



Dr. R. L. Straszacker, Chairman of Escom, as seen by d'Ory

MEMBERS OF THE

Electricity Supply Commission

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# Electricity Supply Commission

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Escom Centre,  
204, Smit Street,  
Johannesburg.  
8th October, 1964.

**To the Honourable,  
The Minister of Economic Affairs,  
Union Buildings,  
Pretoria.**

Sir,

As required by Section 19 of the Electricity Act, 1958, the Commission has the honour to present its forty-first Annual Report and the Accounts covering its work during the financial year ended at 31st December, 1963.

In view of the many important projects which were under discussion or in the course of planning at the year-end and during the past Session of Parliament, the Report includes brief comment upon developments which were given form or approval after the close of the Commission's financial year.

## ELECTRICITY ACT: AMENDMENTS

In terms of the Electricity Amendment Act, 1964, the Commission has been given the power to supply electricity in bulk from any of its undertakings to the Industrial Development Corporation of South Africa, Limited, at any point on the border between the Republic and the territory of South West Africa. Such supply may be for use either by the Corporation in the territory or for the purpose of making it available to other consumers; and the Commission has also been authorized to act as the agent of the Corporation in connection with the generation, supply or distribution of electricity by the Corporation outside the Republic.

In this way the experience and organization of the Commission have been made available to the Corporation for carrying out any development of electricity supply which the Corporation may desire to promote in the territory of South West Africa: and preliminary discussions have been held between Escom, the Corporation, the Administrator of South West Africa and others who will be concerned in carrying out the five-year plan for the economic development of the territory, as set out in the White Paper presented to and approved by Parliament.

Among the projects which are to be brought to completion with the least possible delay is the Kunene Scheme, the cost of which has been estimated at R49,000,000, for the supply of electricity to the northern and central areas of South West Africa.

The Electricity Amendment Act, 1964, also gives the Commission a general power to supply electricity in bulk from any of its undertakings to other persons (including a government or administration) at any point on the border between the Republic and any territory adjoining it.

## **EXPANSION OF ESCOM'S UNDERTAKINGS**

In order to meet new demands for electricity further expansion of Escom's Undertakings has been called for: and the present licensed areas of supply of its Undertakings are shown in colour on the map which appears opposite this page.

The map incorporates the following enlargements of Escom's Undertakings, which were granted by the Electricity Control Board, or applied for, during 1963:—

## **Cape Western Undertaking**

The Commission's application dated 18th June, 1963, to include further farms north of Ceres and a further area between Citrusdal and Clanwilliam in the Cape Western Undertaking was granted by the Board on 19th August, 1963. This application was for extensions of Escom's rural reticulations.

## **Cape Eastern Undertaking**

A licence for the new Cape Eastern Undertaking was granted by the Board on 19th February, 1963; and the approval of the Minister, under Section 7 of the Act, was given on 5th April, 1963.

[The proposals for this new Undertaking were reported in detail on page 7 of the Annual Report for 1962.]



## **Natal Southern Undertaking**

The Commission's application dated 14th February, 1963, for extension of the area of supply of the Natal Southern Licence to include a large area on the Natal coast between the Tugela and the Umduna Rivers was granted by the Board on 30th April, 1963.

The immediate purposes of the application were to enable Escom to furnish supplies in bulk to the Municipalities of Eshowe and Empangeni, and a partial supply to S.A. Pulp and Paper Industries, Ltd., at its Mandeni Mill. The supply of power in this area will make an important contribution towards the economic development of the North Coast of Natal and Zululand.

## **Natal Central Undertaking**

The Commission applied on 16th October, 1963, for enlargement of the area of supply of the Natal Central Licence to include the districts of Vryheid and Paulpietersburg and portion of Ngotshe, where additional and new supplies of electricity are required mainly for coal mining.

Escom's application was in the customary form, i.e. it sought authority to supply in the whole area, including the areas covered by permissions granted by the Board to the Municipality of Vryheid under Section 40 of the Act, but was qualified by the condition in the Commission's licence that Escom would not supply consumers whom the Municipality was authorized to supply, unless the Municipality consented thereto. The Municipality has decided to continue the generation of electricity in its new power station: but, as a result of discussions with the Municipality, Escom is to provide a stand-by supply to the Municipality to enable it to close down its old power station.

The Commission's application was granted by the Board after a public hearing of the application on 22nd April, 1964.

