the power station should lie, should it be decided to proceed with one. They concluded that where nuclear power stations were located in Escom's licensed areas of supply, Escom, working in close collaboration with the Board, would be responsible for building and operating them, while the Board would assess health and safety aspects of nuclear power and be responsible for the issuing of licences and permits.

It was also obvious from the report that certain preparatory work would have to be put in hand immediately. To do this, Escom established in its Mechanical Engineering Department a nuclear power engineering division, and recruitment therefore is proceeding.

While Escom would have preferred to continue with the building of its first nuclear power station using its

present multi-contract procedure, it is thought advisable to depart therefrom for the Republic's first nuclear power station and adopt a largely turnkey-contract basis, but the matter is still under review.

While the Nuclear Power Committee of the Atomic Energy Board was engaged on its studies, Escom examined a number of sites along the South African coast from the border of Portuguese East Africa to North of Saldanha Bay, and as a result purchased one about three miles North of Melkbosstrand on the farm Duinefontein.

Site investigations at Duinefontein are at present being carried out there and will continue for some time to come. To do this, a committee was established on which Escom, the Atomic Energy Board, C.S.I.R., Department of Water Affairs Division of Sea Fisheries and University of Cape Town are represented.

The Nuclear Power Committee of the Atomic Energy Board is now again engaged, with Escom's assistance, on assessing the possible use of enriched uranium for a fuel which will influence the reactor type selected. This report will be completed in the not too distant future, when a final decision can be made, if it is decided to proceed with nuclear power which at this stage is highly probable. In the meantime, further studies are proceeding both at the Board and at Escom. The Commission has decided that this first South African Nuclear Station will be called Koeberg.

DEVELOPMENT OF ESCOM'S HIGH VOLTAGE TRANSMISSION SYSTEM

Escom's national high voltage transmission system has now reached an advanced stage of development.

Three 400 kV transmission lines have been completed from Camden Power Station to Atlas Distribution Station near Vereeniging, two of these lines being turned into Grootvlei Power Station during the year.

One 400 kV line is in operation between Atlas and the Droërivier Distribution Station near Beaufort West in the Western Cape.

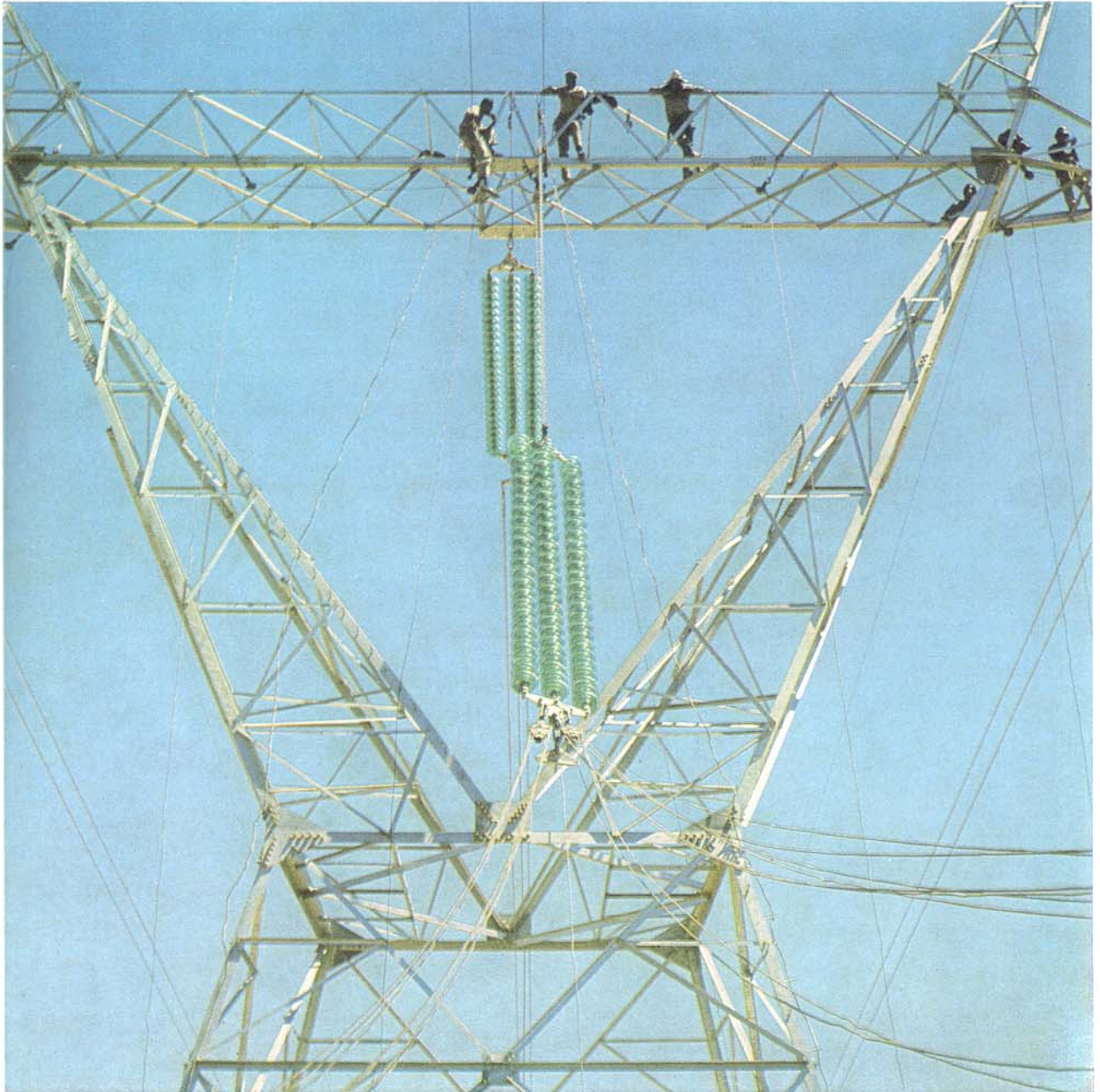
The section of this line between Atlas and the Perseus Distribution Station near Dealesville was

energised during September, 1969, and provided an additional supply point to Kimberley and the Cape Northern Undertaking.

During 1970, an additional 400 kV line will be completed to Perseus, but this line is to start at the Grootvlei Power Station.

By October, 1969, the Hydra Distribution Station near De Aar was in operation and from that date the Orange River Undertaking has been receiving a supply of electricity from the 400 kV system.

It is planned to construct a 400 kV line from De



A dramatic picture of the upper section of a pylon carrying the 400 kV transmission line to the Western Cape. Here the massive insulators weighing approximately one ton are being hoisted into position.

Aar to Cookhouse in the Eastern Cape by April, 1973, and to supply Port Elizabeth and East London from Cookhouse by means of 220 kV lines.

The section of line from De Aar to Beaufort West was completed on the 7th October, 1969, and power was fed for the first time from the 400 kV grid into the distribution system of the Cape Western Undertaking. At present the amount of power that can be fed into this point is limited to about 70 MW because of the restricted capacity of the 132 kV transmission system from Beaufort West towards Cape Town. During the first half of 1970, however, the 400 kV line will have been extended to Muldersvlei Distribution Station near Cape Town and this limitation will no longer apply.

Construction of the first of two 400 kV transmission lines between Chivelston Substation near Ingagane Power Station in Natal and Mersey Distribution Station (between Pietermaritzburg and Greytown) commenced during 1969. This line will be energised, initially at 275 kV, during the first half of 1970

strengthening supplies to Pietermaritzburg and to Southern Natal.

During 1970 a start is to be made with the building of duplicate 275 kV lines from Mersey to Impala Substation in the Richards Bay area, and with the 132 kV lines from Impala to the site of the aluminium smelter. Work on the Impala substation has already commenced.

Enquiries have been issued for the supply of materials for the section of 400 kV lines from the Camden Power Station in the Eastern Transvaal to Chivelston Substation. The first line is to be in operation early in 1971.

Developments in Central Natal include arrangements to supply industrial development in the Ladysmith and Newcastle areas.

The town of Newcastle and the proposed third Iscor Steelworks will be fed from the 400 kV system.

It is also proposed to supply the Spioenkop pumping scheme being constructed on the Tugela River. A 275 kV transmission line is to be built from the

Expansion of Escom's Distribution System

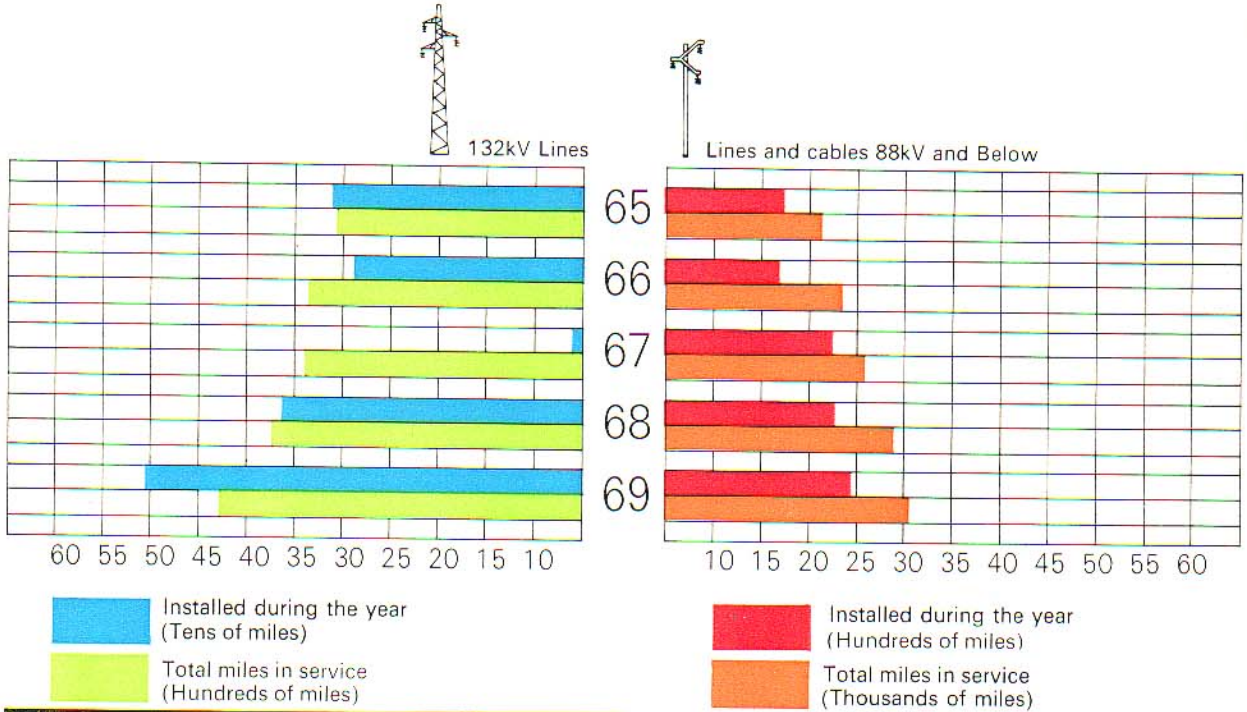


Table in miles				
Total in service	Installed during the year		Total in service	Installed during the year
3058	319	65	21,679	1747
3348	290	66	23,359	1680
3409	61	67	25,637	2278
3778	369	68	27,917	2281
4286	508	69	30,399	2481

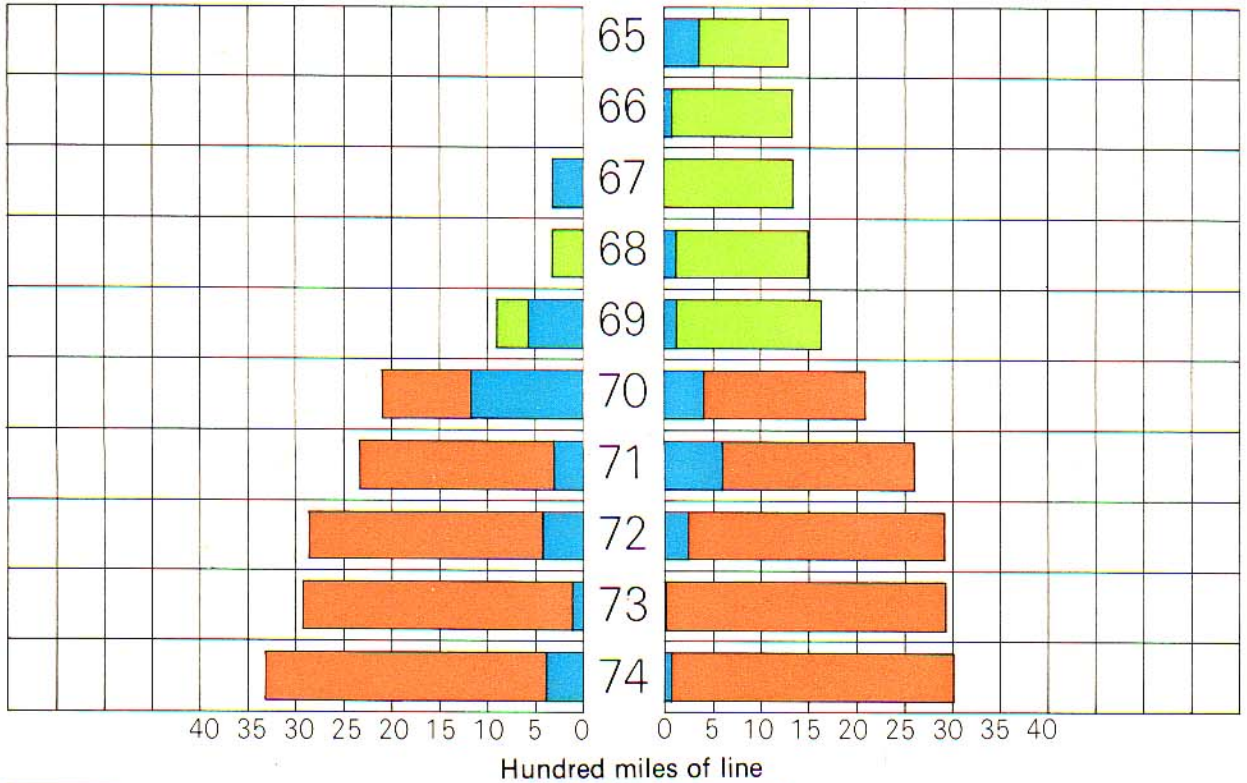
Expansion of Escom's Transmission System



400kV Lines



275kV Lines



400kV Lines

Total miles	Per year
371	371
371	—
918	547
2102	1184
2373	271
2815	442
2934	119
3332	398

275kV Lines

Total miles	Per year	
65	1280	349
66	1363	83
67	1363	
68	1499	136
69	1677	178
70	2100	423
71	2674	574
72	2939	265
73	2949	10
74	3022	73

Bloukrans Substation near Colenso to a new substation near the site of the Spioenkop dam.

The main development in the Rand and Orange Free State and the Eastern Transvaal Undertakings concerns the additions to the main transmission system in preparation for the commissioning of the first turbo-generator sets at the new Hendrina and Arnot Power Stations.

The focal point of this development is the Apollo Distribution Station being built near Pretoria. Apollo will transmit the bulk of the power generated at these two power stations as well as being the receiving point of power generated at the Cabora Bassa scheme in Mozambique. In addition, Apollo will provide a supply to Johannesburg and Pretoria.

Two 400 kV transmission lines are being constructed between Hendrina Power Station and Apollo and are to be in operation by September, 1970, ready for the first sets at the Hendrina Power Station.

During 1972 these lines are to be turned into a new distribution station being built along their route, near Witbank. This distribution station to be called Vulcan will supply the Highveld Steel and Vanadium Corporation Limited as well as Ferrometals and other

industrial and bulk consumers in the Witbank area.

The output from Arnot will also be fed to Apollo via Vulcan after 1972 but since the first two sets are to be commissioned at Arnot Power Station during 1971, a short 400 kV line is to be built between Arnot and Hendrina. This line together with the existing 275 kV system will provide for the output from Arnot until Vulcan Distribution Station is ready.

An additional 275 kV transmission line is planned from Arnot Power Station to Marathon and Acornhoek in the Eastern Transvaal as well as from Marathon to the border of Mozambique at Komatipoort.

Arrangements are being made to provide Lourenço Marques with a point of supply at the border near Komatipoort.

In order to meet the phenomenal growth of the platinum mines in the Rustenburg area, it is planned to reinforce and eventually replace the existing 132 kV system with two 275 kV transmission lines.

During the year 1969 a total of 3,714 route miles of transmission lines and cables were added to Escom's networks.

FINANCIAL

Loans Outstanding

During 1969 the amount outstanding on Loans account increased by R81 295 000 as follows:—

Loans outstanding at 31st December, 1968

R1 005 316 000

Loan money received during 1969

	Loan No.	Date raised	Amount	Interest Rate	Issue Price	Date Rcdcomable	Amount Received
Local Registered Stocks	75	14.10.1968	R22 000 000	6.500%	91.950%	31.10.1993	R660 000
	76	14.10.1968	48 000 000	6.875%	96.250%	31.10.1993	10 632 000
			R70 000 000				(a) R11 292 000
	78	31. 3.1969	R20 000 000	6.500%	93.550%	30. 4.1994	R20 000 000
	79	31. 3.1969	30 000 000	6.875%	97.900%	30. 4.1994	30 000 000
	80	15. 4.1969	20 000 000	6.000%	100.000%	31. 7.1974	20 000 000
	81	22. 9.1969	10 000 000	6.500%	91.400%	31.10.1994	3 964 000
	82	22. 9.1969	25 000 000	6.875%	95.700%	31.10.1994	14 135 000
			R105 000 000				(b) R88 099 000
	Overseas Direct Placements	—	27. 8.1969	R1 813 000	7.750%	100.000%	1971	R1 813 000
—		1. 9.1969	7 247 000	6.500%	98.875%	1970/71	7 247 000
			R9 060 000				(c) R9 060 000

Total Loan money received (a+b+c) 108 451 000

Less Loan money repaid during year 1 113 767 000

Local Loans—Repaid out of Redemption Fund R19 000 000

Overseas Loans 8 156 000

(i) Repaid from amounts set aside out of working costs R5 861 000

(ii) Repaid out of Local loans 2 295 000

Loans outstanding at 31st December, 1969 **R1 086 611 000**

The local loans raised in 1969 totalling R105 000 000 were all fully subscribed and the amounts not received at the year-end in respect of the two loans raised in September, 1969 (Nos. 81 and 82) have since been received.

Capital expenditure

Expenditure on capital account increased by R157 395 000 during the year as follows:

Expenditure incurred	R163 105 000
Transfers to assets sold or scrapped account	5 710 000
	R157 395 000

During the 10-year period 1960–1969 expenditure on capital account has increased by R818 655 000 as follows:—

31st December	<u>Increase during year</u>		<u>Cumulative expenditure</u>
	Amount	%	
1959			R453 130 000
1960	R38 341 000	8%	491 471 000
1961	38 094 000	8%	529 565 000
1962	52 014 000	10%	581 579 000
1963	55 497 000	10%	637 076 000
1964	42 117 000	7%	679 193 000
1965	61 916 000	9%	741 109 000
1966	99 673 000	13%	840 782 000
1967	110 081 000	13%	950 863 000
1968	163 527 000	17%	1 114 390 000
1969	157 395 000	14%	1 271 785 000
	R818 655 000		

Redemption and Reserve Funds and investments of the Funds

The amount in the Redemption Fund at the 31st December, 1969, was R213 621 000 and this exceeded the amounts required for the Redemption of loans in accordance with the Act. The amount in the Reserve Fund at this date was R104 386 000.

The investments of these Funds are wholly represented by Local Registered Stocks as detailed below:—

Investments of:—	Total	Electricity Supply Commission	Republic of South Africa	Local Authorities and Rand Water Board
Redemption Fund	R217 833 000	R214 093 000	R1 464 000	R2 276 000
Reserve Fund	104 301 000	95 174 000	788 000	8 339 000
	R322 134 000	R309 267 000	R2 252 000	R10 615 000

Assets and Liabilities

As at 31st December, 1969, the Commission's Total Assets and Total Liabilities amounted to R1 671 427 000 and R1 206 568 000 respectively. The excess of Assets over Liabilities amounting to R464 859 000 is represented by the total of the amounts in the Redemption and Reserve Funds, the Provision for the repayment of Overseas Loans, the Capital Reserve and the balance of the Consolidated Revenue Account. A summary giving the Total Assets, Total Liabilities and the excess of the former over the latter for each of the ten years ending 1969 is given below:—

At 31st December	Total Assets	Total Liabilities	Excess of Assets over Liabilities
1960	R663 357 000	R509 969 000	R153 388 000
1961	725 886 000	545 128 000	180 758 000
1962	800 784 000	591 641 000	209 143 000
1963	878 314 000	637 448 000	240 866 000
1964	941 339 000	666 176 000	275 163 000
1965	1 044 043 000	732 751 000	311 292 000
1966	1 158 168 000	809 749 000	348 419 000
1967	1 302 685 000	913 734 000	388 951 000
1968	1 482 928 000	1 068 131 000	414 797 000
1969	1 671 427 000	1 206 568 000	464 859 000

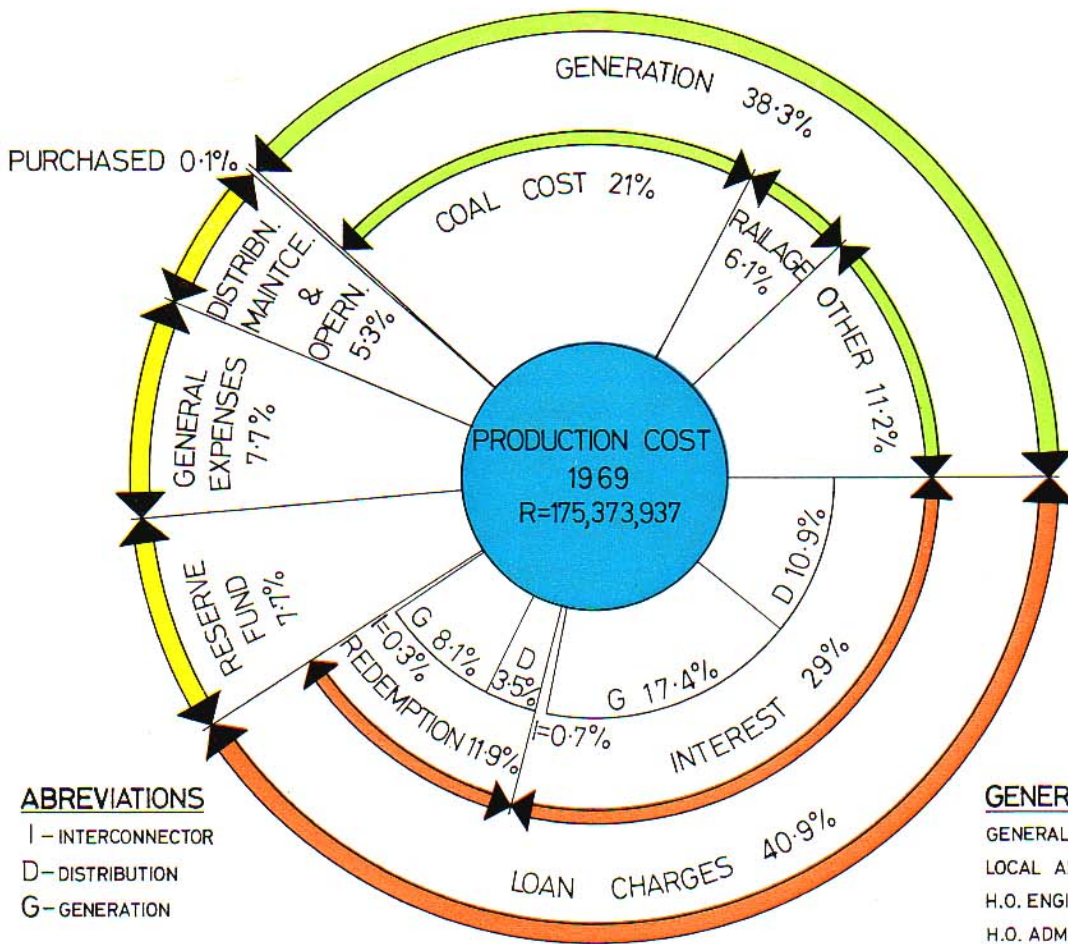
Costs and Revenue

A summary of the Revenue Account in respect of each of the Undertakings for the year-end 1969 is given below:—

Undertaking	Accumulated Surplus/Deficit at 31.12.1968	For 1969		Surplus/Deficit for 1969	Accumulated Surplus/Deficit at 31.12.1969
		Total Revenue	Total Costs		
		(a)	(b)	(a-b)	
Cape Western	—R670 000	R20 225 000	R20 123 000	R102 000	—R568 000
Cape Northern	1 012 000	5 716 000	5 824 000	—108 000	904 000
Cape Eastern	—32 000	170 000	194 000	—24 000	—56 000
Border	—93 000	3 956 000	3 967 000	—11 000	—104 000
Orange River	—2 000	99 000	151 000	—52 000	—54 000
Natal	1 231 000	32 591 000	32 822 000	—231 000	1 000 000
Eastern Transvaal	2 312 000	20 621 000	19 594 000	1 027 000	3 339 000
Rand and O.F.S.	—1 139 000	92 709 000	92 680 000	29 000	—1 110 000
Net adjustment in respect of Inter Undertaking Transfers		19 000	19 000		
	R2 619 000	R176 106 000	R175 374 000	R732 000	R3 351 000

The total revenue from the sales of electricity and sundry revenue of R176 106 000 represents an increase of R14 631 000 (9.1%) over the total revenue (R161 475 000) for 1968.