## **Eastern Transvaal Undertaking**

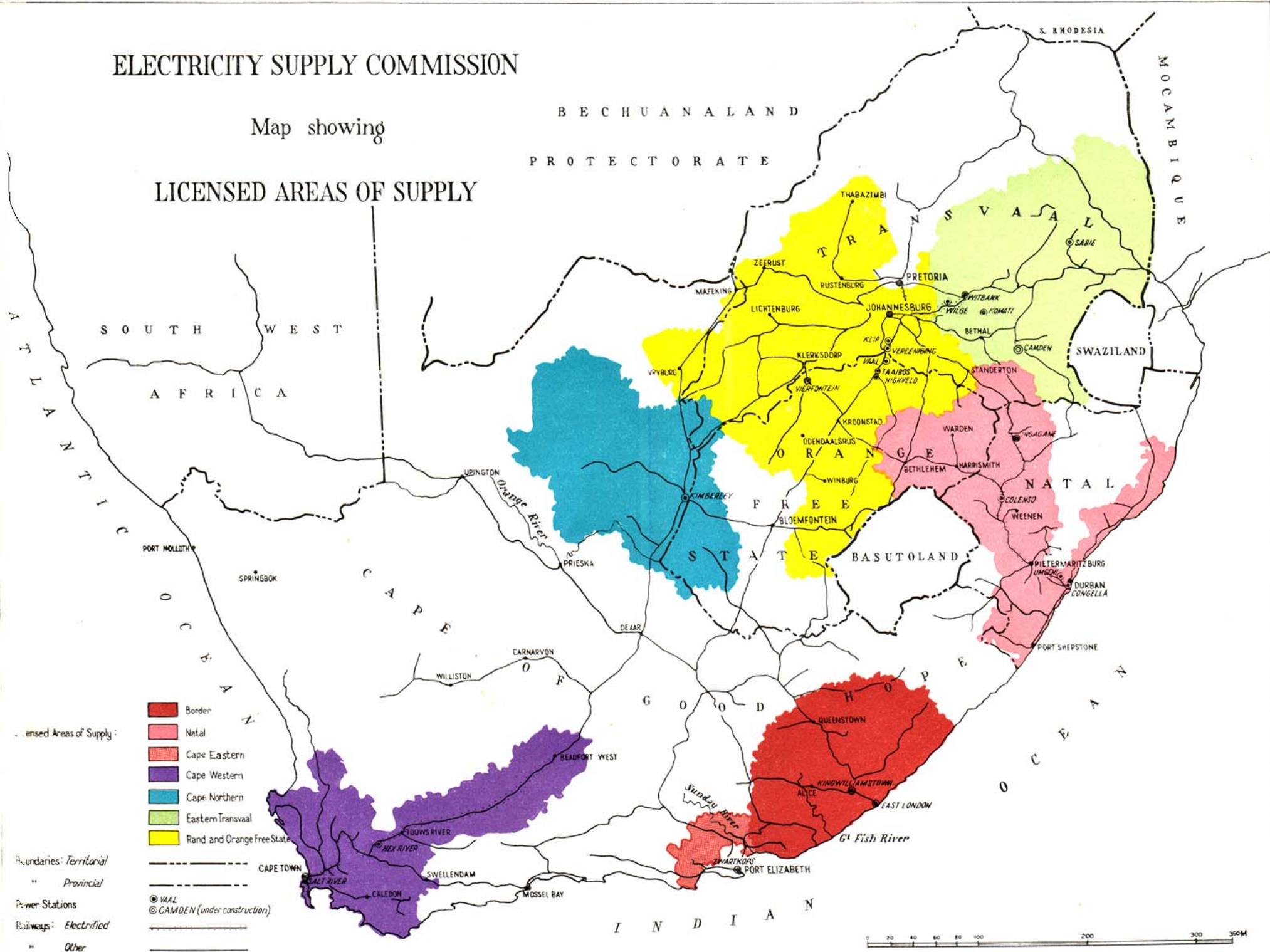
On 18th October, 1963, the Commission applied for extension of its Eastern Transvaal Licence to include an area in the vicinity of Gravelotte, to authorize it *inter alia* to undertake the supply to Consolidated Murchison (Transvaal) Goldfields and Development Company, Ltd., which had applied to Escom for a large supply required for expansion of its mining activities.

As the Municipality of Tzaneen was engaged at the time in the construction of a rural reticulation scheme for farmers whom it was authorized to supply under two permissions granted to it by the Board, agreement was arrived at between Escom and the Municipality that (i) the supply to the Murchison Company would be provided by Escom; (ii) the question of a supply to any other mines in the area would be left for decision from time to time by the Board; (iii) farmers within the areas

# ELECTRICITY SUPPLY COMMISSION

Map showing

## LICENSED AREAS OF SUPPLY



covered by the permissions granted to the Municipality would be supplied by the Municipality; and (iv) Escom would submit terms for a partial bulk supply to the Municipality at or in the vicinity of Letsitele.

The application, as amended, was granted by the Board on the 22nd June, 1964.

## **Rand and O.F.S. Undertaking**

Following from negotiations between Escom and the Brits District Farmers' Union, and between that Union and the City Council of Pretoria, the Commission applied on 1st November, 1963, for certain farms in the district of Brits to be excised from the area of supply granted to Pretoria and added to the area of supply of the Greater Rand Extension and Orange Free State Licence. The application was made, with the consent of the Municipality of Pretoria, to enable Escom to embark upon a large rural electrification scheme in the Brits district. This scheme has been estimated at a capital cost of the order of R1,500,000, and will take several years to construct.

The application was granted by the Board on 24th February, 1964: but the Municipality of Pretoria will continue to provide a bulk supply to the Municipality of Brits, as it has done for many years, until a supply is available from Escom.

## ORANGE RIVER HYDRO PROJECT

Escom's Report for the year 1961 recorded the Commission's decision in principle to undertake the financing, construction and operation of hydro-electric power stations and electrical distribution networks at places where the generation of hydro-electric power is made possible by the Orange River Development Project.

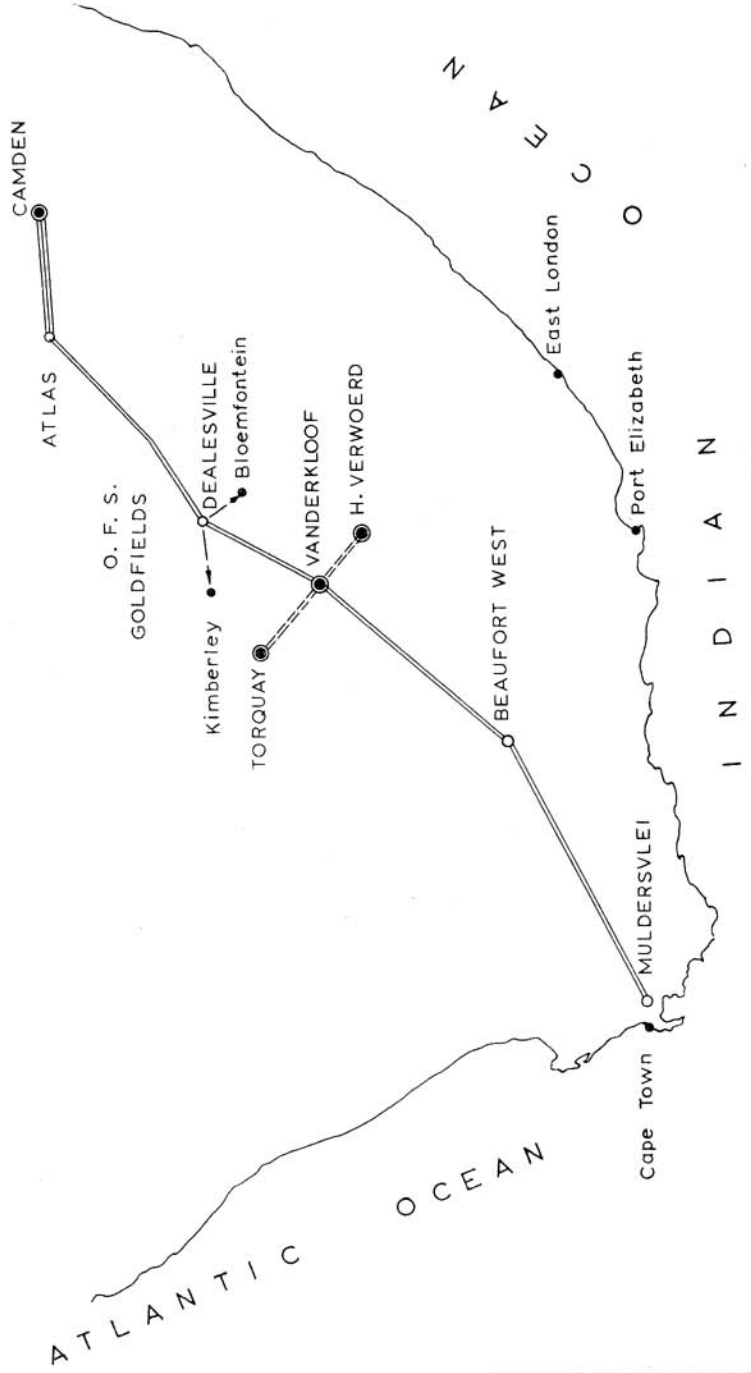
It has to be borne in mind that this is not a straight-forward hydro-electric scheme: since the primary object of the Orange River Project is to provide water for consumption uses, and, consequently, the quantity of water available for power generation will diminish as the water project is brought to full development.

In this initial stage, the investigations have been directed principally to the hydro-electric potential of the three main dams, Hendrik Verwoerd dam, van der Kloof dam, and Torquay dam which are to be built in the first and second phases of the Project. The potential of these dams, when built to the higher elevations described in the White Paper (W.P. AA-'64), has been assessed at some 270,000 kW: but the studies so far made show that this hydro-electric potential can be developed in a way which will bring about a far-reaching change in the pattern of power supply south of the Orange River.

Escom has in mind that a separate undertaking should be established by it, to construct and work the main hydro-electric power stations at Hendrik Verwoerd dam, Van der Kloof dam and Torquay dam, and for the distribution of electricity in that region. This undertaking, which is referred to as the Orange River Undertaking, may be extended to include other places where hydro-electric generation is possible or it may be desirable to have more than one undertaking: but Escom's thinking is to develop the hydro-electric potential of these main dams to the economic limit in the years when large quantities of water will be available for generation of power and to transmit to the Cape the surplus power which cannot, in those years, be sold in the environs of the Orange River valley.