The more important components of Escom's cost structure are shown in the diagram, on page 27, depicting the production costs for the year 1969.



STAFF

Home Ownership Scheme

The balance at 31st December, 1969, 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 R6,312,000.

Personnel

The staff employed by the Commission at the 31st December, 1969, numbered 21,644 employees, made up as follows:—

	1968	1969	Increase
Whites	7,322	7,684	362
Coloured and Bantu	13,571	13,960	389
	<u>20,893</u>	<u>21,644</u>	<u>751</u>

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

STATISTICAL SUMMARY

Revenue, costs, output and sales, and other figures relating to the operation of the Commission's Undertakings during the years 1965 to 1969 are as follows:—

	1965	1966	1967	1968	1969	Increase 1969 over 1968
TOTAL REVENUE	117 959 000	129 517 000	146 783 000	161 475 000	176 106 000	9.061%
TOTAL COSTS	118 673 000	130 500 000	146 928 000	161 993 000	175 374 000	8.260%
Difference between Revenue and Costs	— 714 000	— 983 000	145 000	— 518 000	732 000	1 250 000
Sales of Electricity	117 481 000	129 009 000	146 135 000	160 757 000	175 338 000	9.070%
Net Costs (less Sundry Revenue)	118 195 000	129 992 000	146 280 000	161 275 000	174 606 000	8.266%
Average Price per Unit Sold	0.5076c	0.4254c	0.5467c	0.5550c	0.5565c	0.270%
Average Cost per Unit Sold	0.5128c	0.5315c	0.5512c	0.5608c	0.5566c	— 0.749%
Average Net Cost per Unit Sold	0.5107c	0.5294c	0.5488c	0.5583c	0.5542c	—
Cost of Coal Consumed (including railrage)	34 986 000	37 901 000	42 053 000	44 604 000	47 453 000	6.387%
Railage on Coal Consumed	8 856 000	9 524 000	10 462 000	10 571 000	10 647 000	0.719%
Coal Consumed (in tons of 2,000 lb)	18 438 075	18 720 084	20 180 802	21 091 542	22 027 383	4.437%
Units Generated	26 440 445 395	27 395 479 555	30 421 691 463	33 061 253 244	35 966 956 724	8.789%
Units Sent Out	24 634 982 969	25 528 081 820	28 370 890 385	30 843 479 863	33 598 182 607	8.931%
Units Purchased	126 642 689	629 876 210	69 604 511	7 911 573	7 969 311	0.730%
Units Sold	23 143 311 124	24 554 347 088	26 657 111 958	28 885 008 545	31 505 591 370	9.072%

ESCOM'S UNDERTAKINGS

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

General Note:

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

CAPE WESTERN UNDERTAKING

The licenced area of supply of the Cape Western Undertaking is shown on the map on page 30.

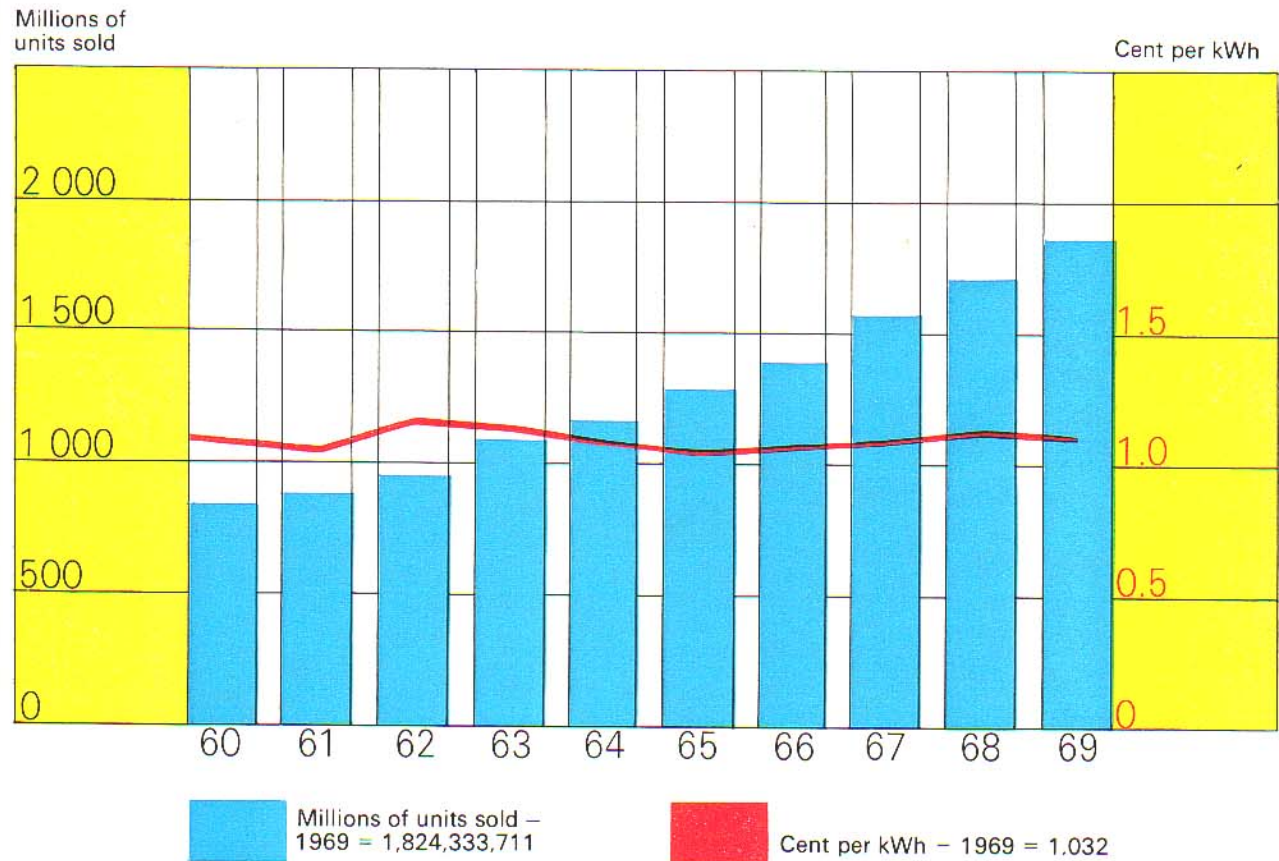
This Undertaking generates the bulk of its electricity requirements at Salt River Power Station at Cape Town and at Hex River Power Station at Worcester. The combined installed capacity of these two power stations is 450 MW.

On the 7th October, 1969, power was delivered, for the first time, from the 400 kV system which is complete as far as Beaufort West.

Due to the capacity of the local 132 kV transmission system to Muldersvlei and Hex River, the amount of power that can be received at this point is limited, but during 1970 this limitation will be removed with the extension of the 400 kV line to Muldersvlei.

Sales of Electricity

The following graph indicates the increase in sales of electricity over the period 1960 to 1969, the red line being the average price per unit sold.



Units generated in the Undertaking's power stations increased from 1,889 million units in 1968 to 1,961 million units during the year under review. In addition, 118 million units were imported from the 400 kV national grid at a maximum demand of 85.7 MW.

Sales increased from 1,666 million units in 1968 to 1,824 million units during 1969. This represents an increase of 9.5 per cent.

Industrial users were responsible for the greatest increase in sales, which rose by 15.4 per cent to 776 million units during 1969. Bulk supplies to municipalities increased by 8.0 per cent to 385 million units during the year. There was very little increase in supplies to the South African Railways for traction purposes, sales to this consumer for 1969 being 397 million units.

Development of the Undertaking

Further progress was made with the construction of the 400/132 kV Distribution Station at Droërvier (Beaufort West) by the Construction Department of this Undertaking, in preparation for the completion of the 400 kV transmission line from Hydra to Droërvier. The line and the distribution station were completed, and on the 7th October the station was energized from the north, after which power was supplied to the Undertaking from Droërvier through the 132 kV lines to Hex River and Muldersvlei.

With the 400 kV supply available as far as Droërvier only, the amount of power imported is limited to a maximum of about 70 MW.

Towards the end of the year, a start was made with the concrete foundation work at Muldersvlei 400 kV

distribution station, site levelling and fencing having been completed.

The 400 kV section will be needed for termination of the Droërvier-Muldersvlei line, when the power import can be increased considerably. The estimated completion date of this project is August, 1970.

The 132 kV Muldersvlei-Stikland double-circuit line was well advanced by the end of the year under review, and should be completed about mid-1970. The Stikland Distribution substation will be completed at about the same time.

The construction of the Malmesbury 132 kV substation was virtually complete by the end of the year and is due for commissioning early in 1970.

The capacity of a number of 66 kV substations was increased during the year and a new 66 kV substation at Saldanha Bay was commissioned.

The demand in the Urban areas of Goodwood, Parow and Bellville increased from 80.6 MVA during 1968 to 88.2 MVA this year.

The total number of substations serving the Urban areas is now 223.

Total installed transformer capacity on the Undertaking increased by 394 MVA to 2,071 MVA and the quantity of transformers increased from 6,392 to 6,716 by the end of 1969. Extensions to the network comprised 151.4 miles of H.V. lines (22, 11 and 6.6 kV), 13.7 miles of L.V. and 10.6 miles of street lighting mains.

The Undertaking's Construction Department was also involved with the construction of substations on the Orange River Undertaking, namely those at Ruigtevallei, Colesberg, Middelburg and Noupoot, all of which were completed for handing over to the

Orange River Undertaking before the year-end.

After some years of discussion and negotiation, the Southern Cape Municipalities of Oudtshoorn, George, Mossel Bay and Knysna concluded agreements with Escom during 1969 for supply to be given from Droërvier by the winter of 1972. This will be a major rural development for the Undertaking, traversing formidable mountain and forest areas.

Extensions to Rural Supplies

During the year 114 new farms were connected and additional supplies were given to 216 existing rural consumers, 52 connections were made to rural consumers other than farmers.

Financial

Details of the units of electricity sold to the various classes of consumers and the total revenue received, as well as the working costs for 1969 are shown in the table on page 33.

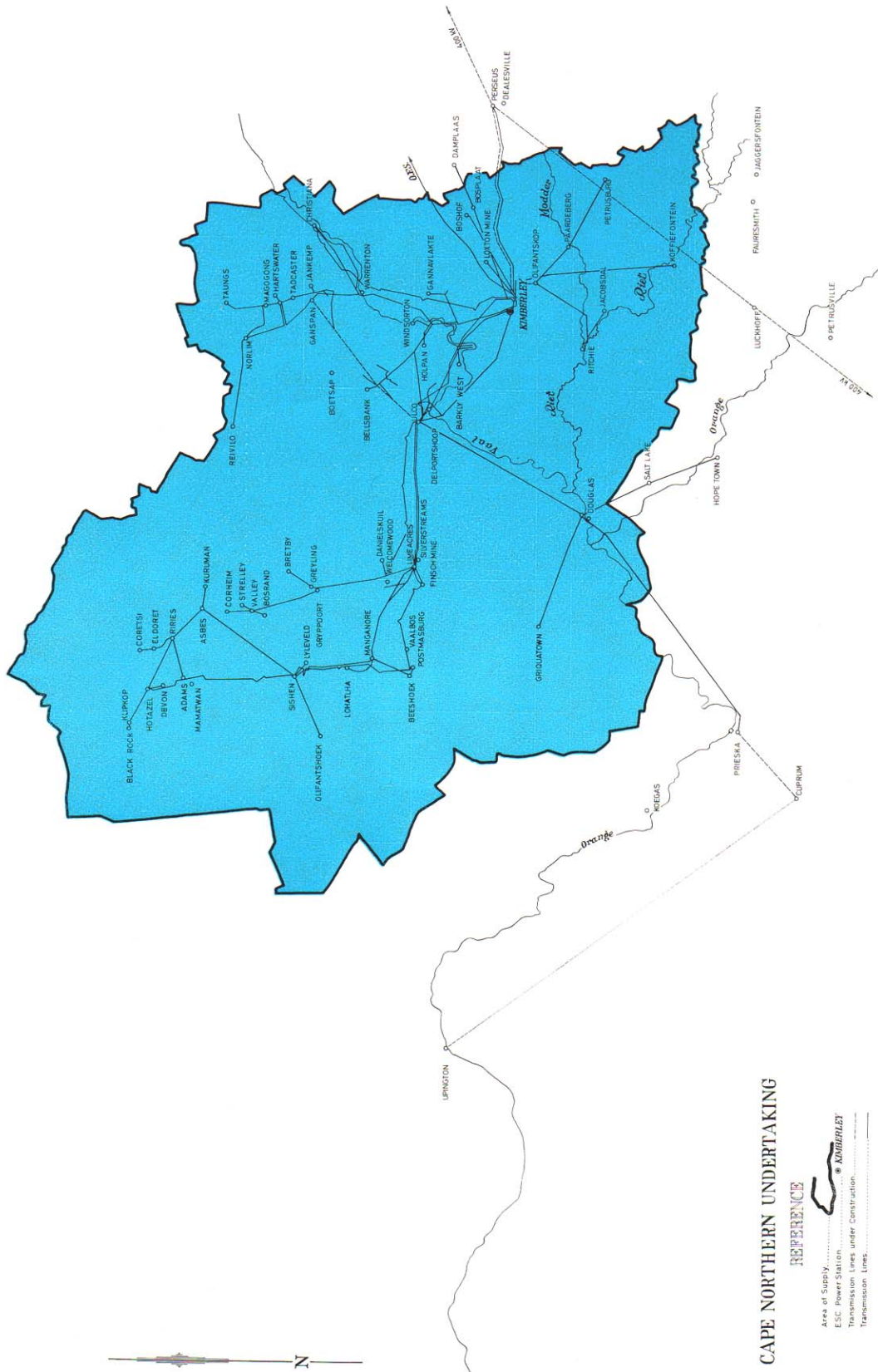
The average price per unit sold as shown in the above graph is practically the same as the figure for last year, there being a slight decrease of 0.19 per cent to 1.1032 cents per unit for 1969.

The cost per unit sold decreased by 1.26 per cent during the year to 1.1030 cents per unit, being slightly less than the revenue received from the sale of units.

Total revenue for the year amounted to R20,224,000 as against working costs of R20,123,000. There was therefore a surplus of R102,000 on the year's working, reducing the total accumulated deficit on the Undertaking's revenue account to R568,000.

CAPE WESTERN UNDERTAKING

CONSUMER		SALES		REVENUE FROM SALES		AVERAGE PRICE PER kwh SOLD							
								SALES		REVENUE FROM SALES		AVERAGE PRICE PER kwh SOLD	
								Number	Ration %	kWh	%Change	Rand	Cents
Class	1968	1969	1968	1969	1968	1969	1968	1969					
Traction.....	7	6	391 319 448	397 011 612	+ 6.21	+ 1.45	4 100 000	1 0478	1 0500				
Bulk.....	34	34	356 457 205	385 102 792	+ 6.62	+ 8.04	3 281 000	0.9203	0.9192				
Mining.....													
Industrial.....	6 104	6 542	672 317 585	775 960 893	+ 11.59	+ 15.42	7 293 000	1.0848	1.0974				
Domestic.....	40 905	43 162	239 106 346	258 853 365	+ 8.04	+ 8.26	3 584 000	1.4988	1.4418				
Street Lighting.	41	41	7 021 835	7 405 049	+ 7.80	+ 5.46	157 000	2.2886	2.2873				
Total	47 091	49 785	1 666 222 419	1 824 333 711	+ 8.69	+ 9.49	18 415 000	1.1052	1.1032				
				1968		1969		Accumulated to 31/12/69					
				R		R		R					
Total Revenue.....				18 472 668		20 223 822							
Running Costs				18 612 620		20 122 705							
Surplus				—		101 117							
Deficit.....				139 952		—							
Capital Expenditure				12 252 868		14 610 188		568 374					



AREA OF SUPPLY.....23,200 SQUARE MILES (60,100 SQUARE KILOMETRES)

CAPE NORTHERN UNDERTAKING

REFERENCE

- Area of Supply.....
- ESC Power Station.....
- Transmission Lines under Construction.....
- Transmission Lines.....



CAPE NORTHERN UNDERTAKING

The licensed area of supply of the Cape Northern Undertaking is shown on the map on page 34.

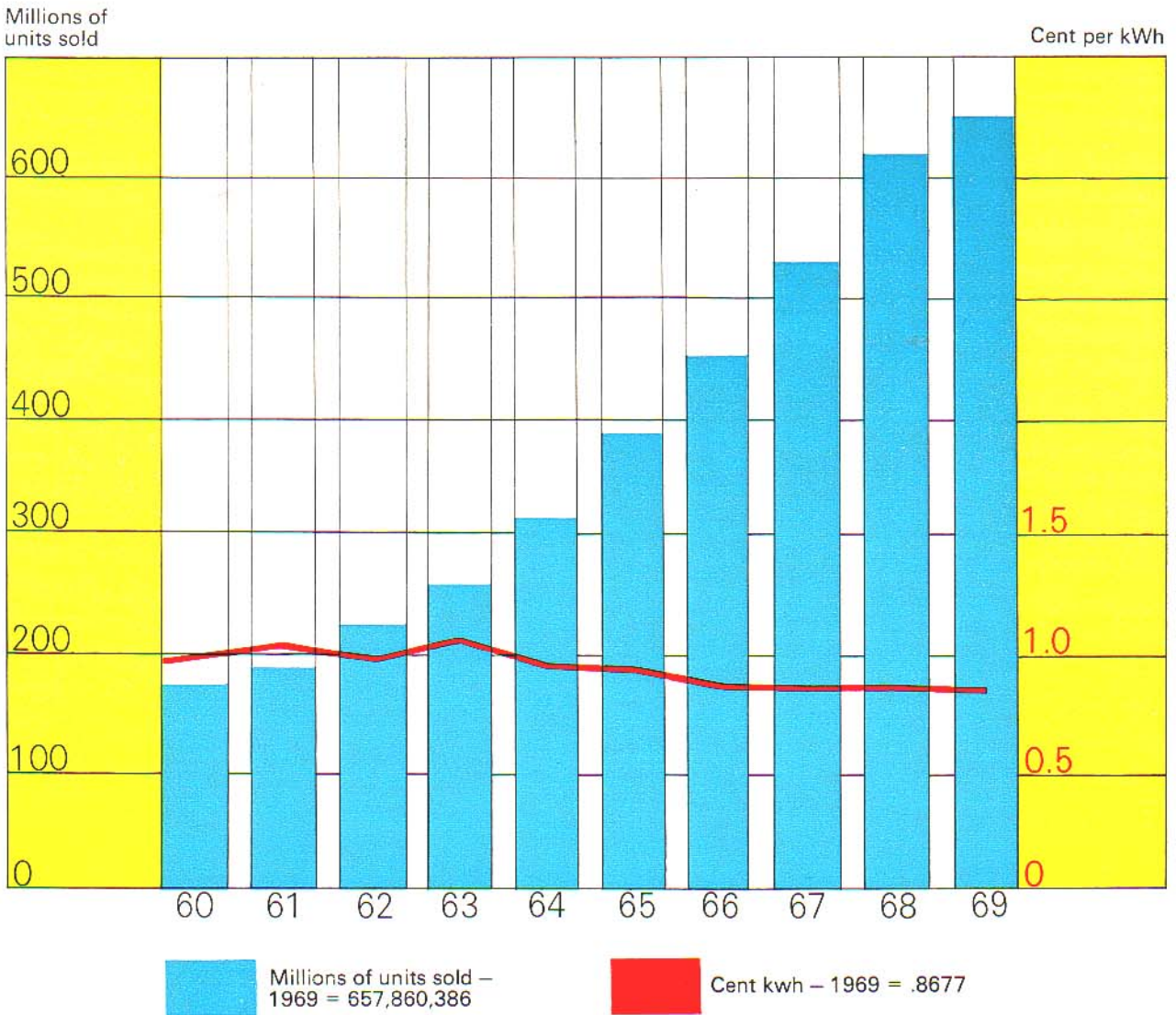
This Undertaking has no generating plant of its own but purchases its power requirements from the pooled power stations of the Rand and Orange Free State and Eastern Transvaal Undertaking. A total of 717 million units were purchased during 1969 at a maximum demand of 127 MW. This represents an increase of 9.4 per cent during the year.

There are at present two points of supply to the Undertaking. One of these is by means of a 165 kV

line from Grootkop, while the second, a 275 kV line previously in operation between the Everest Distribution Station and Kimberley was turned into the Perseus Distribution Station (near Dealesville) during the year, Perseus replacing Everest as a point of supply to the Undertaking. A second 275 kV line is to be completed from Perseus during the latter part of 1970.

Sales of Electricity

The following graph indicates the increase in sales of electricity over the period 1960 to 1969.



Sales of electricity have doubled in less than five years.

The South African Railways purchased 179.5 million units for traction purposes during the year, being an increase of 10.9 per cent over the 1968 figures.

The consumption at the De Beers Company's new Finsch Mine increased by 5.1 million units to 23.6 million units. The four Kimberley mines continued to

operate at full output consuming 87.6 million units.

Small diamond mines in the Barkly West, Smith Mine, Bellsbank and Boshof areas increased consumption by 9.8 per cent to 12.3 million units during the year. It is expected that this expansion will continue for several years.

The energy consumed by the iron ore mining companies in the Postmasburg-Sishen area remained static at 36 million units, while sales to the manganese

mines in the Postmasburg-Hotazel and Black Rock areas increased by 13·0 per cent to 11·3 million units for the year.

After a period of three years of steady demand at

40 million units the blue asbestos mining demand increased to 46·2 million units.

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

	Million units		% Increase of units during year	% of total units sold
	1968	1969	1969	1969
Diamonds	117·7	123·5	4·9	18·8
Lime, Cement and Gypsum	74·8	78·4	4·8	11·9
Blue Asbestos	39·9	46·2	15·8	7·0
Iron Ore	36·6	36·0	-1·6	5·5
Manganese	10·0	11·3	13·0	1·7
Total	<u>279·0</u>	<u>295·4</u>	<u>5·9</u>	<u>44·9</u>

Sales to the smaller municipalities increased by 2·90 million to 26·29 million units or by an average of 12·4 per cent. Two additional municipalities were supplied during the year, Douglas being supplied from the beginning of 1969 and Griquatown from April.

The 1,142 plottolders in the Vaalharts scheme consumed 6·26 million units. The average consumption of these plottolders has increased during the year by 8·7 per cent to the present average monthly consumption of 460 units.

The Taungs area, mainly in the Bantu Reserve, continued to develop and showed a gain of 19·6 per cent to the present consumption of 1·51 million units per annum.

Although the Government has restricted the amount of water extracted from the rivers during critical periods, the amount of energy consumed by riparian farmers on the Vaal and Harts Rivers showed a slight increase from 5·8 units to 5·9 million units during the year. This increase of energy is due to the installation of new spray irrigation plants and would indicate that in fact, less water is being used but it is being used more economically, because lands are not over-flooded when sprays are used. However, an additional million units have been used on the new electrical pumping plants now being installed in the Modder-Riet confluence and near Douglas in the Vaal-Riet confluence district.

Development of the Undertaking

The section of transmission line from Ulco to the Herbert Distribution Station (near Douglas) is complete and is operating at its design voltage of 132 kV, the 132/22 kV transformers having now been installed at Herbert.

Both the towns of Douglas and Griquatown are receiving a supply from this distribution station.

Work on the extension of the 132 kV line from Herbert to Burchel Distribution Station (near Prieska) is nearing completion and early in 1970 a supply should be available to the town of Prieska. Further extensions to this system are planned into Gordonia and the Municipality of Upington has

indicated that they will require a supply by March 1972, while a line from Ulco to Ganspan will strengthen supplies in the Vaalharts area.

Developments of the 66 kV transmission system from Kimberley consist of extensions to Bosplaat in order to supply the Eland and Rovic diamond mines as well as to provide an increased supply to the town of Boshof.

The De Beers Company has re-opened the old Koffiefontein Mine and a temporary 22 kV supply was given at the end of December over the newly erected 132 kV transmission line.

Development of Rural Supplies

Considerable development has taken place with the development of rural supplies in the Undertaking.

A total of 78 miles of transmission line was erected during the year. A total of 90 additional farms were supplied, 39 in the Modder River Area and 22 in the Vaalharts Area. Two rural schemes were commenced in the Perdeberg and Douglas Areas. Eleven miles of line are to be built to supply 13 farmers along the Modder River, while in the Douglas area 27 miles of line have already been completed. Agreement has been reached concerning a further extension along the Modder River from Perdeberg.

It is also intended to supply the town of Hopetown early in 1970.

Financial

Details of units sold to the various classes of consumer, the total income received as well as the operating costs for 1969 are given in the table on page 37.

The average price per unit sold decreased by 1·1 per cent during 1969 to 0·8677 cents per unit, the corresponding cost per unit sold being 0·8853 cents.

Total revenue for the year amounted to R5,716,000 as compared with working costs of R5,824,000.

The resulting deficit of R108,000 reduces the accumulated surplus on the Undertaking's revenue account to R904,000.