Hitherto the level of power costs at the Cape has been governed largely by the cost of the 1,000 mile rail-haulage from the coal fields in the Witbank district to the power stations at the Cape. Now that the Orange River Project will provide a source of power about midway, a scheme for transmission of power to the Cape can be introduced in economic stages. In the first stage hydro-electric power will be transmitted from this halfway point to the Cape; and later, when the hydro-electric source has to be supplemented by power from another source, it will be economically possible to supply further quantities of electricity to the Orange River Undertaking,

# ELECTRICITY SUPPLY COMMISSION





and so to the Cape, from the pit-head power stations located on the Transvaal and Orange Free State coal fields.

The thermal stations at the Cape will continue in service, of course, as regulating stations and to cater for the peak loads on the systems to which they are connected.

A schematic diagram of the transmission system which is envisaged in these proposals is shown on the map which appears opposite this page.

It was reported last year that the transmission system from Camden Power Station to Atlas Distribution Station would be 400 kV: and, as this voltage is suitable, the plans for the Orange River Undertaking envisage the extension of this 400 kV system from Atlas Distribution Station *via* Dealesville to the power station at Van der Kloof dam, and from Van der Kloof *via* Beaufort West to a major distribution station in the Western Cape.

Dealesville will provide a point of distribution at 275 kV westwards to Kimberley and, possibly, to Bloemfontein. Beaufort West will provide a point of interconnection between the 400 kV transmission system and the 132 kV lines which carry the traction supplies for the main railway line to the Cape.

For a scheme of this magnitude it was necessary that the hydro-electric power potential be increased by building Hendrik Verwoerd dam and Van der Kloof dam to the higher levels announced by the Hon. P. O. Sauer, Chairman of the Cabinet Committee for the Orange River Development Project, on the 27th November, 1963. As Minister Sauer pointed out, the decision will give a more balanced development, and the income that will be contributed by hydro-electric generation in the first 25 years will provide a substantial contribution towards the cost of the dams.

The payments which Escom will make to the Department of Water Affairs for water used to generate electricity at Hendrik Verwoerd dam, Van der Kloof dam and Torquay dam have been calculated on the basis of the cost of generation in the power pooled stations of the Rand and Orange Free State Undertaking and the Eastern Transvaal Undertaking, that is to say, the cost per kW and per kWh sent out from the hydro electric power stations will be the same as the cost of generation in the large thermal stations located on the Transvaal and Orange Free State coal-fields.

## OUTPUT AND SALES

The total units generated in all Escom's Undertakings in the year 1963 amounted to 22,312 million units, which was an increase of 7·24 per cent over the corresponding figure for 1962.

Purchases from other undertakings (including units re-purchased) amounted to 18 million units.

The figures of output and sales for all Undertakings were as follows:—

	1963	1962	<i>Increase</i>
Units generated.....	22,312,389,427	20,805,518,186	7·2%
Units purchased.....	18,582,815	12,559,278	—
Units sold.....	19,500,013,697	18,121,036,829	7·6%

The year 1963 is the first year in which the amount of power sold to Mining consumers fell below one-half of the total sales; and the annual increase of only 2·9 per cent in the units sold to mines is the lowest rate of increase since the years immediately preceding the devaluation of sterling and South African currency in September, 1949.

In the light of these figures the over-all increase of 7·6 per cent reflects a marked expansion of the power requirements of other consumers. The increases in bulk supplies to Municipalities (11·7 per cent) and in units sold to Industrial consumers (15·2 per cent) were well above the ten-year average.

Total Sales (electricity, air and steam) for the year 1963 in the main categories of supply, with the corresponding figures for 1962 and the rate of increase in the year under review, are shown in the following table. The final column enables a comparison to be made with the average rate of increase over the 10 years 1954-1963.

	1963	1962	% Increase 1963	<i>Average Annual Increase in 10 Years</i>
<i>Bulk Supplies:</i>				
Municipalities.....	4,001,567,340	3,573,766,595	11·7	9·3
<i>Direct Supplies:</i>				
Traction.....	1,388,966,164	1,296,352,748	7·1	9·1
Mining.....	9,517,969,988	9,246,759,274	2·9	6·8
Industrial.....	4,262,427,593	3,700,839,193	15·2	11·8
Domestic.....	322,560,933	296,379,011	8·8	9·3
Street Lighting.....	7,521,679	6,940,008	8·4	10·7
	<u>19,500,013,697</u>	<u>18,121,036,829</u>	<u>7·6</u>	<u>8·4</u>

Total Revenue for the year amounted to R101,488,074, which was an increase of 7·9 per cent over the revenue for the previous year.