CAPE NORTHERN UNDERTAKING

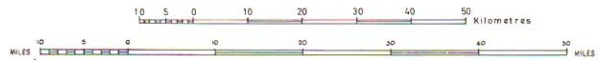
CONSUMER		Number		Proportion %		SALES		% Change		REVENUE FROM SALES		AVERAGE PRICE PER kWh SOLD		
		1968	1969	1968	1969	1968	1969	68/67	69/68	R	R	1968	1969	
Traction.....	3	3	26.55	161 825 684	179 499 150	-54.73	+ 10.92	1 460 830	1 609 825	0.9027	0.8968			
Bulk.....	11	12	21.91	133 564 061	142 409 600	- 9.46	+ 6.62	957 734	1 014 310	0.1171	0.7122			
Mining.....	67	72	37.43	228 216 436	242 111 609	- 5.80	+ 6.09	2 095 830	2 159 648	0.9184	0.8920			
Industrial.....	319	393	11.73	71 521 452	77 773 938	+ 9.74	+ 8.74	600 619	664 758	0.8398	0.8547			
Domestic.....	2 226	2 482	2.35	14 300 559	15 871 095	-16.96	+10.98	230 740	255 603	1.6135	1.6105			
Street Lighting.....	7	9	0.03	184 512	194 994	+ 3.17	+ 5.68	3 819	4 238	1.0698	2.1734			
Total	2 633	2 971	100.00	609 612 704	657 860 386	+17.26	+ 7.91	5 349 572	5 708 382	0.8775	0.8677			
										1968	1969	Accumulated to 31/12/69		
										R	R	R		
Total Revenue.....											5 360 558	5 716 306		
Working Costs.....											5 464 498	5 824 214		
Surplus.....											103 940	107 908	903 902	
Deficit.....														
Capital Expenditure.....											1 464 999	2 048 606		



BORDER UNDERTAKING

CAPE EASTERN UNDERTAKING
REFERENCE

- Area of Supply.....
- Border Undertaking.....
- Transmission Lines.....
- Transmission Lines Under Construction.....
- Substation Site..... o S/S



AREA OF SUPPLY.....3,100 SQUARE MILES (8,000 SQUARE KILOMETRES)

CAPE EASTERN UNDERTAKING

The area of supply of the Cape Eastern Undertaking is shown on the map on page 38.

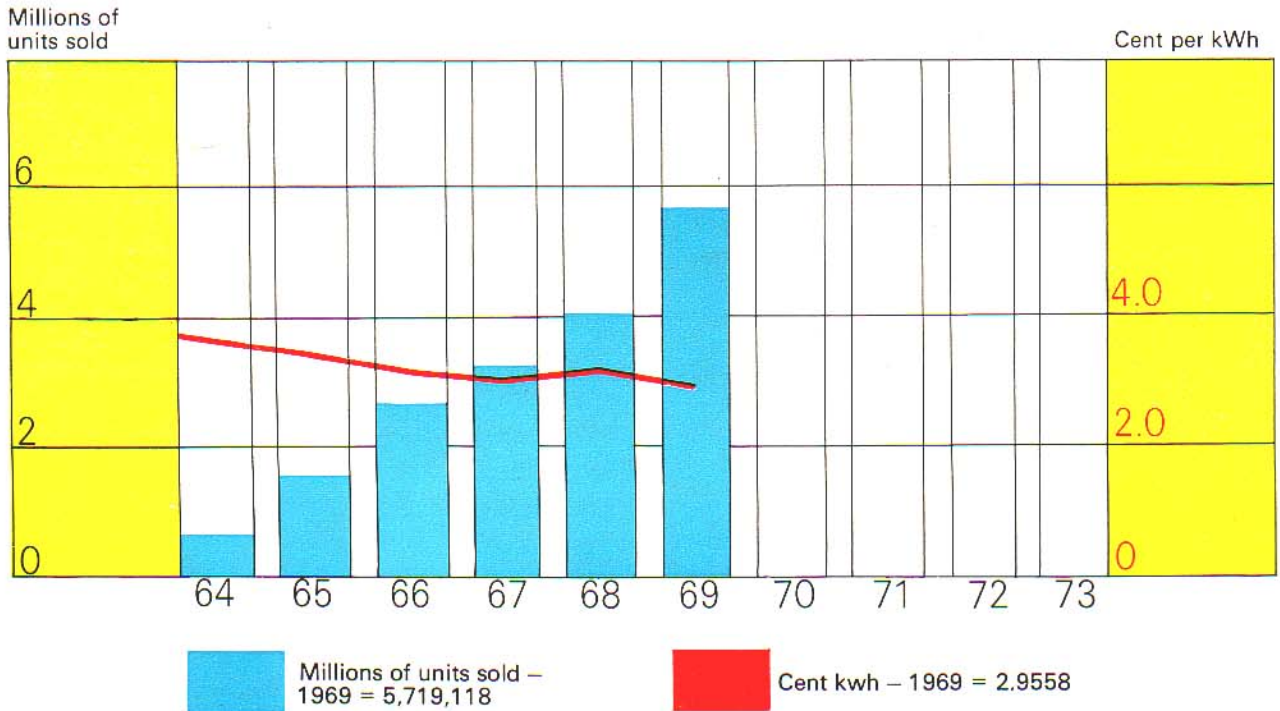
All electricity sold by Escom in the Sundays River Valley was purchased from the Port Elizabeth Municipality at Aloes.

Electricity sold by Escom in the Gamtoos Valley was purchased from Port Elizabeth Municipality at the temporary supply point at Loerie up to November 1969, when the supply was transferred to the permanent point of supply at Summit Substation.

A supply to the Gamtoos Valley will be purchased from the Department of Water Affairs hydro station at present under construction at the Paul Sauer Dam. It is anticipated that this power station which has an installed capacity of 4.5 MW will be ready for service by mid 1970.

Sales of Electricity

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



Sales to consumers increased by 39.5 per cent, from 4,098,388 units in 1968 to 5,719,118 units in 1969. Sales in the Sundays River Valley amounted to 3,887,734 units and in the Gamtoos River Valley to 1,831,384 units.

The system maximum demand for the Sundays River Valley increased from 1,323 kVA in 1968 to 1,377 kVA in 1969, an increase of 4.1 per cent, while the maximum demand for the Gamtoos River Valley increased from 360 kVA in 1968 to 576 kVA in 1969, an increase of 60.0 per cent.

Sales to the only bulk consumer, Kirkwood Municipality, increased by 17.4 per cent to 1,346,960 units in 1969. The maximum demand was 452 kVA, compared with 448 kVA in 1968.

6,312,762 units were purchased from Port Elizabeth Municipality at Aloes, Loerie and Summit and 157,389 units from the Water Affairs Department. 115,260 units were supplied to Port Elizabeth Municipality at Summit during the period when the Paul Sauer Power Station was undergoing testing.

Development of the Undertaking

Sundays River Valley

Development of the supply system in the irrigation area took place at a higher rate than in the previous year and the net increase in the number of consumers was 23, bringing the total at the year end to 343. All the additional consumers were in the domestic or small power user classes.

Supply was made available to the two radio navigation stations in the Valley in June but the stations were not yet in a position to take the supplies at the year end.

Gamtoos River Valley

Apex Substation, which is adjacent to the point of interconnection with the Port Elizabeth Municipality's system at Summit, was brought into commission in November and the temporary 22-kV supply from the Municipality at Loerie was discontinued.

Kouga Substation, at which point the output from Paul Sauer Hydro-Electric Power Station will be fed into Escom's system in the Gamtoos River Valley, was commissioned in November. The initial tests on the plant at the power station were carried out in November and December and it is expected that this station, which will be operated by Escom on behalf of the Department of Water Affairs, will be brought into service in 1970.

11 additional consumers were connected to the reticulation system in Patensic, bringing the total to 82. In Hankey, 15 additional consumers were connected and the total number at the year end was 52.

Rural consumers were connected at a steady rate, 34 being connected during the year to bring the total to 46.

The total number of consumers in the Valley at the end of 1969 was 180, of whom 4 were large power users.

Good progress was made with the construction of the 22-kV line from Kouga Substation to supply the South African Broadcasting Corporation F.M. station and the General Post Office microwave station at Kareedouw and it is expected that these supplies will be made available in April, 1970.

Certain problems connected with the site delayed

the commencement of work on the erection of the depot for operating and maintenance staff at Patensic, and it is now hoped to complete this depot during the first half of 1970.

Financial

Details of units sold to the various classes of consumers, the total income received as well as the operating costs for 1969 are given in the table on page 41.

The average price per unit of electricity sold decreased from 3·1917 cents per unit during 1968 to 2·9558 cents per unit for the current year.

The cost per unit sold however only decreased by 5 per cent to 3·3908 cents per unit.

The cost will, however, decrease considerably when the hydro power station built by the Department of Water Affairs in the Gamtoos Valley comes into operation.

Total revenue for the year 1969 amounted to R170,000 as against working costs of R194,000.

The accumulated deficit on the Undertaking's revenue account at the end of 1969 amounted to R56,000.

CAPE EASTERN UNDERTAKING

Class	CONSUMER				SALES				REVENUE FROM SALES		AVERAGE PRICE PER kwh SOLD	
	Number		Proportion %		kWh		Change %		R	R	c	c
	1968	1969	1968	1969	1968	1969	68/67	69/68	1968	1969	1968	1969
Traction.....	1	1	28.00	23.55	1 147 720	1 346 960	+ 3.33	+ 17.36	23 264	25 919	2.0270	1.9243
Bulk.....	81	97	37.81	45.93	1 549 359	2 627 028	+47.36	+ 69.56	55 252	77 334	3.5661	2.9438
Industrial.....	353	423	34.19	30.15	1 401 309	1 724 094	+ 36.63	+ 23.03	52 229	64 655	3.7316	3.7501
Domestic.....	—	2	—	0.37	—	21 036	—	—	—	1 139	—	5.4145
Street Lighting .	—	—	—	—	—	—	—	—	—	—	—	—
Total	435	523	100.00	100.00	4 098 388	5 719 118	+28.56	+ 39.55	130 808	169 047	3.1917	2.9558
									1968	1969	Accumulated to 31/12/69	
									R	R	R	
									131 924	170 277	170 277	
									146 329	193 923	193 923	
									14 405	23 646	23 646	
									139 448	216 106	216 106	
									Total Revenue.....			
									Working Costs			
									Surplus			
									Deficit.....			
									Capital Expenditure			
									55 697			

BORDER UNDERTAKING

The licensed area of supply of the Border Undertaking is shown on the map on page 42.

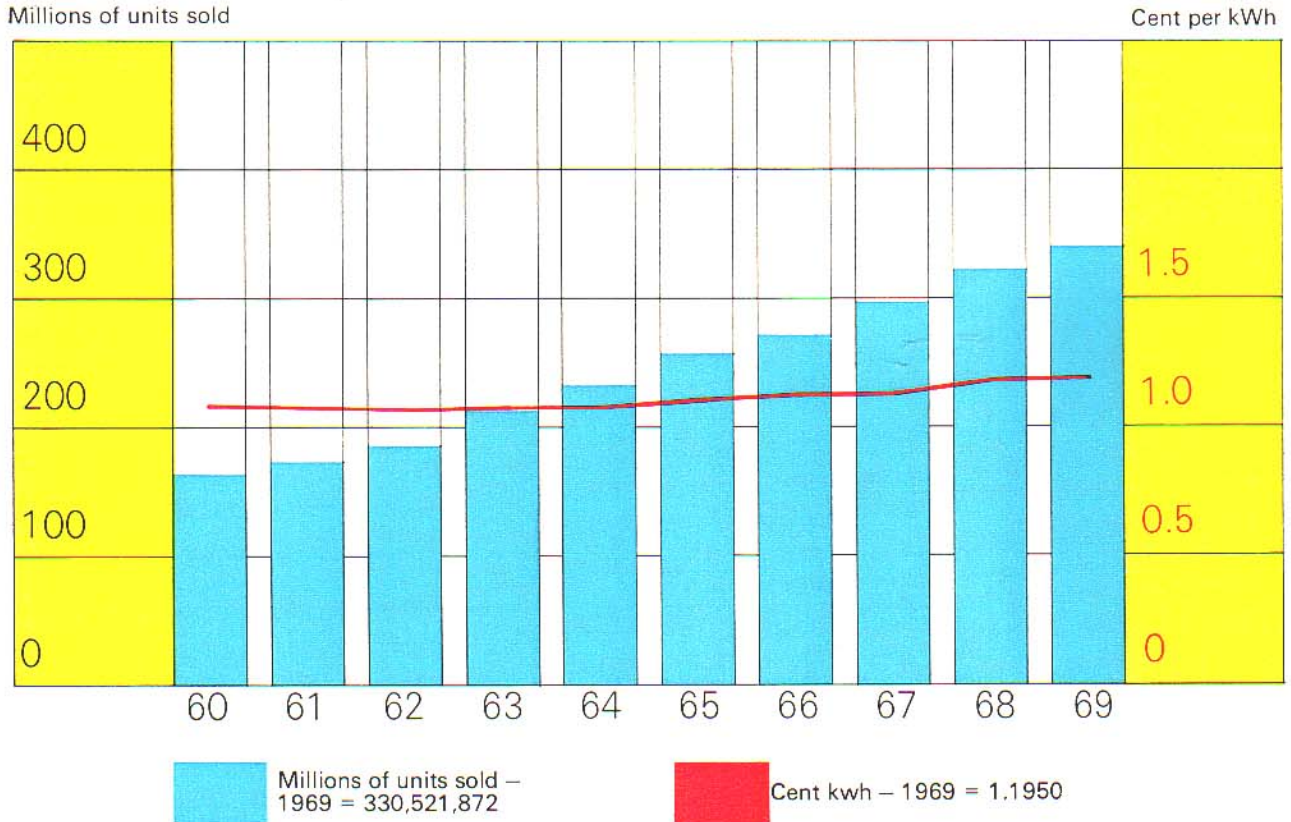
This Undertaking generates its own power at two steam power stations at present. With the commissioning of the second 20 MW set at West Bank power station in East London during March 1969, this power station has attained its final design capacity of 117 MW. King William's Town power station is at present only being used for standby purposes.

Preliminary planning has been commenced in connection with the transmission system which will be installed to connect the Border Undertaking

supply system with the 400 kV system at De Aar. The system is being suitably designed to provide a major point of supply, in the vicinity of Berlin, to the East London Municipality, which will be responsible for the reticulation of electricity in the new industrial area at Berlin.

Sales of Electricity

The growth of the Undertaking is shown on the following graph of units sold for the years 1960 to 1969.



The total sales by the Undertaking amounted to 330,521,872 units, an increase of 6.45 per cent over the figure for the previous year. The average annual increase over the ten-year period from 1960 to 1969 was 7.2 per cent.

The system maximum demand increased from 64,860 kW in 1968 to 67,720 kW in 1969.

The major bulk consumer on the Undertaking is the East London Municipality. Sales to this consumer increased by 6.2 per cent to 247,928,925 units, and the maximum demand increased by 2.4 per cent, from 52,500 kVA in 1968 to 53,760 kVA in 1969.

The net increase in the number of consumers during the year was 261, giving a total year-end figure of 4,577.

Four new large users were connected and one terminated supply. 43 farmers and 2 other rural consumers were connected.

Development of the Undertaking

Work is complete with the installation of two additional 11 kV cables between the West Bank No. 2 power station and the nearby Gately Outspan Distribution Station where the third 12 MVA 11/66kV step-up transformer was placed on load in September, 1969. The two 66 kV circuit breakers for controlling the outgoing transmission lines were erected but had not been commissioned at the year end. It is expected that they will be placed in service early in 1970.

The 5 MVA 66/11 kV transformer at Ducats Substation was commissioned in May and an additional 11 kV circuit breaker and length of 11 kV line were erected to provide a duplicate supply to the North Coast system.

The foundations for the third 6 MVA 66/11 kV transformer at King William's Town Substation were

installed, delivery of the transformer is awaited and it is hoped to complete the erection by the middle of 1970.

The conversion of the King William's Town/Kubusie 11 kV line to 22 kV operation was completed in May and the 11/22 kV step-up substation at King William's Town and the 22/11 kV stepdown substation at Kubusie were placed in service at that time.

The 22 kV line to supply the Thafalofefe Hospital in the Kentani district was completed and the supply was connected in September.

The transfer of the point of supply to Bedford Municipality to a new position was completed in August.

In order to cater for the increasing load in the Fort Beaufort area, plans were made to install a 2 MVA 33/11 kV transformer to bring the firm capacity up from 1500 kVA to 2,000 kVA, and work was commenced on this project.

The permanent substation for the 11 kV supply to the Fort Hare University was placed in service in December, 1969.

Portion of the 3.3 kV reticulation system at Alice was converted to 11 kV.

Agreements were concluded with the Department of Water Affairs for supplies to two pumping stations which are being erected for the purpose of supplying water from the Laing Dam to King William's Town and to the new industrial complex at Berlin. Negotiations are in progress for the supply to a third pumping station in this vicinity. Pending the installation of the new major substation for the supply to the Berlin area, a temporary 66/11 kV substation will be erected to provide the supplies to these pumping stations, which are scheduled for operation in 1970.

Due to the growth of load at Butterworth and at Idutywa, additional 22/3.3 kV transformers will have to be installed in the substations at these points and the necessary arrangements are in hand.

Plans have also been made for the erection of a new terminal substation to cater for the increase of load at

Stutterheim. This is due for completion in April, 1970.

Negotiations have been completed for the provision of supplies to the G.P.O. and other consumers in Bathurst and work is to be started on this scheme in the first half of 1970.

Supplies to Rural Consumers

During the year 12 miles of 11 kV line and 21 miles of 22 kV line were built to supply 39 farmers and 15 other rural consumers.

In the Zuney area, west of Alexandria, a scheme to supply 23 farmers is under construction, the scheme will involve the erection of 22 miles of line. Negotiations have been completed with a further 23 farmers in the Boknes area east of Alexandria and for this scheme 27 miles of rural lines will have to be erected.

Agreements have been completed with 28 individual farmers and 7 other rural consumers in various areas, for connection in 1970. This work will involve the erection of 16 miles of line. A large number of applications have been received from different sections of the Undertaking and these are being investigated at present.

Financial

Details of units sold to the various classes of consumers, the total income received as well as operating costs for 1969 are given in the table on page 45.

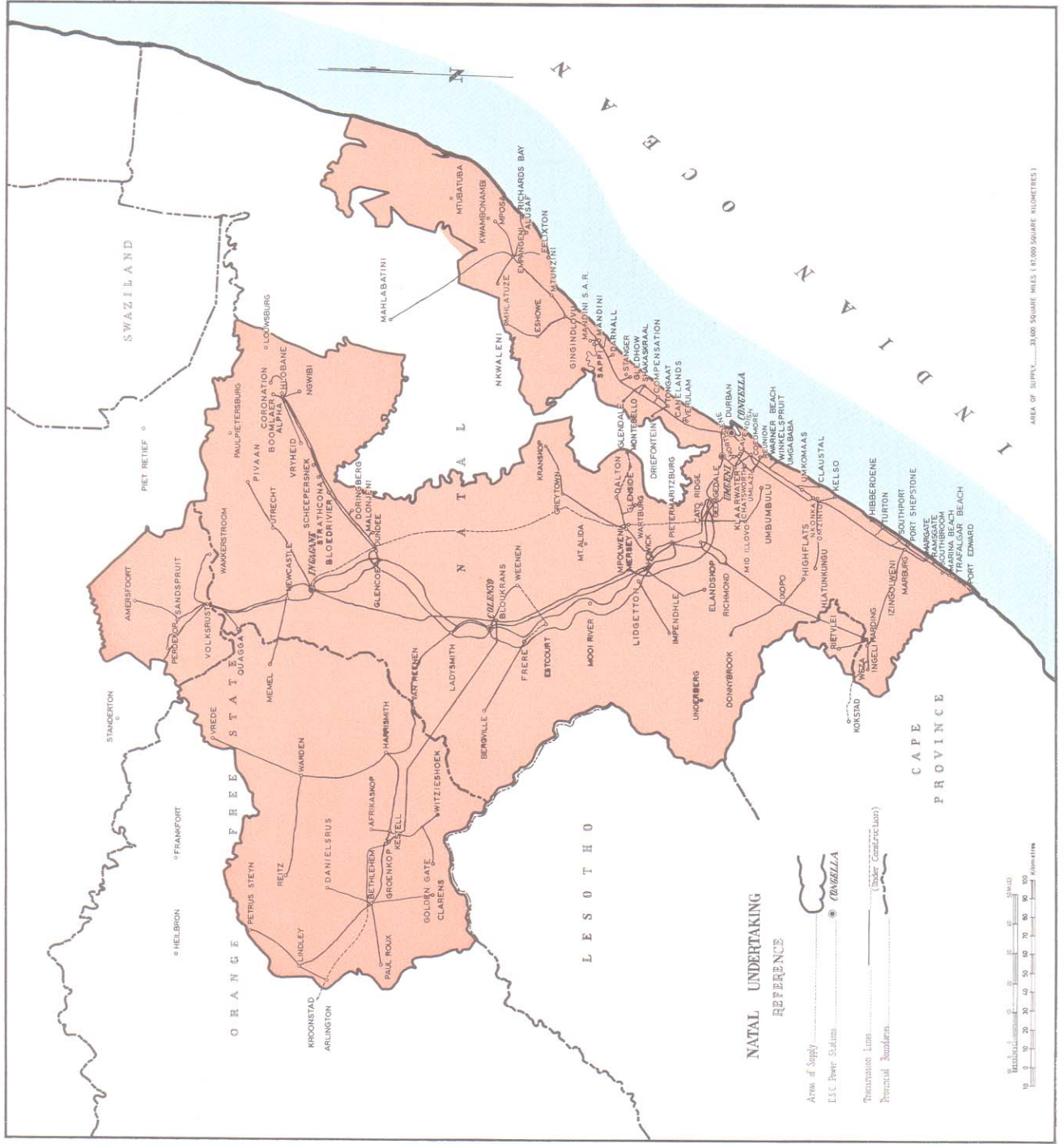
The average price per unit sold for the year 1969 was 1.1950 cents per unit representing an increase of 0.94 per cent since 1968.

The average cost per unit sold for 1969 decreased by 2.0 per cent during the year to 1.2003 cents per unit being 0.4 per cent higher than the average revenue received.

Total revenue for the year was R3,955,000 as compared with total costs of R3,967,000 resulting in a deficit on the year's operation of R12,000. This increases the accumulated deficit on the Undertaking's revenue account to R104,000.

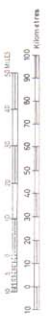
BORDER UNDERTAKING

CONSUMER		Number		Proportion %		SALES		%Change		REVENUE FROM SALES		AVERAGE PRICE PER kWh SOLD		
		1968	1969	1968	1969	1968	1969	kWh	1968	1969	R	c	R	c
Traction.....	14	14	86.36	85.76	268 160 954	283 457 527	5.70	68/67	69/68	2 827 391	3 023 004	1.0544	1.0665	
Bulk.....	429	437	6.69	6.87	20 763 881	22 704 561	9.35	+ 6.03	- 9.35	447 505	477 514	2.1552	2.1032	
Mining.....	3 862	4 115	6.76	7.18	20 971 148	23 733 695	13.17	+ 6.73	+ 13.17	385 687	432 095	1.8391	1.8206	
Industrial.....	11	11	0.19	0.19	601 595	626 089	4.07	+ 3.47	+ 4.07	15 354	17 015	2.5522	2.7177	
Domestic.....														
Street Lighting .														
Total	4 316	4 577	100.00	100.00	310 497 578	330 521 872	6.45	+ 5.54	1 6.45	3 675 937	3 949 628	1.1839	1.1950	
										1968	1969	Accumulated to 31/12/69		
										R	R	R		
Total Revenue.....											3 680 468	3 955 214		
Working Costs											3 802 320	3 967 127		
Surplus.....											121 852	11 913		
Deficit.....											2 225 355	1 251 984	104 474	
Capital Expenditure.....														



NATAL UNDERTAKING

- REFERENCE**
- Area of Supply
 - E.I.C. Power Stations
 - Transmission Lines
 - Provincial Boundaries
 - Under Construction



AREA OF SUPPLY.....31,000 SQUARE KILOMETRES

NATAL UNDERTAKING

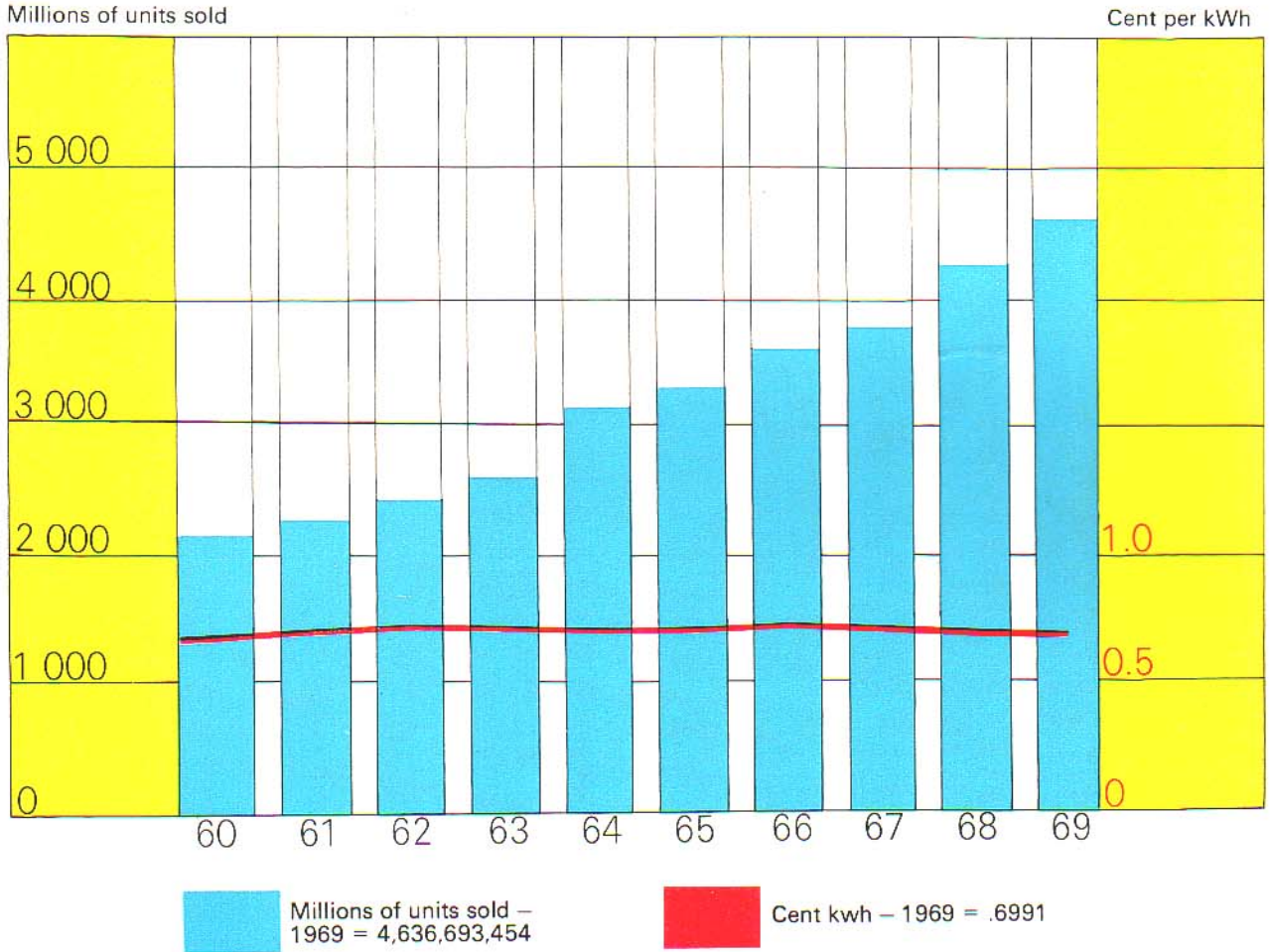
The licensed area of supply of the Natal Undertaking which combines the areas of supply of the Natal Central Licence and the Natal Southern Licence is shown on the map on page 46 and remains unchanged during 1969. Application has been made to the Electricity Control Board for amendments to both the Natal Southern and Natal Central Licences to cater for the proposed expansion of the system in the Northern Zululand/Pongola areas and in the Kokstad area.

This Undertaking has four power stations, Congella and Umgeni Power Stations near Durban, Colenso

in the Natal Midlands and Ingagane Power Station in Northern Natal. All these power stations have, with the bringing into service early in 1969 of the fifth 100 MW generator at Ingagane, been developed to their full designed capacity. Further load growth requirements will be met by the import of power via 400 kV lines between Camden Power Station and Ingagane.

Sales of Electricity

The following graph indicates the increase in sales of electricity over the period 1960 to 1969.



Units generated in the pooled power stations of the Natal Undertaking increased from 4,606.6 million units in 1968 to 5,178.3 million units during 1969, an increase of 12.4 per cent. In addition 1.8 million units were imported from the Rand and O.F.S. Undertaking through the 88 kV system at Platrand. No export of units was effected over the same system.

Total sales from the interconnected system of the Undertaking increased from 4,121 million units in 1968 to 4,637 million units during 1969. The increase for the year was 12.5 per cent, being higher than the average increase over the last ten years, and higher than the increase for 1968 (10.8 per cent).

All classes of consumer except mining, reflected

higher rates of increase in consumption during 1969 than in 1968.

Bulk supplies to municipalities showed an increase of 11.0 per cent to 2,976 million units sold during 1969. The Durban Corporation purchased 78.9 per cent of these units, its consumption rising by 10.8 per cent over their 1968 figure to 2,347 million units. Pietermaritzburg's purchases for the year were 306 million units with a growth rate of 10.4 per cent.

Sales to the South African Railways for traction purposes rose by 15.2 per cent to 668 million units. The increase in industrial supplies during the year amounted to 18 per cent with 773 million units sold to

this class of consumer. Sales to the South African Railways for pumping petroleum products and crude oil totalled 51 million units during 1969 as compared to 8 million units in 1968, due mainly to the bringing into service of the new crude-oil pipeline between Durban and Ogies via Empangeni.

Feralloys Limited at Cato Ridge increased their consumption by 27 per cent to 265 million units and Union Glass Works at Talana increased their consumption by 18 per cent to 33 million units.

Development of the Undertaking

A programme involving considerable expansion of the system has commenced with a start having been made during 1969 on a number of major new projects. Other projects are due to commence in the near future.

The first of two 400 kV transmission lines from Chivelston to Mersey was started during 1969. This line will be energised initially at 275 kV from Ingagane Power Station.

Good progress has been made on the construction of the 275/132 kV section of the Mersey Substation. This work will be completed during the first half of 1970 to receive the line from Ingagane. An early start is to be made during 1970 on the single 275 kV line from Mersey to Gcorgedale, thereby completing the urgently required third interconnector with Ingagane.

In the Richards Bay area construction commenced during the latter part of 1969 on the Impala Substation required primarily for supply to the Aluminium Smelter by mid-1971. Pending completion of the permanent supply, a temporary construction supply of 2 MVA was made available to the Smelter.

A start will be made during 1970 with the construction of the duplicate 275 kV lines from Mersey to Impala and with the 132 kV lines from Impala to the Smelter. At the Smelter a switching substation will also be provided for the point of supply.

The Marburg/Ingeli 88 kV transmission line and the Ingeli Substation at Harding were commissioned during the year, thereby strengthening the system in the Ixopo/Harding area. Construction of the 88 kV line beyond Ingeli to Kokstad started in January 1970. Work on the Kokstad substation is well advanced and a supply to the Kokstad Municipality should be available early in 1970.

At Mpolweni a new 88/33 kV substation reached an advanced stage of construction during 1969 and will be fed from Cedara by conversion of the existing 33 kV wood-pole line to 88 kV operation during 1970 and the rehabilitation of the Cedara Substation. This is required to strengthen the existing system east of Pietermaritzburg and to provide for further extension of the 33 kV system beyond Greytown, to the proposed Ahrens Substation in the Hermannsburg area and the proposed Grüneck Substation in the Harburg area, which is scheduled to be started in 1970.

Good progress was made during the year on the new Willowford 88/33 kV Substation near Estcourt which is expected to be commissioned during the first half of 1970. The Estcourt Municipality will be provided with an increased supply from this substa-

tion at 33 kV by a pair of 33 kV lines and cables to a new point in the town. The existing Estcourt Substation will be replaced by Willowford and will eventually be dismantled. From Willowford 33 kV lines will also feed the Winterton and Weenen areas where new substations have been provided for strengthening of the system. During the year the troublesome 33 kV line to Bergville was rebuilt.

The Orange Free State system was strengthened with the commissioning during the year of the Bloukrans and Groenkop 132 kV Substations and the 132 kV transmission line from Bloukrans to Groenkop. Although Bloukrans is initially a 132 kV switching station only, it is planned to provide a 275 kV in-feed by 1972 to supplement and eventually take over load from the Colenso Power Station which will gradually be shut down. At Groenkop an 11 kV supply will be established during 1970 to strengthen the rural network in the Harrismith/Bethlehem area. The 132 kV system from Groenkop will be extended during 1970 to tie in with the Rand and O.F.S. Undertaking near Kroonstad.

Supplies were energized to the South African Railways Crude-Oil Pumping Stations during 1969 at Scheepersnek near Vryheid, Quagga near Volksrust and at Mahlabatini and Empangeni in Zululand.

In order to provide for an in-feed of additional power to the system, the construction of two 400 kV transmission lines from Camden Power Station, the construction of Chivelston Substation and the 275 kV interconnector with Ingagane Power Station will be commenced in 1970 for completion by mid-1971.

A scheme to extend the system beyond Empangeni to the Mtubatuba and Pongola areas in Northern Zululand will be undertaken during 1970 for completion in stages by about the end of 1971.

At Klaarwater Substation the Durban Corporation section has been completed and it is expected that the Corporation will be utilizing this point of supply in 1970.

In the Durban area the South African Railways have asked for a supply at 88 kV to the Bayhead area for new harbour extensions. A supply of 2 MVA increasing to 10 MVA with an ultimate capacity of 20 MVA under emergency conditions will be provided during 1970 from one of the 88 kV lines between Coedmore Substation and Congella Power Station.

In the Central Section of Natal, announcements by the Government of future growth points at Ladysmith for I.D.C.-sponsored industrial development and at Newcastle for the third Iscor Works have brought about the need to plan for major system extensions during the next few years. This has been further accentuated by an application from the Water Affairs Department for power to pump water from the Spioenkop Dam on the Tugela River across the Berg into the Wilge River.

In order to provide power supplies for the Tugela/Wilge Pumping Scheme, it is proposed to construct a 275 kV line from Bloukrans Substation near Colenso to a new substation near Bergville to be named Tugela. From Tugela Substation 132 kV lines will be built to the pump stations where supplies will be provided at 11 kV.

Rural Development

Development of the rural network took place over a wide area in Natal. A total of 366 new farm supplies were made available during the year. This involved the building of 239.5 miles of transmission line. No less than 130 of these new farm connections were supplied in the Ixopo/Pietermaritzburg/Greytown area, where 73.3 miles of line were built. The existing system in Central Natal was extended to supply an additional 40 farmers, involving 25.7 miles of line, while in Northern Natal and the Bethlehem/Warden/Vrede area 42 miles of line were built to supply 32 farms. On the North Coast and Zululand 91.1 miles of line were completed to supply 149 farms, while an additional 15 farmers' supplies, involving 7.3 miles of line, were given on the South Coast.

The development in the Bethlehem/Warden/Vrede area enabled Escom to supply the town of Clarens.

Supplies to 167 farms with a total length of 114 miles of transmission line are at present under construction.

Schemes to supply large numbers of consumers in the Pongola and Mtubatuba areas (including the towns of Mtubatuba and Kwambonambi) have been finalised and construction work will commence in 1970.

Terms have been quoted for a number of other schemes with 686 applications being outstanding at the year end. During the year a total of 914 farmers accepted Escom's terms for supply.

Financial

Details of units sold to the various classes of consumers, the total income received as well as the operating costs for 1969 are given in the table on page 50.

The average price per unit sold decreased by 0.9 per cent during 1969 to 0.6991 cents per unit.

The cost per unit sold decreased from 0.7290 cents per unit in 1968 to 0.7079 cents per unit during 1969, representing an improvement of 2.9 per cent.

This was partially due to the increased use made of the new and more efficient Ingagane Power Station which generated more than half the total units sold in the Undertaking.

Total revenue for the year amounted to R32,592,000 as compared with working costs of R32,822,000.

There was, therefore, a deficit of R230,000 thus reducing the accumulated surplus on the Undertaking's revenue account to R1,000,000.

NATAL UNDERTAKING

CONSUMER	SALES				%Change	REVENUE FROM SALES		AVERAGE PRICE PER kWh SOLD			
	Number		kWh			R	R	c	c		
	1968	1969	1968	1969		1968	1969	1968	1969		
Traction.....	12	12	580 079 577	667 916 534	68/67	69/68	4 631 513	5 280 948	0.7984	0.7907	
Bulk.....	25	26	2 680 222 072	2 976 464 052	+ 13.82	- 15.14	17 062 401	18 559 708	0.6366	0.6235	
Mining.....	29	33	130 575 686	133 242 097	+ 9.59	- 11.05	1 019 993	1 087 477	0.7812	0.8162	
Industrial.....	2 939	3 350	655 100 218	773 220 259	+ 8.40	+ 2.04	5 141 112	6 136 354	0.7848	0.7936	
Domestic.....	12 722	13 704	73 787 577	83 999 814	+ 13.76	+ 18.03	1 174 178	1 315 343	1.5913	1.5659	
Street Lighting .	61	63	1 686 717	1 850 698	+ 10.18	- 13.84	32 497	35 520	1.9266	1.9193	
Total	15 788	17 188	4 121 451 847	4 636 693 454	- 10.77	12.50	29 061 694	32 415 350	0.7051	0.6991	
						1968		1969		Accumulated to 31/12/69	
Total Revenue.....							R	R	R		
Working Costs.....							29 210 987	32 592 104	32 822 483		
Surplus.....							30 044 131	32 822 483	1 000 400		
Deficit.....							833 144	230 379			
Capital Expenditure.....							11 959 243	10 941 541			

EASTERN TRANSVAAL UNDERTAKING

The licensed area of the Eastern Transvaal Undertaking is shown on the map on page 52.

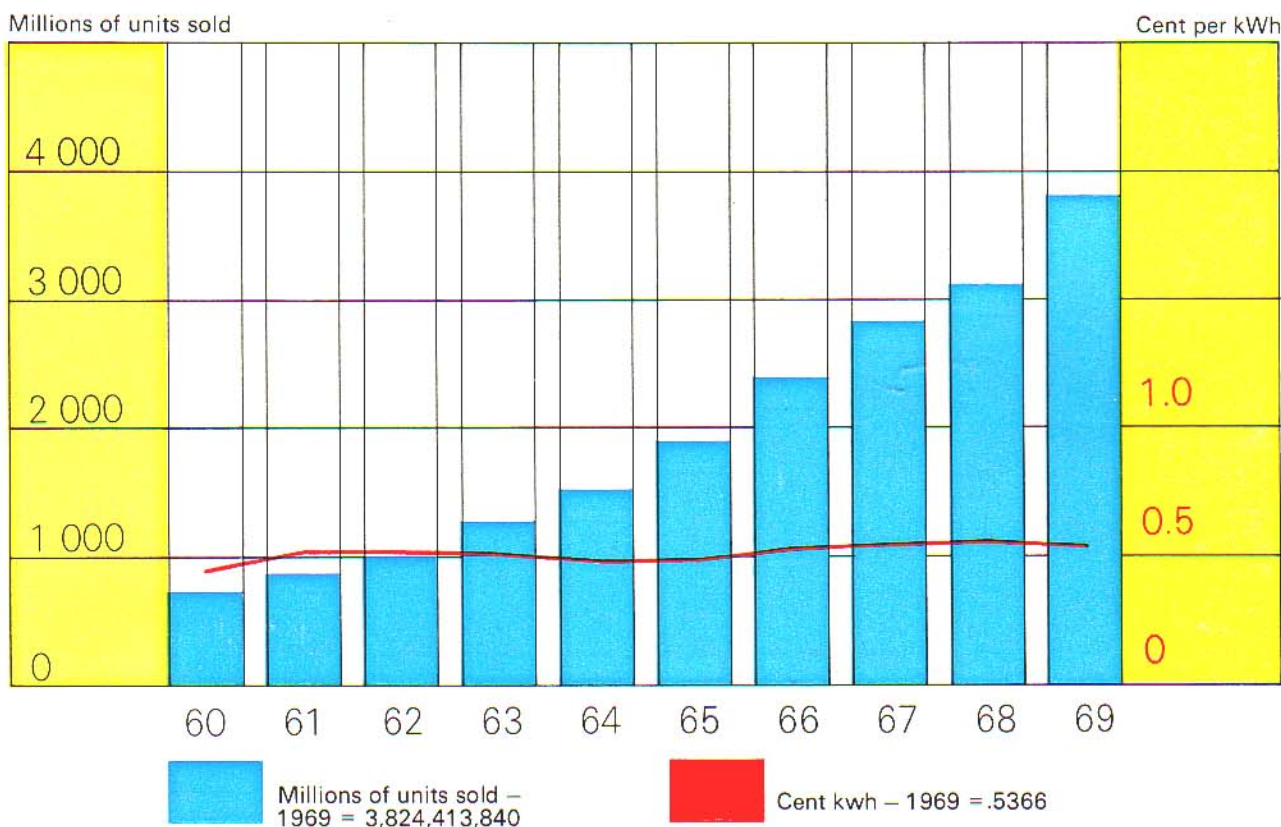
In terms of the licence granted by the Electricity Control Board the power stations of the Eastern Transvaal and of the Rand and Orange Free State Undertaking operate as a pooled generation system. The Eastern Transvaal Undertaking draws its power wholly from this pooled system.

Sales of Electricity

The Undertaking again experienced a high rate of

expansion during the year. In 1968 the increase in units sold was 12·8 per cent which in itself was well above average but in 1969 this figure increased by more than half to 19·8 per cent.

It is of interest to note that the total units sold in 1969 amounted to 3,824,413,840 which is an increase of 633,045,910 over the 1968 figure and in comparison almost equals the figure of total units sold in 1959 of 633,326,551.



Details of units sold to the various classes of consumers, the income received therefrom and the operating costs for 1969 are given on the table on page 54.

A new classification "Foreign" has been introduced in the table as the Undertaking is now supplying the village of Ressano Garcia in Mozambique and arrangements have also been concluded to extend the supply by means of 275 kV transmission to Lourenço Marques in 1971. Escom will make the supply available on the border near Komatipoort and the Mozambique authorities will be responsible for the extension and in due course operation and maintenance in Mozambique territory.

With the exception of electric traction, all classes of supplies show large increases in sales and in particular industrial supplies have increased by 33·9 per cent.

Development of the Undertaking

With the progress of construction of Hendrina and Arnot Power Stations inside the Eastern Transvaal Undertaking's area of supply, the Undertaking has been considerably involved indirectly with the construction of these two new power stations.

At Hendrina Power Station, one of the Undertaking's 132 kV lines was turned in to the 400/132 kV switchyards and later in the year use was made of this to energize the station transformers which in turn are now being used for the construction supplies at the station.

With the commissioning of Hendrina and Arnot Power Stations, additional water supplies are required for these two stations and during the year construction on a new 132/3·3 kV substation to be known as Wintershoek was commenced and was nearing completion at the year-end. This substation will

M O C H A M B I Q U E

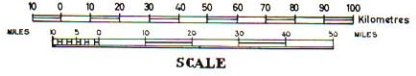
S W A Z I L A N D



EASTERN TRANSSVAAL UNDERTAKING

REFERENCE

- Area of Supply
- E.S.C. Power Stations WILGE
- Transmission lines
- Transmission lines under construction
- ARNOT
(under construction)



AREA OF SUPPLY.....35,700 SQUARE MILES (92,500 SQUARE KILOMETRES)

supply additional pumps being installed at Nooitgedacht Dam on the Komati River. This substation is supplied by means of a single 132 kV line from Witkloof Substation which also had to be extended during the year. Ultimately, this 132 kV line will extend beyond Wintershoek to supply a booster pumping station at Bosloop and another pump station at Kafferskraal Dam near Badplaas.

The third 132 kV line from Acornhoek to Foskor and then on to Selati Distribution Station near Phalaborwa was completed and energized.

At Kudu Distribution Station at Komati Power Station the steelwork, switchgear and civil works were extended to prepare for the installation of a 132/88 kV 60 MVA transformer. In connection with this, work was started on the Kudu/Geluk and Geluk/Middel-drift 88 kV lines and the necessary extensions at Geluk and Middel-drift Distribution Stations to accommodate the extra 88 kV line. The purpose of these extensions is to reinforce the network to compensate for the closing down of Witbank Power Station.

Early in 1969 the Jericho/Kemp 88 kV line and the Kemp 88/11 kV Distribution Station were completed and commissioned. Extensions at Jericho Distribution Station were also necessary. This work has enabled supplies of electricity to be made available to the Town of Piet Retief and neighbouring sawmills, a paper mill and other industries.

Work was commenced on extensions to Arbor Switching Station and site levelling was completed in preparation for the erection of Jakkals 88/21 kV Distribution Station. These two points are to be connected by a new 88 kV line from Arbor in order to improve supplies at Bronkhorstspuit. Construction on the 88 kV line could not commence as difficulty is being experienced over rights of way.

A supply was made available in mid-year to the Lower Sabie Rest Camp in the Kruger National Park by extending the 22 kV system from Crocodile Bridge. Other rest camps in the Game Reserve supplied by this Undertaking are Pretoriuskop and Skukuza.

Work was in progress at the year-end to supply the S.A.B.C.—F.M. transmitter and other installations on the top of Mariepskop by means of a long 22 kV extension from Acornhoek.

During the year numerous supply points were made

to the State Oil project near Ogies and further supplies are being requested. This work is in connection with the Durban/Richards Bay/Ogies/Sasolburg oil pipeline.

Rural Electrification

Once again good progress has been made with rural electrification but due to the large number of applications being received coupled with the general staff shortage, delays averaging six to nine months are being experienced in making supplies available.

During the year 306 new farms were supplied with electricity whilst another 98 farms had their existing supplies increased. In addition, 38 new rural supplies to non-farmers were made available whilst 11 other such existing supplies were increased.

In the small rural towns, 36 new supplies were made available and 11 others were increased.

In the Groblersdal/Marble Hall area approximately 18 miles of 22 kV line and 7 miles of 11 kV line were erected to furnish these new supplies. Similar figures for the Highveld section of the Undertaking were 37 miles of 22 kV line and 94 miles of 11 kV line, in the Southern Lowveld 70 miles of 22 kV line and 59 miles of 11 kV line and finally in the Northern Lowveld 34 miles of 22 kV line and 31 miles of 11 kV line.

A total of 159 miles of 22 kV and 191 miles of 11 kV lines were erected for rural supplies in 1969.

Financial

The average price per unit of electricity sold decreased from 0.5540 cents/unit in 1968 to 0.5366 cents/unit for the current year, representing a decrease of 3.1 per cent.

The cost per unit sold during 1969 was 0.5123 cents/unit being 4.9 per cent lower than the 1968 figure.

This improvement in costs is partially as a result of a considerable increase in the number of units sold being 19.8 per cent above sales for 1968, the main increase being in the industrial sector.

Total revenue for the year amounted to R20,620,000 as compared with total costs of R19,594,000. There was, therefore, a surplus of R1,026,000 on the year's operation increasing the total accumulated surplus to R3,339,000.

EASTERN TRANSVAAL UNDERTAKING

CONSUMER		Number		Proportion %		SALES		%Change		REVENUE FROM SALES		AVERAGE PRICE PER kWh SOLD	
		1968	1969	1968	1969	1968	1969	68/67	69/68	R	R	1968	1969
Class													
Traction	7	7	7.07	8.46	7.07	269 935 275	270 223 270	+ 7.42	+ 0.11	2 027 565	2 017 668	0.7511	0.7467
Bulk	20	21	5.46	5.76	5.46	184 028 972	208 952 581	-22.40	+13.54	1 087 157	1 237 802	0.5908	0.5924
Mining	79	82	36.44	32.61	32.61	1 162 863 916	1 247 348 685	-13.25	- 7.27	6 312 655	6 803 777	0.5429	0.5455
Industrial	1 804	2 070	48.24	53.88	53.88	1 539 437 438	2 060 599 349	-12.33	-33.85	7 693 567	9 896 406	0.4998	0.4803
Domestic	4 754	4 773	1.08	0.96	0.96	34 496 377	36 633 127	-14.71	- 6.19	537 199	542 782	1.5573	1.4817
Street Lighting	23	23	0.02	0.02	0.02	605 952	656 828	- 2.94	+ 8.40	20 921	21 667	3.4526	3.2987
Total	6 687	6 976	100.00	100.00	100.00	3 191 367 930	3 824 413 840	-12.78	+19.84	17 679 064	20 520 102	0.5540	0.5366
										1968	1969	Accumulated to 31/12/69	
										R	R	R	
										17 785 293	20 620 091	20 620 091	
										17 189 045	19 594 017	19 594 017	
										596 248	1 026 074	1 026 074	
										4 245 234	4 797 311	3 338 574	
												Capital Expenditure	
												Total Revenue	
												Working Costs	
												Surplus	
												Deficit	
												Capital Expenditure	

RAND AND ORANGE FREE STATE UNDERTAKING

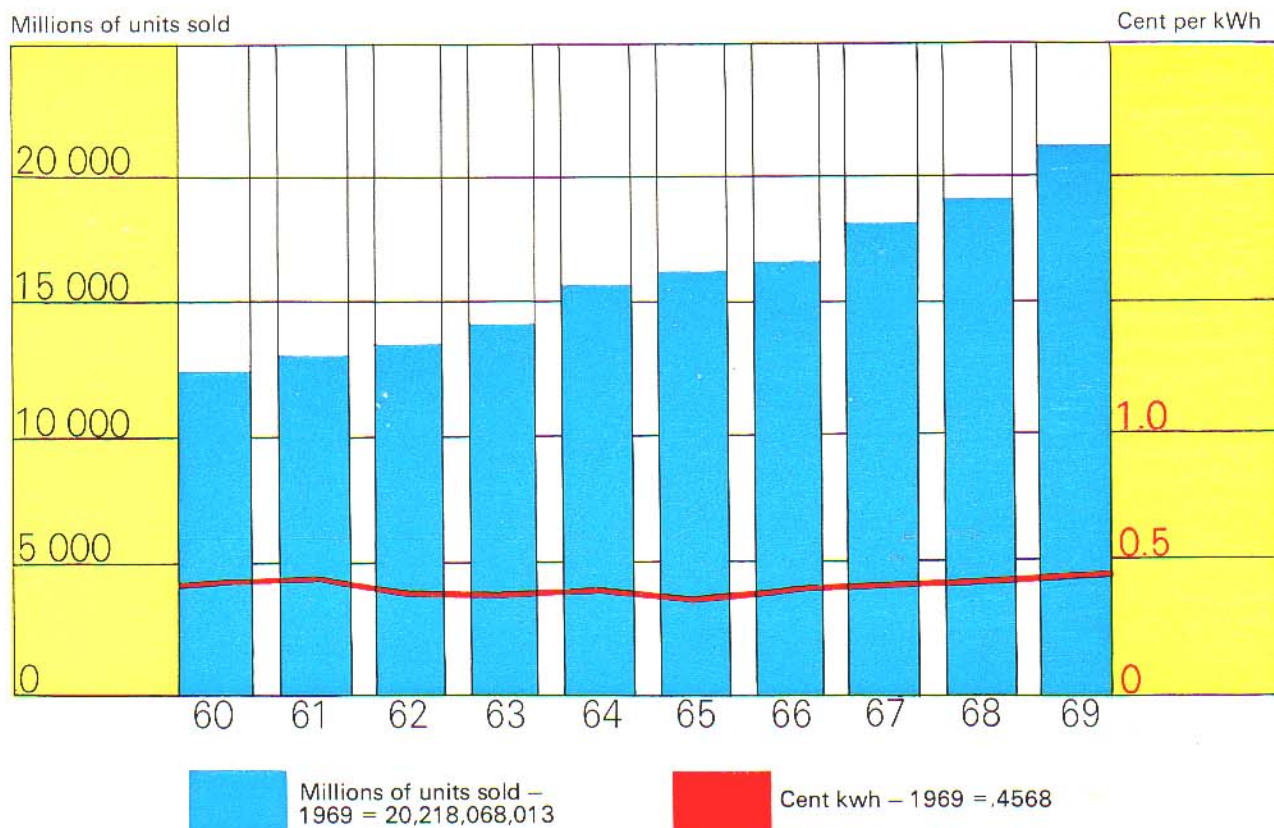
The licenced area of supply of the Rand and Orange Free State Undertaking is shown on the map on page 56.