The increase in Total Costs was slightly less than the increase in output; so that the year's accounts show a decrease in the cost per unit sold from the average of ·5132c in 1962 to ·5106c per unit sold in 1963. This reduction in the cost of power was achieved in spite of a small increase in the cost of coal burnt in the Commission's power stations.

## **Bulk Supplies to Municipalities**

In all Undertakings, Escom provided bulk supplies to 165 urban local authorities, these supplies accounting for 20·53 per cent of total sales.

The sum of the maximum demands of these Consumers in 1963 was of the order of 900 MW which represents a capital investment in Escom power stations of about R100 million.

A substantial proportion of these bulk supplies is re-distributed by Local Authorities to industrial and commercial users; so that the over-all increase at the high rate of 11·7 per cent for the year reflects a marked up-turn in industrial and commercial activities throughout the country.

During the year new supplies were given to Alicedale, Barberton and Ottosdal, and additional points of supply were provided for Robertson in the Cape and Middelburg, Transvaal.

## **Traction Supplies**

Only one new traction substation was commissioned during 1963, the Strand Substation at the Cape. The increase of 26·8 per cent in traction sales by the Natal Southern Undertaking reflects the full year's working of the electrification from Durban to Duff's Road, and thence to Kwa-Mashu.

The over-all increase of 7·1 per cent in total sales to the South African Railways for traction is spread over most sections, and indicates a general increase in traffic both on main line and suburban railways.

The General Manager of Railways records that, at 31st March, 1963, the total length of electrified track was 3,412 miles, or 18·39 per cent of the total railway network in the Republic and South West Africa.

## **Mining Supplies**

The increase in Mining Supplies of 271 million units for the year represents an increase of only 2.9 per cent, which is appreciably lower than the average annual increase during the past 10-year period. None-the-less, figures published by the

Transvaal and Orange Free State Chamber of Mines show an increase in gold production of nearly 2,000,000 fine ounces (7·6 per cent) while the revenue from gold rose by R50·2 million, to the record total of R663·0 million for the year. Uranium production declined from 4,598 tons in 1962 to 4,162 tons in 1963.

However, within the gold mining industry the pattern of recent years has been repeated: a decline in activity and gold output in the old Witwatersrand area, between Springs and Randfontein; expansion in the new gold fields—Far West Rand, Klerksdorp, Orange Free State and Bethal. This pattern is shown in the summary of units sold to mining consumers on the Witwatersrand and in the new gold fields, and the total units sold to gold mines, coal mines and other mines during the past three years, which are given in the following table:—

	<i>Units sold (millions)</i>		
	1961	1962	1963
Witwatersrand.....	3,089	2,934	2,815
Klerksdorp.....	1,194	1,350	1,412
Far West Rand.....	1,566	1,812	1,949
Orange Free State.....	2,131	2,225	2,282
Bethal.....	147	246	301
Gold Mining (including Uranium).....	8,127	8,567	8,759
Coal Mines.....	265	288	315
Diamond, Platinum and other Mines.....	346	392	444
	<u>8,738</u>	<u>9,247</u>	<u>9,518</u>

The increase in mining supplies furnished from the Cape Northern Undertaking reflects the development of supplies to De Beers Consolidated Mines, Limited, at Kimberley, to asbestos and manganese mines in the Kuruman district, and the iron ore mine of S.A. Iron, and Steel Industrial Corporation, Limited (“Iscor”), at Sishen. Sales in these categories during the past three years were as follows:—

	<i>Units sold (millions)</i>		
	1961	1962	1963
Diamond mines.....	55·8	63·8	70·3
Asbestos mines.....	0·4	7·6	15·8
Gypsum and Lime.....	17·8	17·4	17·5
Manganese and Iron mines.....	—	9·5	16·9
	<u>74·0</u>	<u>98·3</u>	<u>120·6</u>

## **Industrial Supplies**

The increase of 15·2 per cent in supplies of electricity to consumers classified as "*Industrial*" — which includes all large users other than bulk, railway traction and mining consumers — is well above the 10-year average. Increases are recorded in all Undertakings, and in all sectors of the economy. Thus, to the extent that consumption of electricity can be taken as a measure of production, Escom's sales for 1963 reflect both a general increase on a wide economic front, and special increases arising from new enterprises and the expansion of existing industries.

A general increase in power supplies is seen in all manufactures of consumer goods, and especially in the preparation and packaging of foodstuffs and in the manufacture of cement and basic building materials.

Particular increases, arising from new ventures or the expansion of existing industries, are seen in the production of iron and steel and base metals, in the engineering and chemical industries, and in the manufacture of paper and paper products.



A picture of the expansion of Industries in the Republic is presented by the following figures of the consumption of electricity by the large consumers who obtain their supplies from Escom:—

	<i>Units sold (millions)</i>	
	1962	1963
Building and Cement (including quarrying).....	296	327
Chemical (including pharmaceutical).....	774	849
Engineering, including the Motor Industry.....	170	201
Foodstuffs, Consumer Goods and Commercial.....	510	560
Iron, Steel and Base Metals.....	1,420	1,659
Paper and Paper Products.....	193	212

## **Rural Electrification**

Units sold to consumers in rural areas are included in the totals, under Industrial and Domestic sales; but a detailed account of the progress made in the supply of electricity to rural areas is given on pages 19 to 26.

## Individual Undertakings

The total units sold by Individual Undertakings in 1963, with the corresponding figures for 1962, and the increase for the year were as follows:—

	1963	1962	<i>Increase</i>
Cape Western.....	1,051,395,162	945,016,912	11·3
Cape Northern.....	264,928,379	224,938,860	17·8
Border.....	204,924,863	188,602,113	8·7
Natal Southern.....	1,764,578,124	1,589,504,713	11·0
Natal Central.....	779,010,952	730,973,354	6·6
Eastern Transvaal.....	1,212,129,341	1,012,152,795	19·8
Rand and Orange Free State.....	14,223,046,876	13,429,848,082	5·9
	<hr/>	<hr/>	
	19,500,013,697	18,121,036,829	7·6

## NEW DEVELOPMENTS IN THE COMMISSION'S UNDERTAKINGS

### Electrification of Railways

The initial supplies for the electrification of the section of the Natal main line between Union Junction and Volksrust, were made available in February and March, 1964; and the section was converted to electric traction at the end of March.

Work is proceeding on the Klerksdorp–Kimberley electrification. Testing and proving of plant is scheduled to start at the end of June, 1964, and the change-over to electric working is expected in the first quarter of 1965.

Survey and preliminary work in preparation for construction of the 88 kV and 132 kV lines and substations for the Witbank–Komatipoort electrification is well advanced. The programme for testing of plant and conversion of this section to electric working extends over the second half of 1965 and the first quarter of 1966.

Survey work is well advanced and construction has commenced on the 88 kV line and four traction substations which will provide supply to the new rail link between Houtkop and Potchefstroom. This additional railway is expected to be ready for service about mid-1965.

## **Expansion at the Cape**

Negotiations were concluded during the year for a supply to Caltex (Africa) Limited, for their new oil refinery at the Cape. This supply will be required towards the end of 1965, and for this purpose a new major stepdown substation is to be established at Acacia Park, alongside the Cape Town–Paarl national road.

In order to meet the growth of load on the Cape Western Undertaking, the Commission's Salt River No. 2 Power Station is being extended by the addition of two 60 MW turbo-generators and corresponding boiler plant. These additional sets are to be in service in 1967, and will suffice to meet the forecast of power requirements

at the Cape until hydro-electric power can be brought to the Cape from the Orange River Undertaking.

### **Cape Eastern Undertaking**

The first supply provided by the Cape Eastern Undertaking was furnished to the Municipality of Kirkwood on the 29th May, 1964.

Supplies are to be furnished to the Sundays River Citrus Co-operative Company, Limited, at Hermitage, Richardson's Citrus (Proprietary) Limited, and to rural consumers in the Sundays River Valley.

Negotiations are continuing with the Department of Water Affairs and the Municipality of Port Elizabeth in connection with the use of surplus power from the Department's hydro-electric power station to be erected at the Coega dam at the head of the Gamtoos Valley. Until finality is reached in these negotiations no progress can be made in the proposed electrification scheme in the Gamtoos River Valley.

### **Supply of Electricity to Zululand**

Construction of the transmission system for the supply to Zululand was commenced during the year, starting with the 88 kV lines between Empangeni, Eshowe and Mandeni. These lines are planned for completion by September, 1964, and will be used as an interconnector, operating at 22 kV, between the existing power stations at Empangeni, Eshowe and S.A. Pulp and Paper Industries, Limited, at Mandeni. This will enable the Municipalities of Empangeni and Eshowe to avoid installing additional generating plant in the interval before the 132 kV lines are completed in October, 1965.

In order to provide for the increasing loads on the North Coast system, a 15 MVA 132/33 kV substation, supplied from tee-lines off the Umgeni/Mandeni 132 kV lines, is to be constructed at Shakaskraal in the Stanger district. This substation will feed into the existing 33 kV system, which has been supplied hitherto *via* the network of the Durban Corporation.

### **Ingagane Power Station at Newcastle**

The first machine and boiler in Ingagane Power Station went into commercial service on the 29th April, 1963: but until the 275 kV interconnector between Ingagane and Georgedale Distribution Station is commissioned, operation of the Station has had to be limited to the safe capacity of the existing transmission system. Completion of the first 275 kV line between Ingagane and Georgedale and the 275 kV yard at Georgedale is expected in June, 1964.

In order to meet growth of load on the Natal Undertakings, orders have been placed for two further 100 MW sets and boilers for Ingagane Power Station.