Considerable progress continued to be made during the year with the development of the high voltage

transmission system which is now nearing completion.

Sales of Electricity

The following graph indicates the increase in sales of electricity over the period 1960 to 1969.



Over the years covered in the graph, the total units sold increased from 11,035 million units in 1959 to 20,218 million units in 1969, an average annual increase of 6.2 per cent over the 10 years.

The increase during 1969 is 6.5 per cent above the sales for 1968 which is slightly above the average for the last 10 years.

Sales to the South African Railways, local authorities, industries and mining increased during

1969 over the sales recorded during 1968 by the following percentages:—

South African Railways for traction purposes	1.9%
Local Authorities	8.5%
Industries	8.5%
Mining	5.2%

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

	Units sold (millions)				
	1965	1966	1967	1968	1969
Building and Cement (Including quarrying)	335	353	388	437	471
Chemical (Including pharmaceutical)	594	637	673	652	695
Engineering (Including the Motor Industry)	375	340	437	476	510
Foodstuffs, Consumer Goods and Commercial	570	464	502	596	669
Iron, Steel and Base Metals	1 452	1 509	1 690	1 831	1 986
Paper and Paper Products	255	281	302	291	298

Sales to the Rustenburg Platinum Mines showed a significant increase, while the units sold to the gold mines increased by only 2.8 per cent during the year.

The fall off in sales in the Witwatersrand area recorded in 1968 continued in 1969 and amounted to a drop of 6.1 per cent. The Klerksdorp area sales

increased by 9.6 per cent, the Far West Rand area by 4.5 per cent and the Orange Free State area by 3.9 per cent over the sales recorded in 1968.

Domestic sales maintained their rapid increase, the 1969 sales exceeded the 1968 sales by 16.2 per cent.

Development of the Undertaking

During 1968 one 400 kV transmission line was completed between the Atlas Distribution Station (near Vereeniging) and the Perseus Distribution Station (near Dealesville). A second 400 kV line is being constructed to Perseus for completion in July, 1970. This line will, however, start at the Grootvlei Power Station.

Perseus was commissioned during the year. Bloemfontein Municipality should be supplied from this distribution station by March, 1972.

Two transmission lines were completed during April, 1969, between Atlas and the Bernina Distribution Station on the West Rand and Bernina Distribution Station was placed in service.

The 275 kV line from Bernina Distribution Station to Trident Distribution Station is expected to be in service by December, 1970 and plans are in hand for a 275 kV line (to be operated initially at 88 kV) from Trident Distribution Station to the Northam area to cater for the large increases in load notified by the platinum mining companies operating in that area.

Work was commenced on the 275/88 kV Jupiter Distribution Station which will be a point of supply to the City of Johannesburg and also augment the supply to the Germiston and Alberton areas. This distribution station should be in service towards the end of 1970. Jupiter Distribution Station will be supplied by two 275 kV lines from Apollo Distribution Station, the establishment of which was also commenced during 1969. This latter distribution station will be fed by 400 kV lines from Vulcan Distribution Station (near Witbank) and will also be the input point for the supply from the Cabora Bassa Power Station in Mozambique.

Supplies were given to the Municipalities of Cornelia and Dealesville during 1969 and a second point of supply to the Vereeniging Municipality at Duncanville was commissioned.

Negotiations were concluded with the Municipalities of Johannesburg, Bloemfontein and Pretoria for the

provision of bulk supplies to augment the output of their own generating plants.

The 6.6 kV supply to the Bedfordview Village Council was replaced by a 42 kV supply to meet the rapid load growth in the Village.

The permanent supply to East Driefontein Gold Mining Company Limited was placed in service with an initial transformer capacity of two 20 MVA units.

Impala Platinum Limited took a permanent supply at its Rustenburg Mine via four 5 MVA transformers and also a supply for its refinery at East Geduld.

Rustenburg Platinum Mines Limited's demand increased considerably with the commissioning of their first 20 MVA furnace.

A 42 kV supply was given to the Zinc Corporation of South Africa Limited on the property of Vogelstruisbult Gold Mining Areas Limited.

Rural Electrification

During 1969 the work of connecting new consumers in Rural Areas continued apace; the number of new farm supplies given was 977 and 674 miles of transmission line were built.

A large number of existing rural electrification schemes were extended further, and the additional numbers of consumers connected in the larger schemes were:— Brits—278, Potchefstroom South—91, Lochvaal/Barrage—83, Magaliesburg/Tarlton—76, and Halfway House (between Johannesburg and Pretoria)—104.

The Rayton (East of Pretoria), Kroonstad North, Hennopsriver (near Pretoria) and Luipaardsvlei/Doornkop (near Randfontein) schemes were completed and supplies were provided to 112 consumers.

Schemes are under construction in the Thabazimbi South and Fochville areas, Oaktree Agricultural Holdings (near Krugersdorp) and Riverpark/Mooiland Agricultural Holdings (near Vereeniging). A total of 123 consumers were connected.

The following schemes were offered and accepted during 1969, and have been placed on the construction programme:—

Scheme	Number of consumers	Miles of line involved
Skikfontein/Goeiehoop (between Heidelberg and Vereeniging)	69	80
Sannieshof Restricted Scheme	231	289
Hennenman	44	80
Theunissen South	27	32
East of Nigel	31	32
Zonnestraal Agricultural Holdings (West of Nigel)	17	8
Magaliesburg/Tarlton—New Area West of Maanhaarrand	20	21
Magaliesburg/Tarlton—New Area along Ventersdorp Road to de Pan	26	23
Syferbult Scheme (West of Magaliesburg)	20	21

Offers of supply were made to farmers in proposed extensions to existing schemes, to small groups of farmers in various areas of the Undertaking, and also to individuals not within the scope of an existing scheme. Schemes were offered to, *inter alia*, the Hartebeesfontein (West of Klerksdorp), Theunissen, North of Delmas, Kroonstad, Frankfort/Villiers, Bloemhof, Cullinan and Magaliesburg areas to cater for approximately 750 properties and we are still awaiting the response to our offers.

Financial

Details of units sold to the various classes of

consumers, the total income received as well as the operating costs for 1969 are given in the table on page 58.

There was an increase of 0.9 per cent in the price per unit sold of 0.4568 cents above the price for 1968.

The cost per unit sold during 1969 amounted to 0.4584 being 0.4 per cent above the corresponding figure for 1968.

Total revenue for the year amounted to R92,709,000 as compared with working costs of R92,680,000.

This resulted in a surplus of R30,000 on the year's working, decreasing the accumulated deficit on the Undertaking's revenue account to R1,110,000.

RAND AND ORANGE FREE STATE UNDERTAKING

CONSUMER		Number		Proportion %		SALES		%Change		REVENUE FROM SALES		AVERAGE PRICE PER kWh SOLD	
		1968	1969	1968	1969	1968	1969	kWh		1968	1969	1968	1969
Traction	2	2	3.92	4.10	777 509 906	792 361 077	+ 7.38	+ 1.91	4 251 011	4 339 670	0.5467	0.5477	
Bulk	125	132	16.12	15.82	3 002 474 155	3 258 292 931	+ 13.02	+ 8.52	14 709 853	16 006 906	0.4899	0.4913	
Mining	101	102	54.50	55.19	10 473 819 593	11 019 245 173	+ 3.92	+ 5.21	44 465 507	47 406 049	0.4245	0.4302	
Industrial	1 863	2 086	24.04	23.58	4 477 830 426	4 860 401 182	+ 9.36	+ 8.54	19 767 349	21 340 354	0.4414	0.4391	
Domestic	20 254	23 184	1.41	1.30	247 602 865	287 643 347	+ 22.78	+ 16.17	2 732 736	3 257 222	1.1037	1.1324	
Street Lighting	7	7	0.01	0.01	92 787	124 303	- 15.49	+ 33.97	2 139	2 363	2.3052	1.9010	
Total	22 352	25 513	100.00	100.00	18 979 329 732	20 218 068 013	+ 6.89	+ 6.53	85 928 596	92 352 564	0.4527	0.4568	
										1968	1969	Accumulated to 31/12/69	
										R	R	R	R
Total Revenue.....										86 739 167	92 709 799	92 709 799	
Working Costs										86 638 342	92 680 014	92 680 014	
Surplus										100 925	29 785	29 785	
Deficit													
Capital Expenditure										115 506 702	114 995 664	114 995 664	1 109 781

ORANGE RIVER UNDERTAKING

The licensed area of supply of the Orange River Undertaking is shown on the map on page 60.

Since its inception this Undertaking purchased its supplies of electricity from the Municipality of Aliwal North, but during the latter half of 1969 with the completion of the 132 kV transmission line from the Hydra Distribution Station (near De Aar) to Ruigtevallei, the Undertaking was interconnected with the main 400 kV transmission system. Supplies from Aliwal North have, therefore, ceased.

Sales of Electricity

Total sales for 1969 amounted to 7.98 million units as compared with 2.4 million units for the previous year.

At the beginning of 1969 the following three towns were connected to the system, Rouxville, Smithfield and Zastron.

Supplies to Colesberg, Venterstad, Aliwal North and De Aar were made available by mid-1969, followed by Middelburg and Noupoot at the end of the year. The system maximum demand increased from 625 kVA in 1968 to 7,394 kVA during 1969.

Development of the Undertaking

The first of two 400 kV transmission lines from the Perseus Distribution Station near Dealesville to the Hydra Distribution Station near De Aar was completed during the year, the Hydra Distribution Station being commissioned during September, 1969.

In addition, the first of two 132 kV lines from Hydra to the Ruigtevallei Distribution Station near the site of the Hendrik Verwoerd Dam are now in service. The second 132 kV line is to be completed by June 1971 to coincide with the commissioning of the Hydro Electric Power Station. Two short 132 kV lines will connect the power station with Ruigtevallei Distribution Station.

The 66 kV line from Ruigtevallei to Melkspruit Distribution Station was completed during April, 1969 and energised temporarily at 22 kV. Melkspruit Distribution station supplies the distribution system serving Aliwal North, Rouxville, Smithfield and Zastron.

A 66 kV line from Ruigtevallei was built during the year to supply Colesberg, Noupoot and Middelburg, the section between Noupoot and Middelburg being completed at the end of the year.

An agreement to supply the Municipality of De Aar was concluded and two 22 kV lines were built from the Hydra Distribution Station.

It is planned for Escom to take over an existing 66 kV network supplying six towns between De Aar and Bloemfontein. These towns are at present being supplied from the Bloemfontein Municipal Power Station, but it is planned to interconnect this system with Escom's 66 kV system at Ruigtevallei, leaving the Bloemfontein connection as a standby.

The 66/22 kV Substation at Onverwag was commissioned during the year together with a twelve mile 22 kV line to supply the town of Burgersdorp.

A supply to the town of Venterstad was made available during August, 1969.

Supplies to Rural Consumers

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

Financial

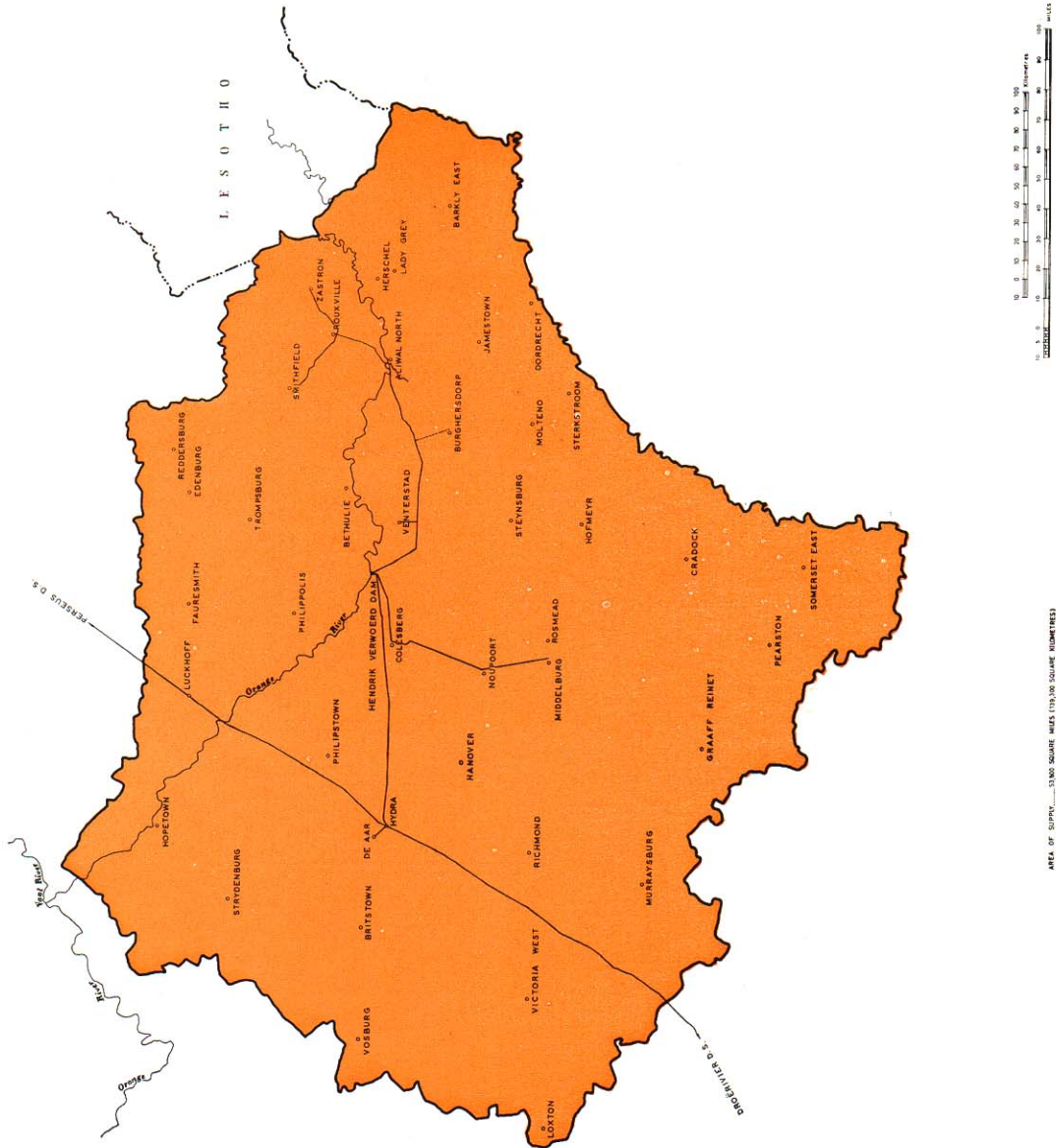
Details of units of electricity sold to the various classes of consumers, the total income received as well as the operating costs for 1969 are given in the table on page 61.

This Undertaking is developing rapidly, sales of electricity having increased by 329 per cent since 1968, resulting in a marked reduction in the cost per unit sold. This figure amounted to 1.8933 cents per unit for 1969, being a reduction of 14.9 per cent on the 1968 figure.

The price received per unit of electricity sold decreased by 44.7 per cent below the 1968 figure to 1.2219 cents per unit for 1969. This large decrease in price per unit is as the result of the considerable increase in the number of units sold during 1969.

Total revenue for the year amounted to R99,000 as compared with total operating costs of R151,000.

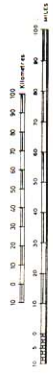
The resulting deficit on the year's working of R52,000 increased the accumulated deficit on the Undertaking's revenue account to R54,000.



ORANGE RIVER UNDERTAKING

REFERENCE

- AREA OF SUPPLY.....
- TRANSMISSION LINES.....
- TRANSMISSION LINES UNDER CONSTRUCTION.....



AREA OF SUPPLY..... 13100 SQUARE KILOM (32100 SQUARE MILES)

ORANGE RIVER UNDERTAKING

CONSUMER		Number		Proportion %		SALES		%Change		REVENUE FROM SALES		AVERAGE PRICE PER kWh SOLD							
		1968	1969	1968	1969	1968	1969	1968	1969	1968	1969	1968	1969						
Class						kWh	kWh	68/67	69/68	R	R	c	c						
Traction.....	3	9	85.96	93.96	2 087 400	7 498 620	+ 90.24	+ 259.23	43 000	87 600	2.0562	1.1682							
Bulk.....	—	—	—	—	—	—	—	—	—	—	—	—							
Mining.....	1	3	14.04	6.04	340 547	482 356	—	+ 41.64	9 000	9 920	2.6689	2.0566							
Industrial.....	—	—	—	—	—	—	—	—	—	—	—	—							
Domestic.....	—	—	—	—	—	—	—	—	—	—	—	—							
Street Lighting.	—	—	—	—	—	—	—	—	—	—	—	—							
Total	4	12	100.00	100.00	2 427 947	7 980 976	+ 119.26	+ 228.71	52 000	97 520	2.1422	1.2219							
										1968		1969		Accumulated to 31/12/69					
										R		R		R					
										52 011		99 042		53 762					
										53 993		151 103		6 060 942					
										1 982		52 061		53 762					
										9 032 101		6 060 942		53 762					
										Total Revenue.....		Working Costs.....		Surplus.....		Deficit.....		Capital Expenditure.....	

MUNICIPAL ELECTRICITY SUPPLY SCHEMES

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

New Schemes	Extensions
TRANSVAAL: Clewer	Lydenburg
ORANGE FREE STATE:	Bethlehem Bethulie Clocolan Ficksburg Marquard
CAPE:	Aberdeen Beaufort West Cofimvaba Elliot Kenhardt Maclear Mossel Bay Port Elizabeth Port St. Johns Vosburg Williston
NATAL:	Eshowe Ladysmith
SOUTH WEST AFRICA:	Omaruru Otjiwarongo

Up to the 31st December, 1969, a total of 1,957 reports on municipal supply schemes had been submitted by the Commission. Of these, 305 were in respect of new schemes, 1,024 were in respect of extension schemes and 628 were reports on tenders.

ANNEXURES

The Commission submits for the year 1969 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.
Schedule No. 4—Investments of the Reserve Fund.
Account No. 1—Redemption Fund Account.
Account No. 2—Reserve Fund Account.
Consolidated Revenue Account.

Revenue Accounts in respect of:—

Account No. 3—Cape Western Undertaking.
Account No. 4—Cape Northern Undertaking.
Account No. 5—Cape Eastern Undertaking.
Account No. 6—Border Undertaking.
Account No. 7—Orange River Undertaking.
Account No. 8—Natal Undertaking.
Account No. 9—Eastern Transvaal Undertaking.
Account No. 10—Rand and Orange Free State Undertaking.
Statement of pooled costs and allocation for Rand and Orange Free State and Eastern Transvaal Undertakings.

ANNEXURE B: STATISTICAL AND OTHER STATEMENTS

Statement No. 1—Summary of principal plant and equipment installed at the Commission's undertakings as at 31st December, 1969.
Statement No. 2—Units sold to all consumers during the past forty-two years.
Statement No. 3—Units sold and number of consumers, 1969.
Statement No. 4—Power Stations Statistics, 1969.
Statement No. 5—Power purchased, 1969.
Statement No. 6—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 1969.
Statement No. 7—Coal used at the Commission's steamdriven power stations.

ANNEXURE C: NATIONAL STATISTICS

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

Yours faithfully,



Chairman.

Electricity Supply Commission

ANNEXURE B

POWER STATIONS: PRINCIPAL EQUIPMENT INSTALLED AS AT 31st DECEMBER, 1969

Undertaking and Area (sq. miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb./hr.	Generators MW	No.	Continuous Maximum Rating Each 1000s lb./hr.	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Border (21 500 sq. miles) (55 700 sq. km.)	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			
		420·0	40·0	2	210·0	2	20·0			
Total 1 & 2		1 100·0	85·0	6		5				
		1 449·0	117·0	16		11				
Border	Total		1 495·0	120·0	20		13			
Cape Eastern (3 100 sq. miles) (8 000 sq. km.)	No Generating Plant									
Cape Western (25 400 sq. miles) (65 800 sq. km.)	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 ...		2 600·0	120·0	10	260·0	4	30·0		
				120·0			2	60·0		
	Total 1 & 2		2 600·0	240·0	10		6		1	
		3 320·0	330·3	18		12				
Hex River	Steam	800·0	60·0	4	200·0	3	20·0			
		550·0	60·0	2	275·0	2	30·0			
Total		1 350·0	120·0	6		5				
Cape Western	Total		4 670·0	450·3	24		17		1	0·3

Undertaking and Area (sq. miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb./hr.	Generators MW	No.	Continuous Maximum Rating Each 1000s lb./hr.	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Natal (33 600 sq. miles) (87 000 sq. km.)	Colenso Nos. 1 & 2	Steam	480·0		8	60·0				
			320·0	60·0	4	80·0	5	12·0		
			900·0	75·0	5	180·0	3	25·0		
			400·0	30·0	2	200·0	1	30·0		
	Total		2 100·0	165·0	19		9			
	Ingagane	Steam	4 500·0	500·0	5	900	5	100		
Congella Nos. 1 & 2	Steam		36·0				3	12·0		
		300·0	20·0	5	60·0	1	20·0			
		400·0	30·0	4	100·0	1	30·0			
		1 600·0	120·0	8	200·0	3	40·0			
Total		2 300·0	206·0	17		8				
Umgeni	Steam	1 440·0	120·0	8	180·0	4	30·0			
		1 300·0	120·0	5	260·0	2	60·0			
		Total	2 740·0	240·0	13		6			
Natal	Total	11 640·0	1 111·0	54		28				
Orange River (53 800 sq. miles) (139 300 sq. km.) Orange River	No Generating Plant									
Cape Northern (23 200 sq. miles) (60 100 sq. km.) Cape Northern	No Generating Plant									
Eastern Transvaal (35 700 sq. miles) (92 500 sq. km.)	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			
Eastern Transvaal	Sabie Gorge	Hydro		1·35			3	0·45		
	Total		9 000·0	1 001·35	9		12			

Undertaking and Area (sq. miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb./hr.	Generators MW	No.	Continuous Maximum Rating Each 1000s lb./hr.	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Rand & O.F.S. (73 200 sq. miles) (189 600 sq. km.)	Camden.....	Steam	14 400·0	1 600·0	8	1 800·0	8	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	
Rand & O.F.S.	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	
	Grootvlei.....	Steam	3 400·0	400·0	2	1 700·0	2	200·0		
	Vierfontein.....	Steam	3 990·0	360·0	19	210·0	12	30·0		
	Wilge.....	Steam	500·0 1 600·0 580·0	60·0 180·0	4 4 1	125·0 400·0 580·0	2 3	30·0 60·0		
	Total.....		2 680·0	240·0	9		5			
Rand & O.F.S.	Total.....		41 430·0	4 302·0	97		64		7	7·0
E.T.U. + R. & O.F.S.U.	Total.....		50 430·0	5 303·35	106		76			
Total all Escom....	Hydro Steam Steam		—	1·35			3			
			68 235·0	6 934·0 49·3	204		131		8	
			68 235·0	6 984·65	204		134		8	

**TRANSMISSION LINES AND CABLES: CIRCUIT MILES (EXCLUDING SERVICE CONNECTIONS
ON RETICULATION SYSTEMS) AT 31st DECEMBER, 1969**

(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	253·32	628·79	—	3·55	—	107·50	1 200·86
Cape Eastern.....	—	—	882·25	—	348·17	—	—	90·80	121·70	—	—	—	5·66	218·16
Cape Northern.....	—	150·00	—	—	—	—	—	334·87	799·57	—	—	—	32·39	2 547·25
Cape Western.....	152·00	—	545·45	—	795·31	—	98·56	418·64	2 768·17	—	—	—	1 251·05	6 362·48
Eastern Transvaal.....	—	254·66	652·18	—	162·30	—	—	1 601·72	1 719·49	—	8·40	—	190·36	5 173·41
Natal.....	—	366·27	499·20	—	—	—	365·26	61·07	3 207·97	—	—	—	440·83	6 340·89
Orange River.....	175·58	—	86·29	—	185·19	—	—	78·10	—	—	—	—	—	525·16
Rand & O.F.S.....	589·91	905·86	1 611·16	—	—	1 464·93	—	508·06	3 968·15	—	—	—	682·81	13 230·01
Totals 1969	917·49	1 676·79	4 276·53	4 920·99	1 662·97	1 464·93	499·52	3 346·58	13 213·84	847·61	11·95	48·42	2 710·60	35 598·22
A	917·49	1 676·79	4 276·53	8 548·41		20 179·00								