## **Supply of Electricity to Phalaborwa area**

The first phase of construction for the supply to the Phalaborwa area was completed in 1963, comprising the 275 kV transmission line Leeuwkloof-Marathon-Acornhoek and the 132 kV line from Acornhoek to the Foskor substation together with the low voltage lines and substations at Phalaborwa. The 275 kV line is coupled temporarily with the 132 kV line at Leeuwkloof and the 132 kV line at Acornhoek, and is operated at 132 kV. Supply was commenced to the Phalaborwa area on 7th August, 1963.

In consequence of the decision of Palabora Mining Company, Limited, to proceed with the opening up of the copper mine at Phalaborwa, it is necessary to complete the Komati-Acornhoek 275 kV line by building the section Komati-Leeuwkloof, and to establish the permanent 275/132 kV step-down at Acornhoek. A second 132 kV line will also be required from Acornhoek to Foskor substation. This work is in hand and the target date for completion is mid-1965.

For supplies to the town of Phalaborwa and the industrial sites to be established there, an extension of the 132 kV line is being built to Selati substation, northwest of the town: and from this point a 66 kV line will be built to Gravelotte for supplies to Consolidated Murchison (Transvaal) Goldfields and Development Company, Limited, and to the Municipality of Tzaneen at Letsitele.



### **Supply of Electricity in Eastern Transvaal Lowveld**

Marathon Distribution Station and the 66 kV line Marathon–Noordkaap were commissioned during September, 1963, and the further section of 66 kV line to Louwscreek was commissioned in December, 1963.

Some 12·5 miles of 22 kV lines and 13·5 miles of 11 kV lines were taken over from Eastern Transvaal Consolidated Mines, Limited, and supplies were furnished to Barberton Municipality, Fairview mine, Eastern Consolidated Agnes and Ben Lomond mines, and to Marble Lime and Associated Industries Ltd., at Noordkaap, in September, 1963.

A supply which has been notified at 5,500 kVA is to be provided for the new Ngodwana Mill of S.A. Pulp and Paper Industries, Limited, which is being established in the Elandshoek Valley, some 30 miles west of Nelspruit.

### **Komati Power Station**

During 1963 two further 100 MW turbo-generator sets and associated boilers were commissioned at Komati Power Station, the third and fourth sets at this Station, on 7th June, 1963, and 1st November, 1963. The fifth set and boiler were taken into commercial service on 5th February, 1964.

Unfortunately, due to failure of the low-pressure shaft forgings for No. 6 and No. 7 machines at Komati, construction has been delayed; and these machines are not expected earlier than August, 1964, and January, 1965.

### **Camden Power Station**

A description of the new Camden Power Station near Ermelo was given in the last Annual Report when it was announced that two 200 MW sets and two 1,800,000 lb/hr boilers had been ordered for this Station.

In order to meet the growth of load on the three Undertakings which draw power from the pooled power stations in the Transvaal and Orange Free State, i.e. Eastern Transvaal, Rand and Orange Free State and Cape Northern Undertakings, the dates of completion of the first and second sets have been advanced, and orders have been placed for three further sets and boilers which are to be completed for commissioning over the period March, 1967, to January, 1968.

This programme thus provides for the addition of 1,000 MW of generating plant at this Station over a period of 18 months from the starting up of the Station.

## **Supply of Electricity to the Northern Transvaal**

In August, 1963, an application was received from the Municipality of Warmbad for a partial bulk supply to augment the supply generated in its own power station; and an offer was made of a supply from the Rand and Orange Free State Undertaking.

Subsequently a meeting was called at Potgietersrust, under the Chairmanship of Dr. P. S. Rautenbach, Chairman of the Electricity Control Board, at which the Municipalities of Warmbad, Nylstroom, Naboomspruit, Pietersburg and Potgietersrust, and other interested bodies were represented; and Escom was asked to investigate and draw up a scheme to supply electricity in these areas.

The existing power stations at Warmbad and Pietersburg are able to make a contribution to the power requirements of these areas for many years to come: so that Escom's proposals have been drawn up to meet the increase in power requirements which is expected in this area. The scheme provides for the construction of a major transmission line, at 275 kV, from Esselen Distribution Station to Warmbad, and a 132 kV line from Warmbad to Potgietersrust and eventually to Pietersburg.

Negotiations are proceeding with the Municipalities of Warmbad and Pietersburg, who own the existing power stations.

## PLANT CAPACITY

The capacity of new generating plant installed in and taken into commercial service in Escom's power stations in 1963, and the capacity of additional boilers and turbo-generators under construction or on order, are given in the following table:—

	Plant taken into service: 1963		Plant under construction or on order	
	Boilers lb/hr	Generators kW	Boilers lb/hr	Generators kW
<b>Cape Western Undertaking</b>				
Hex River Power Station.....	275,000	30,000	—	—
Salt River Power Station.....	—	—	1,040,000	120,000
<b>Border Undertaking</b>				
West Bank Power Station.....	—	15,000	170,000	—
<b>Natal Central Undertaking</b>				
Ingagane Power Station.....	900,000	100,000	2,700,000	300,000
<b>Eastern Transvaal Undertaking</b>				
Komati Power Station.....	1,800,000	200,000	5,400,000	600,000
<b>Rand and O.F.S. Undertaking</b>				
Highveld Power Station.....	1,100,000	120,000	—	—
Camden Power Station.....	—	—	9,000,000	1,000,000
	4,075,000	465,000	18,310,000	2,020,000

Of the plant listed in the Table as being under construction at the end of the year, one 100,000 kW set and a 900,000 lb/hr boiler at Ingagane Power Station, and one 100,000 kW set and two boilers at Komati Power Station were commissioned in 1964, in time to be available for the winter loads of 1964.