(b) UNDERGROUND CABLES

Border.....	—	—	—	—	—	—	—	0·01	30·79	—	1·56	—	12·50	44·86
Cape Eastern.....	—	—	—	—	—	—	—	—	1·58	—	—	—	6·40	7·98
Cape Northern.....	—	—	—	—	—	—	—	—	223·16	—	2·40	—	304·12	645·47
Cape Western.....	—	—	9·66	—	24·04	—	71·77	2·65	26·87	—	1·04	—	87·80	142·73
Eastern Transvaal.....	—	—	—	—	—	—	—	25·34	116·20	—	0·29	—	54·94	186·27
Natal.....	—	—	—	1·17	—	—	5·47	—	—	—	—	—	—	—
Orange River.....	—	—	—	—	—	—	—	—	101·99	—	0·07	—	123·81	653·42
Rand & O.F.S.....	—	—	—	—	—	33·49	—	95·83	298·13	—	—	—	—	—
Totals 1969	—	—	9·66	1·17	24·04	33·49	77·24	123·83	500·59	315·56	5·36	0·22	589·57	1 680·73
B	—	—	9·66	135·94		1 535·13								

(c) TOTAL LINES AND CABLES

A + B = C 1969	917·49	1 676·79	4 286·19	4 922·16	1 687·01	1 498·42	576·76	3 470·41	1 3714·43	1 163·17	17·31	48·64	3 300·17	37 278·95
D	917·49	1 676·79	4 286·19	—	8 684·35	—	—	—	21 714·13	—	—	—	—	33 564·82
1968	370·72	1 498·95	3 778·13	—	8 241·95	—	—	—	19 675·07	—	—	—	—	—
Additions 1969	546·77	177·84	508·06	—	442·40	—	—	—	20 39·06	—	—	—	—	3 714·13
C - D = E	724·61	—	—	—	950·46	—	—	—	20 39·06	—	—	—	—	—

CAPACITY OF TRANSFORMERS IN SERVICE AT 31st DECEMBER, 1969

Undertaking	Number		M.V.A.	
	1968	1969	1968	1969
Border	725	786	134·56	162·14
Cape Eastern	335	391	7·60	10·89
Cape Northern	1 560	1 631	878·500	886·730
Cape Western	6 392	6 716	1 676·579	2 071·261
Eastern Transvaal	2 692	3 102	2 781·405	2 899·530
Natal	4 406	4 910	3 607·791	4 007·874
Orange River	7	30	2·38	569·615
Rand & Orange Free State	10 012	11 748	16 664·947	19 588·838
Compressor Stations, Rand	43	36	336·720	233·325
Pooled Power Stations	599	799	6 100·466	8 970·107
Totals	26 771	30 149	32 190·948	39 400·310

UNITS SOLD BY UNDERTAKINGS TO ALL CONSUMERS DURING THE PAST FORTY-TWO YEARS
(MILLION UNITS)

Year	Border	Cape Eastern	Cape Northern	Cape Western	Eastern Transvaal	Klip	Natal Central	Natal Southern	Natal U.	Rand & O.F.S.	Sabie	Vaal	Total
1928				31.0	464.3		114.2	15.6			2.8		627.9
1929				47.9	543.1		123.9	78.9			3.2		797.0
1930				49.8	619.0		117.1	99.2			4.6		889.6
1931				52.1	603.4		101.1	103.9			6.6		867.1
1932				64.3	610.3		100.3	109.8			6.1		890.7
1933				100.7	639.4		109.2	118.5			6.3		974.1
1934				73.6	648.2		124.9	131.1			7.3		985.2
1935				80.0	727.9		154.3	149.9			7.2		1 119.2
1936				85.8	696.4		171.5	170.5			6.9		1 688.0
1937				94.0	684.5		210.6	189.4			7.2		2 535.6
1938				98.8	768.1		234.9	209.5			7.2		2 985.5
1939				106.5	767.7		266.2	233.7			6.4		3 573.7
1940				119.8	853.3		281.1	242.7			6.7		4 070.2
1941				136.2	862.6		302.4	270.3			6.6		4 254.0
1942				151.8	873.4		307.7	273.7			6.3		4 320.8
1943				145.7	849.1		312.4	293.4			5.9		4 275.6
1944				158.7	889.2		336.0	321.6			6.7		4 415.8
1945				165.9	830.7		333.2	348.8			6.6	377.9	4 706.1
1946	56.2			184.6	896.9		347.0	369.7			7.4	582.5	5 002.4
1947				198.6	887.7		346.0	402.6			7.6	668.6	5 114.5
1948	69.2			222.4	633.2	1 207.4	367.9	448.7		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			271.9	378.5		406.5	561.8		5 151.8	6.3		6 910.6
1951	88.1			53.9	386.8		433.4	617.0		5 563.2	6.1		7 456.5
1952	97.7			61.3	425.0		454.0	655.6		6 039.6	6.1		8 080.6
1953	107.8			67.1	409.9		492.3	713.2		6 559.9	6.4		8 732.2
1954	118.2			70.7	436.2		532.5	777.7		7 465.2	5.6		9 676.6
1955	130.8			73.2	394.6		546.4	870.8		8 416.3	5.7		10 964.0
1956	139.1			78.7	505.9		595.4	957.7		9 151.6	6.0		12 019.5
1957	143.1			86.1	536.6		621.7	1 018.7		9 652.5	5.9		12 763.1
1958	152.9			115.2	584.1		616.1	1 104.1		10 200.6	3.0		13 602.2
1959	165.0			171.4	633.3		629.4	1 228.6		11 034.8			14 724.5
1960	172.3			185.2	762.0		649.3	1 409.0		12 044.8			16 094.1
1961	178.8			191.3	860.0		684.0	1 497.5		12 700.0			17 013.2
1962	188.6			224.9	1 012.2		731.0	1 589.5		13 429.8			18 121.0
1963	204.9			264.9	1 212.1		779.0	1 764.6		14 223.1			19 500.0
1964	228.8	0.4		311.4	1 553.6		—	—	2 922.1	15 067.3			21 247.5
1965	250.5	1.6		393.2	1 936.8		—	—	3 182.5	16 111.3			23 143.3
1966	272.4	2.5		442.4	2 408.2		—	—	3 498.5	16 563.4			24 554.3
1967	294.2	3.2		519.9	2 829.6		—	—	3 720.6	17 755.4	1.1		26 657.1
1968	310.5	4.1		609.6	3 191.4		—	—	4 121.5	18 979.3	2.4		28 885.0
1969	330.5	5.7		657.9	3 824.4		—	—	4 636.7	20 218.1	8.0		31 505.6

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, 1969

STATEMENT No. 3

Undertakings	TRACTION			BULK			MINING		
	Units	Per cent Traction	No. Cons.	Units	Per cent Bulk	No. Cons.	Units	Per cent Mining	No. Cons.
Border	—	—	—	283 457 527	3·90	14	—	—	—
Cape Eastern	—	—	—	1 346 960	0·02	1	—	—	—
Cape Northern	179 499 150	7·78	3	142 409 600	1·96	12	242 111 609	1·92	72
Cape Western	397 011 612	17·21	6	385 102 792	5·30	34	—	—	—
Eastern Transvaal	270 223 270	11·71	7	208 952 581	2·88	21	1 247 348 685	9·87	82
Natal	667 916 534	28·95	12	2 976 464 052	40·98	26	133 242 097	1·05	33
Rand & O.F.S.	792 361 077	34·35	2	3 258 292 931	44·86	132	11 019 245 173	87·16	102
O.R.U.	—	—	—	7 498 620	0·10	9	—	—	—
Total Electricity	2 307 011 643	100·00	30	7 263 525 063	100·00	249	12 641 947 564	100·00	289
Per cent of Total		7·32			23·06			40·13	

Cape	543 510 762		8	837 317 963		60	240 382 489		66
Lesotho	—		—	7 275 983		1	—		—
Natal	628 790 184		10	2 905 500 802		19	133 242 097		33
O.F.S.	56 096 831		2	404 745 081		59	3 006 464 172		21
Mosambick	—		—	114 600		1	—		—
Transvaal	1 078 613 866		10	3 108 570 634		109	9 261 858 806		169
Total	2 307 011 643		30	7 263 525 063		249	12 641 947 564		289

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	
22 704 561	0·26	437	24 359 784	3·39	4 126	330 521 872	1·05	4 577
2 627 028	0·03	97	1 745 130	0·24	425	5 719 118	0·02	523
77 773 938	0·91	393	16 066 089	2·23	2 491	657 860 386	2·09	2 971
775 960 893	9·05	6 542	266 258 414	37·02	43 203	1 824 333 711	5·79	49 785
2 060 599 349	24·03	2 070	37 289 955	5·18	4 796	3 824 413 840	12·14	6 976
773 220 259	9·02	3 350	85 850 512	11·93	13 767	4 636 693 454	14·72	17 188
4 860 401 182	56·69	2 086	287 767 650	40·01	23 191	20 218 068 013	64·17	25 513
482 356	0·01	3	—	—	—	7 980 976	0·02	12
8 573 769 566	100·00	14 978	719 337 534	100·00	91 999	31 505 591 370	100·00	107 545
	27·21			2·28			100·00	

879 161 089		7 481	308 046 726		50 047	2 808 419 029		57 662
—		—	—		—	7 275 983		1
766 476 900		2 994	79 452 121		12 218	4 513 462 104		15 274
367 102 484		328	20 638 973		2 352	3 855 047 541		2 762
—		—	—		—	114 600		1
6 561 029 093		4 175	311 199 714		27 382	20 321 272 113		31 845
8 573 769 566		14 978	719 337 534		91 999	31 505 591 370		107 545

POWER STATION OPERATING STATISTICS YEAR 1969

Statement No. 4

ELECTRICITY GENERATION

1-1 STEAM ELECTRIC Stations as 31/12/69 — The number of Stations, those with separate Turbine Houses (i.e. not under same roof) are counted as two, e.g. S.R.P.S. and West Bank.

Power Station	Units Generated	Units Sent Out	MAXIMUM DEMANDS		Stn. L.F. % S.O.	OVERALL THERMAL EFFICIENCY %	
			½ Hour (Hour) sent out kW	2 Min. Peck kW		Gen.	Sent Out
Border Undertaking							
King William's Town.....	Was Not	Operated In 1969					
West Bank Nos. 1 & 2.....	350 668 250	334 214 370	69 029	73 100	56.0	23.7	22.6
Total.....	350 668 250	334 214 370					
Cape Western Undertaking							
Hex River.....	409 122 600	385 558 940	115 500	122 000	38.1	25.5	24.1
Salt River No. 1.....	22 446 000	19 592 000	43 300	51 000	5.17	15.6	13.6
Salt River No. 2.....	1 529 042 700	1 458 711 100	234 000	250 000	72.27	28.6	27.3
Total.....	1 960 611 300	1 863 862 240					
Natal Undertaking							
Colenso Nos. 1 & 2.....	605 402 310	565 631 940	134 060	143 000	48.2	18.6	17.4
Congella Nos. 1 & 2.....	727 386 200	669 738 100	148 520	164 000	51.5	21.2	19.5
Ingagane.....	2 818 762 500	2 649 735 800	419 600	455 000	72.1	31.7	29.8
Umgeni.....	1 026 780 000	962 678 200	223 600	240 000	49.1	24.6	23.0
Total.....	5 178 331 010	4 847 784 040					
Eastern Transvaal Undertaking							
Komati.....	6 150 086 607	5 698 605 478	911 029		71.4	31.2	28.9
Witbank.....	266 775 773	240 707 364	117 636		31.0	14.0	12.7
Total.....	6 416 862 380	5 939 312 842					
Rand/O.F.S. Undertaking							
Arnot.....							
Camden.....	7 905 226 520	7 473 672 314	1 157 739		73.7	34.8	32.9
Grootvlei.....	746 516 180	698 459 449	374 496		41.5	35.9	33.6
Hendrina.....							
Highveld.....	2 888 520 298	2 697 233 074	458 391		67.2	30.4	28.4
Klip.....	2 040 501 448	1 889 415 985	358 995		54.2	21.8	20.2
Taaibos.....	2 933 832 731	2 707 491 036	441 510		70.0	26.6	24.6
Vaal.....	1 912 909 890	1 783 094 091	247 574		70.7	22.0	20.5
Vereeniging.....	136 160 624	123 952 721	64 423		29.4	16.4	14.9
Vierfontein.....	1 996 750 106	1 855 104 828	330 323		64.1	24.2	22.5
Wilge.....	1 500 043 809	1 384 563 849	217 265		72.7	26.0	24.0
Total.....	22 060 461 606	20 612 987 347					
Total E.T.U.+R. & O.F.S.U.	28 477 323 986	26 552 300 189					
Total B.U. & C.W.U.+N.U.	7 489 610 560	7 045 860 650					
Grand Total.....	35 966 934 546	33 598 160 839					

Coal Burnt Tons (2 000 lb.)	LB OF COAL		Calorific Value of Coal B.Th.U. As Received (Wt. Ave.)	B.Th.U. PER UNIT		COAL COST RAND	
	Per Unit Generated	Per Unit Sent Out		Generated	Sent Out	Totaal	Per Ton
216 126	1.233	1.293	11 680	14 401	15 102	1 183 425	5.48
216 126						1 183 425	5.48
238 454	1.165	1.237	11 460	13 360	14 180	1 375 915	5.77
19 531	1.907	2.185	11 470	21 870	25 060	4 917 243	6.03
796 231	1.039	1.089	11 470	11 920	12 490	6 293 158	5.97
1 054 216	—	—	—	—	—		
484 981	1.602	1.715	11 420	18 290	19 590	1 931 192	3.98
535 391	1.472	1.599	10 940	16 100	17 490	2 542 102	4.75
1 373 471	0.975	1.037	11 040	10 760	11 450	3 159 664	2.30
619 984	1.208	1.288	11 490	13 880	14 800	3 064 264	4.94
3 013 827						10 697 222	3.55
3 150 241	1.024	1.106	10 680	10 940	11 810	4 017 222	1.28
311 722	2.322	2.564	10 310	24 290	26 820	498 380	1.60
3 461 963						4 515 602	1.30
3 806 756	0.963	1.019	10 170	9 790	10 360	6 200 779	1.63
402 434	1.078	1.152	8 810	9 500	10 150	673 940	1.67
1 679 998	1.163	1.246	8 980	11 230	12 040	3 394 682	2.02
1 748 662	1.714	1.851	8 890	15 670	16 920	4 654 604	2.66
2 045 769	1.395	1.511	8 690	12 820	13 890	3 921 860	1.92
1 817 824	1.901	2.038	8 040	15 470	16 590	2 022 999	1.11
163 414	2.400	2.637	8 520	20 860	22 920	149 800	0.92
1 590 612	1.593	1.715	8 580	14 100	15 180	2 478 954	1.56
1 025 782	1.368	1.482	9 590	13 130	14 230	1 265 693	1.23
14 281 251						24 763 311	1.73
17 743 214						29 278 913	1.65
4 284 166						18 173 805	4.24
22 027 383						47 452 718	2.15

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.....	600	600	500	1 000	—	—	—
Sabie Falls.....	1 250	1 250	160	200	—	—	—
Totals.....	1 850	1 850	660	1 200	—	—	—

1·3 DIESEL ELECTRIC

Power Station	Units Generated	Units Sent Out	Maximum Demand—kW		Fuel Consumed		Lub. Oil Gal.
			½ Hour	2 Minutes	Total Lb.	Per kWh Sent Out	
Port Shepstone.....	20 328	19 918	1 852	2 000	12 642	0·635	Nil

(3) GENERATION SUMMARY

	Units Generated	Units Sent Out	Coal Burnt
Electricity Total Units.....	35 966 934 546	33 598 160 839	22 027 383
} Steam	1 850	1 850	—
} Hydro	20 328	19 918	—
} Diesel			
Grand Total 1969.....	35 966 956 724	33 598 182 607	22 027 383
Total for 1968.....	33 061 253 244	30 843 479 863	21 091 542
Change on 1968 (Units or Tons).....	2 905 703 480	2 754 702 744	935 841
Per cent.....	8·79	8·93	4·44

POWER PURCHASED FROM OUTSIDE SOURCES IN 1969

STATEMENT No. 5

Undertaking	Purchased From	Maximum Demands	Units
Rand & O.F.S.....	Nil	Nil	Nil
Natal.....	Durban Navigation Collieries.....	2 539	510 660
Orange River.....	Aliwal North.....	625 kVA	976 500
Border.....	Nil	Nil	Nil
Cape Eastern.....	Port Elizabeth Municipality (1) Alocs .. (2) Loeric ..	1 377 kVA 576 kVA	4 536 202 1 776 560
Eastern Transvaal.....	Water Affairs Dept. (Paul Sauer Dam) (Kouga).....	Nil	157 389
	Transvaal Sugar Corporation.....	Nil	12 000
Total Units Purchased.....			7 969 311
Total Units Sold.....			31 505 591 370
Purchased as % of Sales.....			0·025%

C.E.U. Bought from Dept. Water Affairs and Port Elizabeth.

FOREIGN SUPPLIES 1969

STATEMENT No. 5a

Undertaking	Sold to	Maximum Demands	Units
E.T.U.....	Ressano Garcia.....	144	114 600
R. & O.F.S.U.....	Lesotho.....		7 275 983

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 1969.

(see previous Annual Report for Rights or Interests in or over land acquired prior to 1968.)

Cape Western Undertaking

Immovable property acquired for considerations amounting to	R38 022.83
Servitudes acquired—capitalized payments amounting to	R1 964.12

Cape Northern Undertaking

Immovable property acquired for considerations amounting to	R16 170.00
Servitudes acquired—capitalized payments amounting to	R4 455.44

Cape Eastern Undertaking

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

Natal Undertaking

Immovable property acquired for considerations amounting to	R70 672.30
Servitudes acquired—capitalized payments amounting to	R26 502.74

Eastern Transvaal Undertaking

Immovable property acquired for considerations amounting to	NIL
Servitudes acquired—capitalization payments amounting to	R1 775.50

Border Undertaking

Immovable property acquired for considerations amounting to	R7 000.00
Servitudes acquired—capitalized payments amounting to	R238.50

Orange River Undertaking

Immovable property acquired for considerations amounting to	R67 250.00
Servitudes acquired for capitalized payments amounting to	R994.00

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

Power Station	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
	R	R	R	R	R	R	R	R	R	R	R
Brakpan	1.93	1.70	1.77	1.82	1.83	—	—	—	—	—	—
Colenso	3.17	3.12	3.11	3.36	3.48	3.37	3.77	3.91	3.90	3.81	3.98
Congella	3.82	3.79	3.75	3.91	3.59	3.25	3.42	3.56	3.64	3.80	4.75
Hex River	4.70	4.68	4.76	4.93	5.21	5.17	5.33	5.57	5.79	5.64	5.77
Highveld	1.33	1.45	1.60	1.53	1.55	1.66	1.62	1.64	1.77	1.88	2.02
Ingagane	—	—	—	—	2.27	2.26	2.46	2.52	2.52	2.51	2.30
Kimberley Central	3.83	3.78	3.75	3.90	4.12	4.10	4.07	4.24	—	—	—
Klip	1.82	2.09	2.14	2.13	2.04	2.02	2.17	2.49	2.64	2.83	2.66
King William's Town	4.54	—	4.58	—	4.58	—	—	4.65	—	—	—
Komati	—	—	1.19	1.29	1.53	1.34	1.17	1.24	1.15	1.27	1.28
Rosherville	2.04	1.86	1.90	2.08	2.13	2.15	2.19	2.49	—	—	—
Salt River	4.86	4.83	4.85	5.03	5.36	5.32	5.42	5.65	5.95	5.88	6.03
Taatbos	0.93	1.83	1.98	1.75	1.70	1.58	1.56	1.65	1.78	1.86	1.92
Umgeni	4.05	4.04	4.01	4.28	4.37	4.32	4.54	4.82	5.09	5.06	4.94
Vaal	0.74	0.79	0.93	0.95	1.03	1.04	1.04	1.09	1.16	1.15	1.11
Vereeniging	0.91	0.87	0.96	1.02	1.07	1.05	1.06	1.32	1.29	1.32	0.92
Vierfontein	1.23	1.50	1.56	1.46	1.43	1.42	1.55	1.68	1.65	1.70	1.56
West Bank	4.66	4.61	4.59	4.77	5.02	5.01	5.10	5.22	5.31	5.30	5.48
Witlge	0.97	0.90	0.94	0.97	0.95	0.96	0.99	1.09	1.31	1.33	1.23
Witbank	1.11	1.06	1.05	1.14	1.15	1.16	1.27	1.37	1.36	1.41	1.60
Camden	—	—	—	—	—	—	—	—	1.81	1.41	1.63
Grootvlei	—	—	—	—	—	—	—	—	—	—	1.67

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

Year	Escom		Units Generated (kWh) (Millions)		Escom coal burnt (Tons) (Thousands)		Sales (kWh) (Millions)		Escom total staff	Sales Escom + V.F.P. (kWh) (Millions)
	Capital Expenditure (Rand)	Installed Capacity (MW)	Escom + V.F.P. (X)	Republic of S.A. (Y)	(X) % (Y)	Escom	Republic of S.A.			
1925		1.35					0.1	1 376.4		1 411.4
1926		61.35					161.7	1 516.9		1 560.5
1927		121.35					551.0	1 694.2		
1928	1 399 678	175.65	1 422.2	2 109.6	67.4	1 934.9	627.9	1 807.4		
1929	1 575 492	194.65	1 516.7	2 300.1	66.0	2 086.1	797.0	2 007.6	633	
1930	16 167 114	215.65	1 766.3	2 453.7	72.0	2 166.4	889.6	2 126.8	688	1 632.4
1931	16 591 164	215.65	1 857.4	N.A.	—	2 237.2	867.1	N.A.	664	1 689.5
1932	16 823 332	227.65	2 028.7	N.A.	—	2 388.0	890.7	N.A.	645	1 814.2
1933	17 275 780	247.65	2 246.4	2 946.6	76.2	2 542.0	974.1	2 462.2	678	1 929.0
1934	18 786 190	287.65	2 525.9	3 308.6	76.3	2 831.3	985.2	2 853.9	706	2 140.3
1935	22 980 968	307.65	2 848.4	3 772.5	75.5	3 152.3	1 119.2	3 246.2	778	2 414.9
1936	27 103 556	486.843	3 406.7	4 602.9	74.0	3 884.3	1 688.0	3 767.9	862	2 820.6
1937	30 563 380	519.843	3 980.6	5 336.0	74.6	5 535.6	2 535.6	4 361.3	1 024	3 238.5
1938	34 296 968	623.346	4 452.8	5 933.0	75.1	4 176.4	2 985.4	4 898.2	1 097	3 639.7
1939	36 645 076	737.656	4 740.7	6 574.3	72.1	4 409.2	3 573.7	5 453.4	1 100	4 095.6
1940	38 661 664	770.631	5 098.3	7 167.8	71.1	4 626.0	4 070.2	6 121.9	1 189	4 516.9
1941	40 808 068	771.300	5 444.9	7 592.1	71.7	4 903.7	4 254.0	6 504.7	N.A.	4 833.5
1942	43 762 646	770.551	5 538.9	7 798.5	71.0	5 111.9	4 320.8	6 767.7	N.A.	4 920.0
1943	46 573 506	795.456	5 404.0	7 699.8	70.2	4 977.6	4 275.6	6 638.4	1 238	4 795.8
1944	48 036 044	796.856	5 597.8	8 042.9	69.6	5 164.2	4 415.8	6 919.7	1 328	4 970.5
1945	49 913 496	862.856	5 748.7	8 328.5	69.0	5 309.2	4 706.1	7 142.4	1 531	5 101.1
1946	52 852 490	975.690	5 895.6	8 556.9	68.9	5 321.9	5 002.4	7 338.3	1 836	5 218.8
1947	57 649 694	1 033.190	6 035.9	8 787.8	68.7	6 000.3	5 144.5	7 493.6	2 169	5 341.7
1948	90 815 886	1 385.071	6 553.5	9 480.7	69.1	6 126.0	5 576.9	8 089.2	2 692	5 787.0
1949	100 234 082	1 411.985	7 075.3	10 013.3	70.7	6 365.6	6 222.2	8 829.0	8 764	
1950	115 128 520	1 439.895	7 773.6	11 187.0	69.5	6 970.4	6 910.6	9 749.8	9 352	
1951	137 283 154	1 520.590	8 326.6	11 895.0	70.0	7 344.8	7 456.5	10 473.9	10 336	
1952	176 559 102	1 624.590	8 778.0	12 517.0	70.1	7 841.1	8 080.6	11 233.5	10 889	
1953	218 739 074	1 806.070	9 442.0	13 744.0	68.7	8 150.3	8 732.2	11 806.3	11 518	
1954	270 621 248	2 051.010	10 651.9	15 184.0	70.2	8 846.0	9 676.6	12 811.9	12 317	
1955	304 341 966	2 377.721	12 214.5	17 172.0	71.1	9 920.5	10 964.0	14 309.9	12 490	
1956	342 068 024	2 734.871	13 578.4	18 535.0	73.2	10 679.8	12 019.5	15 782.0	12 977	
1957	377 265 178	2 826.700	14 388.1	19 956.0	73.4	11 266.2	12 763.1	17 140.0	13 421	
1958	417 700 898	3 036.550	15 582.6	20 133.0	77.4	11 887.4	13 602.2	17 321.0	14 312	
1959	453 130 370	3 289.450	16 926.5	21 165.0	80.0	12 730.3	14 724.5	18 132.0	13 947	
1960	491 471 208	3 408.950	18 543.3	22 561.0	82.2	13 792.8	16 094.1	19 334.0	14 654	
1961	529 565 151	3 558.950	19 575.4	24 365.0	79.7	14 544.8	17 013.2	20 968.0	15 441	
1962	581 579 266	3 758.950	20 805.5	25 700.0	79.7	15 383.3	18 121.0	22 066.0	16 467	
1963	637 076 261	4 175.950	22 312.4	26 969.0	80.2	16 227.2	19 500.0	23 706.0	16 804	
1964	679 192 772	4 499.600	24 355.3	29 398.0	80.1	17 256.3	21 247.5	N.A.	17 172	
1965	741 109 317	4 624.750	26 440.4	32 772.0	80.7	18 438.1	23 143.3		17 851	
1966	840 781 679	4 806.350	27 395.5	34 759.0	78.8	18 720.1	24 554.3		18 579	
1967	950 862 731	5 845.350	30 421.7	37 869.0	80.3	20 180.8	26 657.1		19 817	
1968	1 114 390 015	6 344.65	33 061.2	40 947.0	80.7	21 091.5	28 885.0		20 893	
1969	1 271 785 348	6 982.65	35 967.0	44 233.0	81.3	22 028.3	31 505.6		21 644	

THE REPORT OF THE AUDITORS

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

Johannesburg,
4th May, 1970

Gentlemen,

We have completed the audit of the books and accounts of the Commission for the year ended 31st December, 1969.

Redemption Fund

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

Loan No. 73 and the loans raised from Société Generale De Banque and Deutsche Bank were raised under the provisions of paragraph 1 (3) of the Schedule to the Electricity Act, and the provisions relating to the Redemption Fund do not therefore apply to these loans.

In the records of the Commission, the Fund is divided into sections corresponding to its Undertakings but investments are held in a common pool. The Commission has invested the moneys accruing to the Fund in the investments prescribed in the Schedule to the Act. In valuing the Fund at 31st December, 1969, we have taken into account the market value of the investments at that date. The value of the Fund at 31st December, 1969, was in excess of the sum required, in terms of the Schedule to the Act, for the redemption of the respective loans.

The Commission has fixed Redemption periods of 30 years from the date of issue of the relevant loans in respect of the portions of loans used to finance the erection of certain high-voltage transmission lines; in respect of the remainder of the loans, the Redemption periods fixed do not exceed 25 years from the dates of issue of the respective loans. Contributions to the Fund for 1968 and 1969 are lower than the contributions for the immediately preceding years because the Commission, in assessing contributions for 1968 and 1969, took into account that current interest rates at which such contributions are being invested, are materially higher than the statutory rate of 3½ per cent.

The Minister has fixed dates during the year from which provision for redemption of Loans Nos. 64, 65, 70 and 71 commenced. 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, 1969.

Foreign Loans

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

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

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

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

Loans Nos. 72 and 73 and the loans raised from Société Generale De Banque and Deutsche Bank are short-term loans and the Commission intends repaying them out of future borrowings.

Verification of Landed Properties, Rights and Investments

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

Head Office Administration, Engineering and General Expenses

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

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

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

Revenue Accounts

The following is a summary of the operations of the Commission's Undertakings for 1968 and 1969:—

	Surplus + Deficit -		at 31/12/1969	Accumulated Surplus + Deficit -		Amounts set aside to Reserve Fund	
	1968	1969		1968	1969		
Cape Western	- 140 000	+ 102 000	- 568 000	958 000	964 000		
Cape Northern	- 104 000	- 108 000	+ 904 000	400 000	400 000		
Cape Eastern	- 14 000	- 24 000	- 56 000	4 000	4 000		
Orange River	- 2 000	- 52 000	- 54 000	-	4 000		
Border	- 122 000	- 11 000	- 104 000	188 000	190 000		
Natal	- 833 000	- 231 000	+ 1 000 000	1 800 000	2 200 000		
Eastern Transvaal	+ 596 000	+ 1 027 000	+ 3 339 000	1 995 000	2 064 000		
Rand and O.F.S.	+ 101 000	+ 29 000	- 1 110 000	6 955 000	7 779 000		
	- <u>R518 000</u>	+ <u>R732 000</u>	- <u>R3 351 000</u>	<u>R12 300 000</u>	<u>R13 605 000</u>		

Operations during the year resulted in surpluses at Cape Western, Eastern Transvaal and Rand and O.F.S. Undertakings and deficits at the other Undertakings. In the case of the Cape Northern Undertaking, the accumulated surplus was reduced to R904,000 whilst the accumulated surplus at Eastern Transvaal Undertaking now amounts to R3,339,000. Accumulated surpluses or deficits at all other Undertakings, with the exception of Cape Eastern and Orange River Undertakings, which are in the initial stages of development, do not exceed 5 per cent of the past year's sales of electricity at the respective Undertakings.

General

As a result of our audit of the books and accounts of the Commission for the year 1969, 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,

Alex, Aiken & Carter
Halsey, Button & Perry
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, 1969

1968		1968
R1,005,316,000	Loans Outstanding (Schedule No. 3)	R1,086,611,000
—	Short Term Borrowings	45,355,000
	Amount due to Bankers less Cash on Current Accounts and on hand	R17,944,000
	Revolving Credits	14,328,000
	Other Short Term Advances	13,083,000
113,980,000	Capital Reserve	138,890,000
139,232,000	Loans repaid (Schedule No. 3)	164,093,000
—	Machinery and Plant Financed out of Reserve Fund	5,760,000
		169,853,000
25,252,000	<i>Less: Cost of Land and Rights, Buildings and Civil Works and Machinery and Plant sold and scrapped</i>	30,963,000
203,489,000	Redemption Fund (Account No. 1)	213,621,000
4,674,000	Amount set aside for Repayment of Overseas Loans	4,611,000
90,035,000	Reserve Fund (Account No. 2)	104,386,000
2,619,000	Balance on Revenue Accounts (Accounts Nos. 3 to 10)	3,351,000
62,815,000	Creditors and Provisions	74,602,000
49,365,000	Creditors	59,817,000
12,082,000	Interest accrued on loans	13,281,000
1,368,000	Sundry Provisions	1,504,000
R1,482,928,000		R1,671,427,000

The Notes to the Balance Sheet appear on page 68.

	1968	1968
Capital Expenditure at Cost (Schedule No. 1)	R1,271,785,000	R1,114,390,000
Land and Rights	R14,667,000	10,488,000
Buildings and Civil Works	207,000,000	188,415,000
Machinery and Plant	837,456,000	712,576,000
Total in commission	1,059,123,000	911,479,000
Completed Works—proportion not in commission	17,847,000	—
Works under Construction	194,815,000	202,911,000
Stores and Movable Plant	48,011,000	43,215,000
Stores and Materials at cost	41,475,000	37,696,000
Movable plant and equipment at cost less depreciation	6,536,000	5,519,000
Investment of Redemption Fund (Schedule No. 2)	217,833,000	204,646,000
Nominal Value		
1968 R224,859,000	Market Value	
1969 R236,174,000	R200,290,000	
	R210,882,000	
Investment of Reserve Fund (Schedule No. 4)	104,301,000	89,354,000
Stocks of Electricity Supply Commission, Republic of South Africa and Municipalities including Interest Accrued		
Nominal Value		
1968 R96,956,000	Market Value	
1969 R111,991,000	R87,815,000	
	R101,340,000	
Sundry Investments	7,956,000	6,744,000
Electricity Supply Commission Foreign Loan Bonds including Interest accrued	1,643,000	1,207,000
Nominal Value		
1968 R1,198,000	Market Value	
1969 R1,653,000	R1,217,000	
	R1,606,000	
Entire Share Capital of the Rand Mines Power Supply Company Limited	1,000	1,000
Housing Loans to Employees secured by First Mortgage	6,312,000	5,536,000
Debtors and Payments in Advance	21,541,000	18,028,000
Debtors	17,977,000	14,700,000
Payments in advance	3,564,000	3,328,000
Cash on Deposit, on Current Accounts and on Hand		
<i>Less: Amounts Due to Bankers</i>	—	6,551,000
	R1,671,427,000	R1,482,928,000

NOTES TO THE BALANCE SHEET

NOTE 1

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

- (a) Expenditure of approximately R350,000,000 on Capital account, R8,000,000 chargeable against Reserve Fund, and R332,000 in respect of loans granted under the Commission's Home Ownership Scheme and not yet paid.
- (b) A payment of R22,000 to the Electricity Supply Commission Pension and Provident Fund for the period ending 31st December, 1970.
- (c) The purchase from certain Stockholders of Electricity Supply Commission 6¼ per cent. Local Registered Stock 1991 at R97 per cent as follows:—
 - (i) R4,500,000 not later than September, 1976.
 - (ii) R2,000,000 in five annual instalments of R400,000 at the option of the Stockholder.

NOTE 2

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

Electricity Supply Commission

SCHEDULE No. 1

Schedule of Capital Expenditure at 31st December, 1969

Undertaking	TOTAL IN COMMISSION				Completed Works proportion not in commission	Works under Construction	Total Expenditure
	Land and Rights	Buildings and Civil Works	Machinery and Plant	Total			
Cape Western	R1,504,000	R16,690,000	R84,371,000	R102,565,000	R6,133,000	R13,324,000	R122,022,000
Cape Northern	279,000	1,004,000	18,588,000	19,871,000	—	1,642,000	21,513,000
Cape Eastern	11,000	49,000	639,000	699,000	—	494,000	1,193,000
Border	169,000	2,887,000	15,625,000	18,681,000	—	2,474,000	21,155,000
Orange River	58,000	654,000	2,683,000	3,395,000	8,981,000	3,246,000	15,622,000
Natal	1,556,000	32,836,000	132,379,000	166,771,000	—	6,526,000	173,297,000
Eastern Transvaal	1,594,000	30,410,000	110,101,000	142,105,000	—	3,994,000	146,099,000
Rand and O.F.S. (Generation)	1,059,000	99,827,000	284,624,000	385,510,000	—	139,845,000	525,355,000
Rand and O.F.S. (Distribution)	4,747,000	17,817,000	188,446,000	211,010,000	2,733,000	23,262,000	237,005,000
Head Office	3,690,000	4,826,000	—	8,516,000	—	8,000	8,524,000
Totals at 31st December, 1969	14,667,000	207,000,000	837,456,000	1,059,123,000	17,847,000	194,815,000	1,271,785,000
Totals at 31st December, 1968	10,488,000	188,415,000	712,576,000	911,479,000	—	202,911,000	1,114,390,000
Capital expenditure during 1969	R4,179,000	R18,585,000	R124,880,000	R147,644,000	R17,847,000	Cr.R8,096,000	R157,395,000

Electricity Supply Commission

Schedule of Investments of the Redemption Fund at 31st December, 1969

ESCOM LOCAL REGISTERED STOCKS			Nominal Value	Book Value
	Loan No.			
3½ per cent	1965/70	12.....	R3,777,000	R3,762,000
3 per cent	1967/73	13.....	1,302,000	1,186,000
3 per cent	1968/74	14.....	50,000	44,000
3½ per cent	1968/73	15.....	1,928,000	1,748,000
3½ per cent	1969/74	16.....	37,000	33,000
3¾ per cent	1969/74	17.....	11,000	9,000
5 per cent	1968/70	27.....	5,732,000	5,703,000
5 per cent	1967/70	29.....	12,829,000	12,731,000
5 per cent	1971/74	31.....	113,000	107,000
5 per cent	1971/75	32.....	176,000	163,000
4⅝ per cent	1975/80	33.....	9,701,000	8,237,000
4⅞ per cent	1975/80	34.....	8,148,000	7,047,000
5⅞ per cent	1976/81	35.....	4,416,000	3,858,000
5⅞ per cent	1977/82	36.....	1,092,000	945,000
5⅞ per cent	1976/82	37.....	4,108,000	3,547,000
5⅞ per cent	1977/83	38.....	9,961,000	8,539,000
5⅞ per cent	1978/83	39.....	3,960,000	3,464,000
5⅞ per cent	1979/84	40.....	5,130,000	4,578,000
5⅞ per cent	1979/84	42.....	7,061,000	6,133,000
5⅞ per cent	1979/85	43.....	6,066,000	5,235,000
5⅞ per cent	1980/85	44.....	7,238,000	6,216,000
5½ per cent	1980/86	45.....	5,043,000	4,373,000
5⅞ per cent	1981/86	46.....	7,460,000	6,719,000
6¼ per cent	1981/86	47.....	6,196,000	5,818,000
6⅝ per cent	1982/87	49.....	6,356,000	5,863,000
5¼ per cent	1982/87	50.....	6,529,000	5,432,000
5 per cent	1983/88	51.....	10,331,000	8,271,000
5 per cent	1980/83	52.....	6,367,000	5,382,000
5 per cent	1982/84	53.....	3,402,000	2,839,000
5½ per cent	1982/84	54.....	3,250,000	2,851,000
5⅞ per cent	1983/85	55.....	10,199,000	9,362,000
6½ per cent	1983/85	56.....	6,786,000	6,537,000
6½ per cent	1989/91	58.....	9,267,000	8,771,000
6¾ per cent	1991	60.....	5,099,000	4,962,000
6⅞ per cent	1992	61.....	5,850,000	5,765,000
6 per cent	1971	63.....	4,000,000	3,999,000
6½ per cent	1992	64.....	3,147,000	2,968,000
6⅞ per cent	1992	65.....	3,827,000	3,708,000
6½ per cent	1993	70.....	2,874,000	2,633,000
6⅞ per cent	1993	71.....	5,527,000	5,327,000
<i>Carried forward</i>			R204,346,000	R184,865,000

			Nominal Value	Book Value
<i>Brought forward</i>			R204,346,000	R184,865,000
ESCOM LOCAL REGISTERED STOCKS				
	Loan No.			
6½ per cent	1993	75.....	1,071,000	994,000
6⅞ per cent	1993	76.....	—	—
6½ per cent	1994	78.....	3,998,000	3,744,000
6⅞ per cent	1994	79.....	11,467,000	11,230,000
6 per cent	1974	80.....	10,154,000	9,647,000
6½ per cent	1994	81.....	350,000	320,000
6⅞ per cent	1994	82.....	650,000	622,000
			<u>232,036,000</u>	<u>211,422,000</u>
MUNICIPAL STOCK				
Bloemfontein				
5⅞ per cent	1975/80	.....	80,000	68,000
Cape Town				
3 per cent	1976	167.....	200,000	156,000
5⅞ per cent	1980/85	203.....	300,000	252,000
Durban				
3¼ per cent	1962/72	47.....	231,000	212,000
3¼ per cent	1965/75	48.....	90,000	74,000
3¼ per cent	1966/76	49.....	100,000	80,000
3 per cent	1967/77	50.....	668,000	505,000
5⅞ per cent	1974/79	68.....	120,000	105,000
Germiston				
5⅞ per cent	1985	.....	20,000	16,000
Johannesburg				
3¼ per cent	1965/70	19.....	588,000	575,000
3 per cent	1967/77	21.....	60,000	45,000
5⅞ per cent	1974/79	36.....	194,000	169,000
REPUBLIC OF SOUTH AFRICA				
3 per cent	1960/70	.....	687,000	675,000
5½ per cent	1979	.....	300,000	282,000
6 per cent	1985	.....	500,000	483,000
			<u>R236,174,000</u>	<u>R215,119,000</u>
INTEREST ACCRUED				2,714,000
MARKET VALUE			<u>R210,882,000</u>	<u>R217,833,000</u>

Electricity Supply Commission

SCHEDULE No. 3

Loans at 31st December, 1969

Loans Nos. 1 and 2 R16,000,000 repaid out of subsequent loans		Outstanding	Repaid
Loan No.	Local Registered Stocks		
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 3½ per cent 1954/64		13,500,000
6	R5,000,000 3½ per cent 1959/64		5,000,000
7	R4,000,000 3½ per cent 1956/66		4,000,000
8	R4,000,000 3 per cent 1957/67		4,000,000
9	R4,000,000 3 per cent 1959/64		4,000,000
10	R3,000,000 3½ per cent 1960/65		3,000,000
11	R4,000,000 3 per cent 1961/66		4,000,000
12	R5,000,000 3 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 3 per cent 1968/73	30,000,000	
16	R6,000,000 3½ per cent 1969/74	6,000,000	
17	R6,000,000 3½ per cent 1969/74	6,000,000	
18	R10,500,000 3½ per cent 1965/67		10,500,000
19	R6,000,000 3½ per cent 1964/67		6,000,000
21	R10,000,000 3 per cent 1964/68		10,000,000
22	R9,000,000 4½ 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 4½ per cent 1975/80	16,000,000	
34	R16,000,000 4½ per cent 1975/80	16,000,000	
35	R16,500,000 5½ per cent 1976/81	16,500,000	
36	R20,000,000 5 per cent 1977/82	20,000,000	
37	R22,000,000 5 per cent 1976/82	22,000,000	
38	R24,000,000 5½ per cent 1977/83	24,000,000	
39	R24,000,000 5 per cent 1978/83	24,000,000	
40	R22,000,000 5 per cent 1979/84	22,000,000	
42	R20,000,000 5 per cent 1979/84	20,000,000	
43	R16,000,000 5 per cent 1979/85	16,000,000	
44	R16,000,000 5 per cent 1980/85	16,000,000	
45	R17,000,000 5 per cent 1980/86	17,000,000	
46	R16,000,000 5 per cent 1981/86	16,000,000	
47	R18,000,000 6½ per cent 1981/86	18,000,000	
49	R18,000,000 6 per cent 1982/87	18,000,000	
50	R22,000,000 5 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 5 per cent 1982/84	20,000,000	
55	R32,000,000 5 per cent 1983/85	32,000,000	
56	R38,000,000 6 per cent 1983/85	38,000,000	
58	R30,000,000 6 per cent 1989/91	30,000,000	
60	R35,000,000 6 per cent 1991	35,000,000	
61	R35,000,000 6 per cent 1992	35,000,000	
63	R5,000,000 6 per cent 1971	5,000,000	
64	R12,000,000 6½ per cent 1992	12,000,000	
65	R37,000,000 6 per cent 1992	37,000,000	
67	R11,000,000 6 per cent 1969		11,000,000
70	R10,000,000 6 per cent 1993	10,000,000	
71	R70,000,000 6 per cent 1993	70,000,000	
75	R22,000,000 6 per cent 1993	22,000,000	
76	R48,000,000 6 per cent 1993	48,000,000	
78	R20,000,000 6½ per cent 1994	20,000,000	
79	R30,000,000 6 per cent 1994	30,000,000	
80	R20,000,000 6 per cent 1974	20,000,000	
81	R10,000,000 6 per cent 1994	*3,964,000	
82	R25,000,000 6 per cent 1994	*14,135,000	
		<u>R994,099,000</u>	<u>R115,000,000</u>
R1,126,000,000			

*Payable in full not later than 27th February, 1970, in terms of the Prospectus.

Loan No.	Description	Outstanding	Repaid
	R1,126,000,000 Brought Forward	R994,099,000	R115,000,000
FOREIGN BOND ISSUES			
41	R8,275,000 Swiss Francs 50,000,000 5 per cent. Repayable by annual instalments 1965/74	4,137,000	4,138,000
57	R8,921,000 German Marks 50,000,000 6½ per cent. Repayable by annual instalments 1971/80	8,921,000	—
62	R10,776,000 U.S. \$15,000,000 7 per cent. Repayable by ten equal instalments 1968/77	8,621,000	2,155,000
74	R10,882,000 15,000,000 Units of Account 7 per cent in Luxembourg. Repayable by annual instalments 1969/78		
		R10,906,000	
	Less Difference in exchange on outstanding balance	24,000	
		<u>R10,882,000</u>	727,000
77	R18,034,000 German Marks 100,000,000 6½ per cent. Repayable by annual instalments 1974/83	18,034,000	—
DIRECT PLACEMENTS			
EXPORT-IMPORT BANK OF WASHINGTON			
24	R14,016,000 U.S. \$19,600,000 4 per cent. Repayable by half-yearly instalments 1956/70	1,215,000	12,801,000
COMMONWEALTH DEVELOPMENT FINANCE COMPANY LIMITED			
30	R4,000,000 5 per cent. Repaid in half-yearly instalments 1954/68	—	4,000,000
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT			
20	R21,465,000 U.S. \$30,000,000 4 per cent. Repayable by half-yearly instalments 1954/70	1,701,000	19,764,000
28	R2,822,000 U.S. \$30,000,000 4½ per cent. Repaid by half-yearly instalments 1955/63		
		R21,454,000	
	Less repaid out of local loans	18,632,000	
		<u>R2,822,000</u>	2,822,000
48	R3,967,000 U.S. \$14,000,000 5½ per cent. Repayable by half-yearly instalments 1963/71		
		R10,012,000	
	Less repaid out of local loans	6,045,000	
		<u>R3,967,000</u>	1,162,000
59	R12,610,000 U.S. \$20,000,000 6½ per cent. Repayable by half-yearly instalments 1968/76		
		R14,357,000	
	Less repaid out of local loans	1,747,000	
		<u>R12,610,000</u>	787,000
SWISS BANKS			
72	R7,436,000 Swiss Francs 45,000,000 7 per cent. Repayable by four annual instalments 1970/73	7,436,000	—
BARCLAYS BANK D.C.O.			
73	R8,604,000 £5,000,000 6½ per cent. Repayable 1973	8,604,000	—
SOCIETE GENERALE DE BANQUE			
	R1,813,000 German Marks 10,000,000 7½ per cent. Repayable 1971	1,813,000	—
DEUTSCHE BANK			
	R7,247,000 German Marks 40,000,000 6½ per cent. Repayable by yearly instalments 1970/71	7,247,000	—
		<u>R1,086,611,000</u>	<u>R163,356,000</u>
	Sundry Loans		737,000
			<u>R164,093,000</u>

Electricity Supply Commission

Schedule of Investments of the Reserve Fund at 31st December, 1969

LOCAL REGISTERED STOCKS			Nominal Value R	Book Value R
Electricity Supply Commission				
	Loan No.			
3¼ per cent	1965/70	12	80,000	80,000
3 per cent	1968/74	14	29,000	25,000
3½ per cent	1968/73	15	700,000	635,000
5 per cent	1967/70	29	199,000	196,000
5 per cent	1971/75	32	186,000	174,000
4⅝ per cent	1975/80	33	500,000	425,000
4⅞ per cent	1975/80	34	1,380,000	1,194,000
5¼ per cent	1976/81	35	1,500,000	1,311,000
5⅝ per cent	1977/82	36	516,000	447,000
5⅞ per cent	1976/82	37	1,500,000	1,297,000
5¼ per cent	1977/83	38	2,280,000	1,955,000
5⅝ per cent	1978/83	39	2,000,000	1,751,000
5⅞ per cent	1979/84	40	1,420,000	1,268,000
5⅝ per cent	1979/84	42	1,400,000	1,216,000
5⅞ per cent	1979/85	43	200,000	173,000
5⅝ per cent	1980/85	44	1,000,000	859,000
5½ per cent	1980/86	45	1,800,000	1,561,000
5⅞ per cent	1981/86	46	2,582,000	2,326,000
6½ per cent	1981/86	47	2,650,000	2,489,000
6¼ per cent	1982/87	49	2,000,000	1,845,000
5¼ per cent	1982/87	50	3,500,000	2,913,000
5 per cent	1983/88	51	5,055,000	4,048,000
5 per cent	1980/83	52	4,000,000	3,382,000
5 per cent	1982/84	53	2,400,000	2,004,000
5½ per cent	1982/84	54	2,182,000	1,917,000
5⅞ per cent	1983/85	55	3,700,000	3,398,000
6½ per cent	1983/85	56	2,600,000	2,506,000
6½ per cent	1989/91	58	4,200,000	3,976,000
6¾ per cent	1991	60	4,500,000	4,383,000
6⅞ per cent	1992	61	5,000,000	4,928,000
6⅞ per cent	1992	65	9,000,000	8,836,000
6⅞ per cent	1993	71	7,235,000	6,960,000
6⅞ per cent	1993	75	1,665,000	1,533,000
6⅞ per cent	1993	76	8,788,000	8,464,000
6½ per cent	1994	78	2,002,000	1,875,000
6⅞ per cent	1994	79	6,998,000	6,853,000
6 per cent	1974	80	2,000,000	1,899,000
6½ per cent	1994	81	1,000,000	915,000
6⅞ per cent	1994	82	2,000,000	1,915,000
			R101,747,000	R93,932,000
MUNICIPAL				
Bloemfontein				
5⅝ per cent	1975/80		100,000	85,000
Cape Town				
5⅝ per cent	1980/85	203	600,000	503,000
5½ per cent	1981/86	208	850,000	708,000
5½ per cent	1983/88	219	610,000	501,000
5½ per cent	1980	227	100,000	87,000
6½ per cent	1981	240	210,000	198,000
			R104,217,000	R96,014,000

Carried forward

			Nominal Value	Book Value
<i>Brought forward</i>			R104,217,000	R96,014,000
Durban				
	Loan No.			
3¼ per cent	1964/74	41	1,000	1,000
3¼ per cent	1962/72	47	4,000	3,000
3 per cent	1967/77	50	1,000	1,000
5⅝ per cent	1974/79	68	600,000	522,000
5⅞ per cent	1976/80	70	800,000	689,000
6 per cent	1972/77	74	334,000	310,000
5 per cent	1984	84	500,000	399,000
5½ per cent	1982	87	450,000	385,000
6 per cent	1980	88	500,000	453,000
6 per cent	1981	91	1,000,000	901,000
6½ per cent	1981	93	1,000,000	940,000
Germiston				
5⅝ per cent	1985		150,000	122,000
Johannesburg				
5⅝ per cent	1974/79	36	120,000	104,000
Pretoria				
5 per cent	1961/81	7	246,000	204,000
5⅞ per cent	1975/78	44	100,000	89,000
5⅞ per cent	1975/78	47	100,000	88,000
6¼ per cent	1977/82	49	200,000	183,000
5½ per cent	1980/83	56	200,000	170,000
6½ per cent	1981/84		200,000	186,000
Witbank				
3½ per cent	1948/72	29 (R21,200)	4,000	4,000
3½ per cent	1947/71	31 (R17,000)	2,000	2,000
REPUBLIC OF SOUTH AFRICA				
3 per cent	1960/70		112,000	110,000
5¼ per cent	1979		700,000	659,000
RAND WATER BOARD				
6½ per cent	1984		250,000	233,000
7 per cent	1987		200,000	194,000
			R111,991,000	R102,966,000
Interest Accrued				1,335,000
Market Value			R101,340,000	
			R104,301,000	

Electricity Supply Commission

Redemption Fund Account for the Year Ended 31st December, 1969

1968		1968
R17,000,000	Repayment of Local Registered Stock	R19,000,000
	5 per cent 1967/69 (Loan No. 26)	R8,000,000
	6½ per cent 1969 (Loan No. 67)	11,000,000
R10,000,000 7,000,000	3¾ per cent 1964/68 (Loan No. 21)	
	5 per cent 1966/68 (Loan No. 25)	
203,489,000	Balance as per Balance Sheet	213,621,000
18,384,000	Cape Western Undertaking	20,901,000
4,744,000	Cape Northern Undertaking	5,470,000
58,000	Cape Eastern Undertaking	77,000
4,145,000	Border Undertaking	4,771,000
—	Orange River Undertaking	14,000
30,670,000	Natal Undertaking	33,851,000
19,306,000	Eastern Transvaal Undertaking	22,741,000
118,321,000	Rand and Orange Free State Undertaking	117,654,000
2,346,000	Head Office	2,554,000
5,515,000	Undertaking which has been sold	5,588,000
<u>R220,489,000</u>		<u>R232,621,000</u>

NOTE: The Book Values of all Investments were adjusted to Market Value on 1st January, 1968, to facilitate the pooling of Investments previously allocated to the separate sections of the Fund.
The Book Values are adjusted at the end of each year having regard to the par values and periods to maturity.

	1968	1968
Balance at Beginning of Year	R203,489,000	R208,413,000
Less Adjustment of Values of Investments (See Note)	—	19,825,000
	<u>R203,489,000</u>	<u>188,588,000</u>
Cape Western Undertaking	18,384,000	17,498,000
Cape Northern Undertaking	4,744,000	3,886,000
Cape Eastern Undertaking	58,000	37,000
Border Undertaking	4,145,000	4,129,000
Natal Undertaking	30,670,000	30,078,000
Eastern Transvaal Undertaking	19,306,000	15,914,000
Rand and Orange Free State Undertaking	118,321,000	109,391,000
Head Office	2,346,000	2,254,000
Undertaking which has been sold	5,515,000	5,401,000
Amounts Contributed During the Year as per Revenue Accounts	15,024,000	18,684,000
Cape Western Undertaking	2,066,000	2,138,000
Cape Northern Undertaking	414,000	580,000
Cape Eastern Undertaking	14,000	19,000
Border Undertaking	348,000	476,000
Orange River Undertaking	14,000	—
Natal Undertaking	3,028,000	3,824,000
Eastern Transvaal Undertaking	2,007,000	2,938,000
Rand and Orange Free State Undertaking	7,133,000	8,709,000
Other Contributions	94,000	165,000
Proceeds of Sales of Fixed Property	219,000	686,000
Interest Earned on Investments	12,577,000	11,099,000
Adjustment of Values of Investments at 31st December, 1969 (See Note)	1,218,000	1,267,000
	<u>R232,621,000</u>	<u>R220,489,000</u>

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 4th May, 1970.

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

Electricity Supply Commission

Reserve Fund Account for the Year

Ended 31st December, 1969

1968		
R1,137,000	Expenditure During the Year on Replacements and Betterment	R6,020,000
30,000	Cape Western Undertaking	R66,000
3,000	Cape Northern Undertaking	42,000
—	Cape Eastern Undertaking	—
13,000	Border Undertaking	12,000
382,000	Natal Undertaking	530,000
74,000	Eastern Transvaal Undertaking	1,763,000
635,000	Rand and Orange Free State Undertaking	3,607,000
90,035,000	Balance as per Balance Sheet	104,386,000
7,258,000	Cape Western Undertaking	8,704,000
2,496,000	Cape Northern Undertaking	3,040,000
7,000	Cape Eastern Undertaking	11,000
974,000	Border Undertaking	1,231,000
—	Orange River Undertaking	4,000
12,171,000	Natal Undertaking	14,760,000
9,534,000	Eastern Transvaal Undertaking	10,543,000
57,595,000	Rand and Orange Free State Undertaking	66,093,000
<u>R91,172,000</u>		<u>R110,406,000</u>

NOTE: The Book Values of all Investments were adjusted to Market Value on 1st January, 1968, to facilitate the pooling of Investments previously allocated to the separate sections of the Fund.
The Book Values are adjusted at the end of each year having regard to the par values and periods to maturity.

	1968	1969
Balance at Beginning of Year	R90,035,000	R79,892,000
Less Adjustment of Values of Investments (See Note)	—	6,475,000
	<u>R90,035,000</u>	<u>73,417,000</u>
Cape Western Undertaking	R7,258,000	5,904,000
Cape Northern Undertaking	2,496,000	1,952,000
Cape Eastern Undertaking	7,000	3,000
Border Undertaking	974,000	741,000
Natal Undertaking	12,171,000	10,006,000
Eastern Transvaal Undertaking	9,534,000	7,053,000
Rand and Orange Free State Undertaking	57,595,000	47,758,000
Amounts set aside during the year as per revenue accounts	13,605,000	12,300,000
Cape Western Undertaking	964,000	958,000
Cape Northern Undertaking	400,000	400,000
Cape Eastern Undertaking	4,000	4,000
Border Undertaking	190,000	188,000
Orange River Undertaking	4,000	—
Natal Undertaking	2,200,000	1,800,000
Eastern Transvaal Undertaking	2,064,000	1,995,000
Rand and Orange Free State Undertaking	7,779,000	6,955,000
Interest Earned on Investments	6,425,000	5,151,000
Adjustment of Values of Investments at 31st December, 1969 (See Note)	341,000	304,000
	<u>R110,406,000</u>	<u>R91,172,000</u>

Electricity Supply Commission

Consolidated Revenue Account for the Year Ended 31st December, 1969

1968					
R62,133,000	Generation		R67,073,000	Sales of Electricity	R175,338,000
	Operation—			Traction Supplies	R17,417,000
45,117,000	Fuel	R48,035,000		Bulk Supplies	43,495,000
1,623,000	Water and Stores	1,879,000		Mining Supplies	57,457,000
5,965,000	Salaries and Wages	6,612,000		Industrial Supplies	47,118,000
199,000	Other Expenses	558,000		Domestic & Lighting Supplies	9,851,000
	Maintenance—				
2,830,000	Stores	2,949,000		Revenue from Air and Steam	438,000
5,877,000	Salaries and Wages	6,290,000			160,757,000
522,000	Other Expenses	750,000			
	Purchase of Electricity		102,000	Other Revenue	768,000
121,000					176,106,000
8,097,000	Distribution		9,264,000	Balance carried down	—
	Operation and Maintenance—				518,000
1,418,000	Stores	1,542,000			
5,662,000	Salaries and Wages	6,386,000			
1,017,000	Other Expenses	1,336,000			
	General Expenses		13,578,000		
12,176,000	Local Administration and Technical Management	4,035,000			
3,559,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	5,987,000			
5,411,000	Head Office Administration	1,638,000			
1,482,000	Head Office Engineering Expenses	1,285,000			
994,000	Research Expenses	633,000			
730,000					
	Capital Charges		85,357,000		
79,466,000	Interest	50,943,000			
43,282,000	Redemption Fund	15,024,000			
18,684,000	Instalments and Provision for Repayment of Overseas Loans	5,785,000			
5,200,000	Reserve Fund	13,605,000			
12,300,000					
	Balance carried down		732,000		
—					
<u>R161,993,000</u>			<u>R176,106,000</u>		
518,000	Balance brought down		—		
2,619,000	Balance as per Balance Sheet		R3,351,000	Balance brought forward	R2,619,000
				Balance brought down	732,000
<u>R3,137,000</u>			<u>R3,351,000</u>		<u>R3,351,000</u>
					<u>R161,993,000</u>
					<u>R3,137,000</u>

Electricity Supply Commission

Cape Western Undertaking

Revenue Account for the Year Ended 31st December, 1969

1968		1968
R7,468,000	Generation	R8,204,000
—	Proportion of Pooled Costs of Rand and Orange Free State and Eastern Transvaal Undertakings	R340,000
—	Proportion of Transmission Costs charged by Orange River and Rand and Orange Free State Undertakings	55,000
	Operation—	
5,899,000	Fuel	6,292,000
105,000	Water and Stores	108,000
574,000	Salaries and Wages	607,000
117,000	Other Expenses	24,000
	Maintenance—	
96,000	Stores	83,000
574,000	Salaries and Wages	590,000
103,000	Other Expenses	105,000
1,429,000	Distribution	1,507,000
	Operation and Maintenance—	
183,000	Stores	171,000
1,003,000	Salaries and Wages	1,085,000
243,000	Other Expenses	251,000
1,926,000	General Expenses	2,215,000
684,000	Local Administration and Technical Management	807,000
956,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	1,000,000
170,000	Head Office Administration Expenses	188,000
116,000	Head Office Engineering Expenses	220,000
7,790,000	Capital Charges	8,197,000
4,508,000	Interest	4,974,000
2,138,000	Redemption Fund	2,066,000
186,000	Instalments and Provision for Repayment of Overseas Loans	193,000
958,000	Reserve Fund	964,000
—	Balance carried down	102,000
<u>R18,613,000</u>		<u>R20,225,000</u>
R140,000	Balance brought down	—
530,000	Balance brought forward	R670,000
<u>R670,000</u>		<u>R670,000</u>

	1968	1968
Sales of Electricity	R20,126,000	R18,415,000
Traction Supplies	R4,169,000	4,100,000
Bulk Supplies	3,540,000	3,281,000
Industrial Supplies	8,515,000	7,293,000
Domestic and Lighting Supplies	3,902,000	3,741,000
Other Revenue	99,000	58,000
	<u>20,225,000</u>	<u>18,473,000</u>
Balance carried down	—	140,000
	<u>R20,225,000</u>	<u>R18,613,000</u>
Balance brought down	R102,000	—
Balance as per Balance Sheet	568,000	R670,000
	<u>R670,000</u>	<u>R670,000</u>

Electricity Supply Commission

Cape Northern Undertaking

Revenue Account for the Year Ended 31st December, 1969

1968		1968
R2,675,000	Generation	R3,022,000
2,392,000	Proportion of Pooled Costs of Rand and Orange Free State and Eastern Transvaal Undertakings	R2,642,000
283,000	Proportion of Transmission Costs charged by Rand and Orange Free State Undertaking	380,000
299,000	Distribution	318,000
	Operation and Maintenance—	
47,000	Stores	35,000
198,000	Salaries and Wages	223,000
54,000	Other Expenses	60,000
303,000	General Expenses	377,000
116,000	Local Administration and Technical Management	139,000
104,000	General Expenses (including Stores Expenses, Rates, Insurances, Pension Fund Contributions, etc.)	122,000
49,000	Head Office Administration Expenses	53,000
34,000	Head Office Engineering Expenses	63,000
2,187,000	Capital Charges	2,107,000
1,207,000	Interest	1,293,000
580,000	Redemption Fund	414,000
400,000	Reserve Fund	400,000
<u>R5,464,000</u>		<u>R5,824,000</u>
R104,000	Balance brought down	R108,000
1,012,000	Balance as per Balance Sheet	904,000
<u>R1,116,000</u>		<u>R1,012,000</u>

1968		1968
	Sales of Electricity	R5,708,000
R1,610,000	Traction Supplies	1,461,000
1,014,000	Bulk Supplies	958,000
2,159,000	Mining Supplies	2,096,000
665,000	Industrial Supplies	600,000
260,000	Domestic and Lighting Supplies	234,000
	Other Revenue	8,000
		5,716,000
	Balance carried down	108,000
		5,360,000
		104,000
		<u>R5,824,000</u>
	Balance brought forward	R1,012,000
		<u>R1,012,000</u>

Electricity Supply Commission

Cape Eastern

Undertaking

Revenue Account for the Year

Ended 31st December, 1969

1968			
R44,000	Electricity Purchased		R63,000
26,000	Distribution		31,000
	Operation and Maintenance—		
2,000	Stores	R5,000	
16,000	Salaries and Wages	17,000	
8,000	Other Expenses	9,000	
14,000	General Expenses		17,000
3,000	Local Administration and Technical Management	5,000	
9,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	9,000	
1,000	Head Office Administration Expenses	1,000	
1,000	Head Office Engineering Expenses	2,000	
62,000	Capital Charges		83,000
39,000	Interest	65,000	
19,000	Redemption Fund	14,000	
4,000	Reserve Fund	4,000	
<u>R146,000</u>			<u>R194,000</u>
R14,000	Balance brought down		R24,000
18,000	Balance brought forward		32,000
<u>R32,000</u>			<u>R56,000</u>

			1968
	Sales of Electricity	R169,000	R131,000
	Bulk Supplies	R26,000	23,000
	Industrial Supplies	77,000	55,000
	Domestic Supplies	66,000	53,000
	Other Revenue	1,000	1,000
		<u>170,000</u>	<u>132,000</u>
	Balance carried down	24,000	14,000
		<u>R194,000</u>	<u>R146,000</u>
	Balance as per Balance Sheet	R56,000	R32,000
		<u>R56,000</u>	<u>R32,000</u>

Electricity Supply Commission

Border Undertaking

Revenue Account for the Year

Ended 31st December, 1969

1968		
R1,625,000	Generation	R1,731,000
	Operation—	
1,102,000	Fuel	R1,183,000
16,000	Water and Stores	19,000
238,000	Salaries and Wages	254,000
22,000	Other Expenses	2,000
	Maintenance—	
51,000	Stores	47,000
172,000	Salaries and Wages	202,000
24,000	Other Expenses	24,000
219,000	Distribution	227,000
	Operation and Maintenance—	
21,000	Stores	24,000
161,000	Salaries and Wages	158,000
37,000	Other Expenses	45,000
340,000	General Expenses	410,000
141,000	Local Administration and Technical Management	163,000
142,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	167,000
34,000	Head Office Administration Expenses	37,000
23,000	Head Office Engineering Expenses	43,000
1,618,000	Capital Charges	1,599,000
954,000	Interest	1,061,000
476,000	Redemption Fund	348,000
188,000	Reserve Fund	190,000
<u>R3,802,000</u>		<u>R3,967,000</u>
R122,000	Balance brought down	R11,000
—	Balance brought forward	93,000
<u>R122,000</u>		<u>R104,000</u>

	1968	1968
Sales of Electricity	R3,950,000	R3,676,000
Bulk Supplies	R3,023,000	2,827,000
Industrial Supplies	478,000	448,000
Domestic and Lighting Supplies	449,000	401,000
Other Revenue	6,000	4,000
	<u>3,956,000</u>	<u>3,680,000</u>
Balance carried down	11,000	122,000
	<u>R3,967,000</u>	<u>R3,802,000</u>
Balance brought forward	—	R29,000
Balance as per Balance Sheet	R104,000	93,000
	<u>R104,000</u>	<u>R122,000</u>

Electricity Supply Commission

Orange River Undertaking

Revenue Account for the Year Ended 31st December, 1969

<u>1968</u>		
	Generation	
—	Proportion of Pooled Costs of Rand and Orange Free State and Eastern Transvaal Undertakings	R31,000
R50,000	Electricity Purchased	14,000
5,000	Distribution	10,000
	Operation and Maintenance—	
—	Stores	—
5,000	Salaries and Wages	7,000
	Other Expenses	3,000
5,000	General Expenses	32,000
2,000	Local Administration and Technical Management	20,000
3,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	11,000
	Head Office Administration Expenses	1,000
	Head Office Engineering Expenses	—
20,000	Capital Charges	100,000
20,000	Interest	82,000
	Redemption Fund	14,000
	Reserve Fund	4,000
		187,000
	Proportion of Transmission Costs charged to Cape Western Undertaking	37,000
	Proportion of Transmission Costs charged by R. & O.F.S. Undertaking	1,000
<u>R80,000</u>		<u>R151,000</u>
R2,000	Balance brought down	R52,000
—	Balance brought forward	2,000
<u>R2,000</u>		<u>R54,000</u>

	<u>1968</u>	<u>1968</u>
Sales of Electricity	R98,000	R78,000
Bulk Supplies	R88,000	68,000
Industrial Supplies	10,000	10,000
Other Revenue	1,000	—
	99,000	78,000
Balance carried down	52,000	2,000
	<u>R151,000</u>	<u>R80,000</u>
Balance as per Balance Sheet	R54,000	R2,000
	<u>R54,000</u>	<u>R2,000</u>

Electricity Supply Commission

Natal Undertaking

Revenue Account for the Year

Ended 31st December, 1969

1968		R14,655,000
R13,224,000	Generation	
	Operation—	
9,713,000	Fuel	R10,797,000
332,000	Stores	335,000
1,184,000	Salaries and Wages	1,336,000
243,000	Other Expenses	119,000
	Maintenance—	
458,000	Stores	436,000
1,052,000	Salaries and Wages	1,176,000
242,000	Other Expenses	456,000
7,000	Electricity Purchased	
2,000	Electricity Supplied by Rand and Orange Free State Undertaking	6,000
1,453,000	Distribution	5,000
	Operation and Maintenance—	1,751,000
263,000	Stores	281,000
912,000	Salaries and Wages	1,089,000
278,000	Other Expenses	381,000
2,150,000	General Expenses	2,537,000
782,000	Local Administration and Technical Management	881,000
916,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	998,000
268,000	Head Office Administration Expenses	303,000
184,000	Head Office Engineering Expenses	355,000
13,208,000	Capital Charges	13,868,000
7,225,000	Interest	8,149,000
3,824,000	Redemption Fund	3,028,000
359,000	Instalments and Provision for Repayment of Overseas Loans	491,000
1,800,000	Reserve Fund	2,200,000
<u>R30,044,000</u>		<u>R32,822,000</u>
R833,000	Balance brought down	R231,000
1,231,000	Balance as per Balance Sheet	1,000,000
<u>R2,064,000</u>		<u>R1,231,000</u>

		R32,415,000	1968	R29,062,000
	Sales of Electricity			
	Traction Supplies	R5,281,000	4,632,000	17,062,000
	Bulk Supplies	18,560,000	1,020,000	5,141,000
	Mining Supplies	1,087,000	1,207,000	
	Industrial Supplies	6,136,000		
	Domestic and Lighting Supplies	1,351,000		
	Other Revenue	176,000		149,000
		<u>32,591,000</u>		<u>29,211,000</u>
	Balance carried down	231,000		833,000
		<u>R32,822,000</u>		<u>R30,044,000</u>
	Balance brought forward	R1,231,000		R2,064,000
		<u>R1,231,000</u>		<u>R2,064,000</u>

Electricity Supply Commission

Eastern Transvaal Undertaking

Revenue Account for the Year Ended 31st December, 1969

1968		R12,756,000
R10,568,000	Generation	R12,756,000
10,562,000	Proportion of Pooled Costs (Statement attached)	R12,747,000
4,000	Other Operation and Maintenance Costs—	
1,000	Operation—	
—	Salaries and Wages	2,000
1,000	Other Expenses	—
	Maintenance—	
	Stores	5,000
	Salaries and Wages	2,000
336,000	Electricity Supplied by Rand and Orange Free State Undertaking	318,000
768,000	Distribution	939,000
	Operation and Maintenance—	
110,000	Stores	127,000
487,000	Salaries and Wages	581,000
171,000	Other Expenses	231,000
780,000	General Expenses	993,000
428,000	Local Administration and Technical Management	450,000
698,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	733,000
268,000	Head Office Administration Expenses	298,000
183,000	Head Office Engineering Expenses	348,000
1,577,000		1,829,000
797,000	Less charged to Pooled Costs	836,000
4,737,000	Capital Charges	4,588,000
7,588,000	Interest	7,954,000
2,938,000	Redemption Fund	2,007,000
697,000	Instalments and Provision for Repayment of Overseas Loans	683,000
1,995,000	Reserve Fund	2,064,000
13,218,000		12,708,000
8,481,000	Less Charged to Pooled Costs	8,120,000
17,189,000	Balance carried down	19,594,000
596,000		1,027,000
<u>R17,785,000</u>		<u>R20,621,000</u>
R2,312,000	Balance as per Balance Sheet	R3,339,000
<u>R2,312,000</u>		<u>R3,339,000</u>

	R20,521,000	1968 R17,679,000
Sales of Electricity	R20,521,000	R17,679,000
Traction Supplies	R2,018,000	2,027,000
Bulk Supplies	1,238,000	1,087,000
Mining Supplies	6,804,000	6,313,000
Industrial Supplies	9,896,000	7,694,000
Domestic and Lighting Supplies	565,000	558,000
Other Revenue	100,000	106,000
Other Revenue	207,000	202,000
Less Credited to Pooled Costs	107,000	96,000

Electricity Supply Commission

Rand and Orange Free State

Undertaking

Revenue Account for the Year

Ended 31st December, 1969

1968		R72,338,000
R67,751,000	Generation	
	Proportion of Pooled Costs (Statement attached)	R72,338,000
3,614,000	Distribution	4,082,000
	Operation and Maintenance—	
791,000	Stores	R899,000
2,885,000	Salaries and Wages	3,226,000
221,000	Other Expenses	356,000
3,897,000		4,481,000
283,000	Less charged to Undertakings	399,000
1,906,000	General Expenses	2,219,000
1,403,000	Local Administration and Technical Management	1,569,000
2,581,000	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	2,947,000
692,000	Head Office Administration Expenses	757,000
475,000	Head Office Engineering Expenses	887,000
5,151,000		6,160,000
3,245,000	Less Charged to Pooled Costs	3,941,000
13,367,000	Capital Charges	14,041,000
21,743,000	Interest	27,366,000
8,709,000	Redemption Fund	7,133,000
3,957,000	Instalments and Provision for Repayment of Overseas Loans	4,417,000
6,955,000	Reserve Fund	7,779,000
41,364,000		46,695,000
27,997,000	Less Charged to Pooled Costs	32,654,000
86,638,000		92,680,000
101,000	Balance carried down	29,000
<u>R86,739,000</u>		<u>R92,709,000</u>
R1,240,000	Balance brought forward	R1,139,000
<u>R1,240,000</u>		<u>R1,139,000</u>

	R92,352,000	1968 R85,929,000
Sales of Electricity	R92,352,000	R85,929,000
Traction Supplies	R4,340,000	4,251,000
Bulk Supplies	16,007,000	14,710,000
Mining Supplies	47,406,000	44,466,000
Industrial Supplies	21,340,000	19,767,000
Domestic and Lighting Supplies	3,259,000	2,735,000
Revenue from Air and Steam	—	438,000
	92,352,000	86,367,000
Electricity Supplied to Undertakings	323,000	338,000
Eastern Transvaal Undertaking	318,000	336,000
Natal Undertaking	5,000	2,000
Other Revenue	34,000	34,000
Other Revenue	350,000	377,000
Less Credited to Pooled Costs	316,000	343,000
	92,709,000	86,739,000
	<u>R92,709,000</u>	<u>R86,739,000</u>
Balance brought down	R29,000	R101,000
Balance as per Balance Sheet	1,110,000	1,139,000
	<u>R1,139,000</u>	<u>R1,240,000</u>

Electricity Supply Commission

Rand and Orange Free State and Eastern Transvaal Undertakings

Statement of Pooled Costs and Allocation for the Year Ended 31st December, 1969

1968		1968	
R40,604,000	Generation Operation—	R42,949,000	Sundry Revenue
28,403,000	Fuel	R29,763,000	Allocation
1,255,000	Water and Stores	1,498,000	Rand and Orange Free State Undertaking
3,965,000	Salaries and Wages	4,414,000	Eastern Transvaal Undertaking
525,000	Other Expenses	412,000	Cape Northern Undertaking
2,226,000	Maintenance—	2,378,000	Cape Western Undertaking
4,077,000	Stores	4,319,000	Orange River Undertaking
153,000	Salaries and Wages	165,000	
	Other Expenses		
20,000	Electricity Purchased	20,000	
—	Interconnector	2,216,000	
4,042,000	General Expenses	4,777,000	
908,000	Local Administration and Technical Management	924,000	
2,150,000	General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	2,481,000	
984,000	Head Office Administration and Engineering Expenses	1,372,000	
36,478,000	Capital Charges	38,558,000	
18,882,000	Interest	21,710,000	
6,887,000	Redemption Fund	5,377,000	
4,413,000	Instalments and Provision for Repayment of Overseas Loans	4,803,000	
6,296,000	Reserve Fund	6,668,000	
<u>R81,144,000</u>		<u>R88,520,000</u>	
			R422,000
			88,098,000
			R72,338,000
			12,747,000
			2,642,000
			340,000
			31,000
			<u>R81,144,000</u>
			R439,000
			80,705,000
			67,751,000
			10,562,000
			2,392,000
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