Thus, the capacity of new plant under construction in the manufacturers' works or in Escom power stations to meet future demands for power is 1,820,000 kW.

## EXTENSION OF ESCOM'S TRANSMISSION SYSTEMS

Re-inforcement and extension of the transmission system must go hand in hand with the building of new power stations; and a large part of Escom's personnel, engaged in planning and construction, is employed in this work.

As loads increase in size and distances increase, transmission lines of higher voltage and larger capacity become economical; and with the development of power stations of the size of Komati and Camden, and the introduction of transmission lines of 275 kV and 400 kV, Escom is now making rapid strides towards the development of nation-wide network.

A broad picture of the year's work, and of these recent developments, is presented in the following table which sets out the route miles of transmission lines and cables constructed during the last four years, grouped as follows:—

- (i) high voltage transmission lines, of 132 kV and 275 kV.
- (ii) transmission lines of intermediate voltage, 88 kV to 33 kV;
- (iii) distribution lines and cables of lower voltages, ranging from 22 kV to 380 volts, which constitute the bulk of the reticulation systems.

**Route Miles of Transmission Lines and Cables taken into Service during the years 1960/1963.**

<i>Year</i>	<i>275 kV</i>	<i>132 kV</i>	<i>88/33 kV</i>	<i>22 kV and lower</i>	<i>Total (miles)</i>
1960.....	—	56	217	815	1,088
1961.....	—	627	65	1,132	1,824
1962.....	208	44	349	1,072	1,673
1963.....	141	129	460	1,281	2,011

## CAPITAL EXPENDITURE

### Borrowing Powers for New Projects

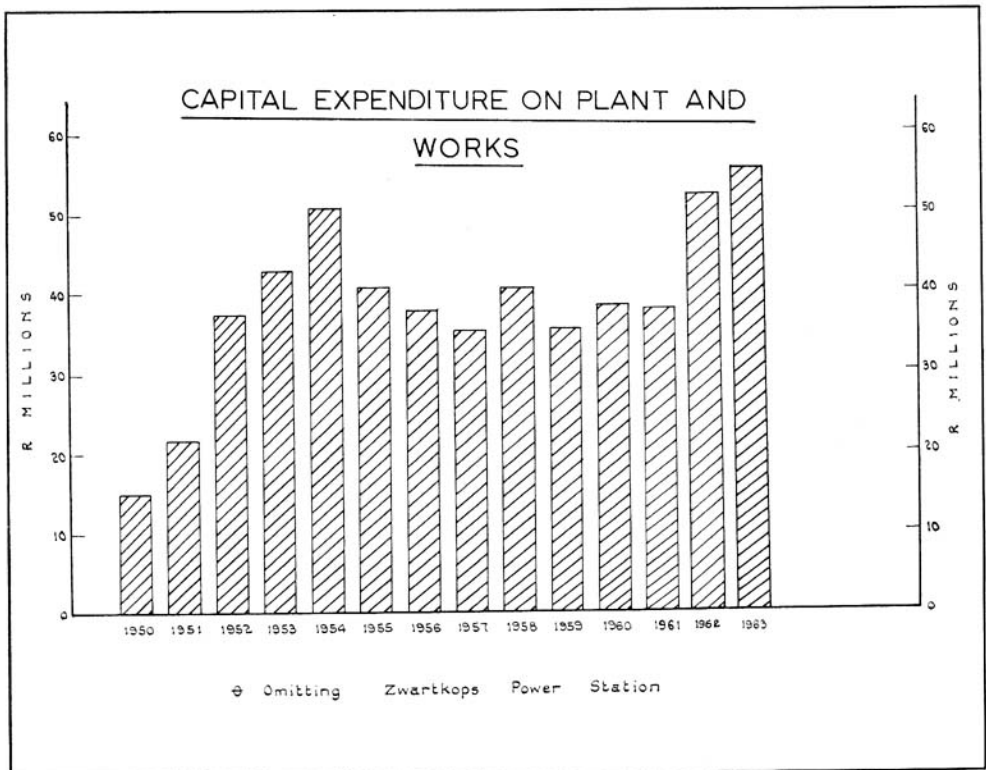
Application was made on 8th May, 1963, for approval, in terms of Section 10 of the Act of borrowing powers for a further R40,700,000. This sum covered the estimates for the final extensions to Komati Power Station and for extensions of the transmission and distribution systems of all Undertakings. An amount of R5,431,000 was included for rural electrification.

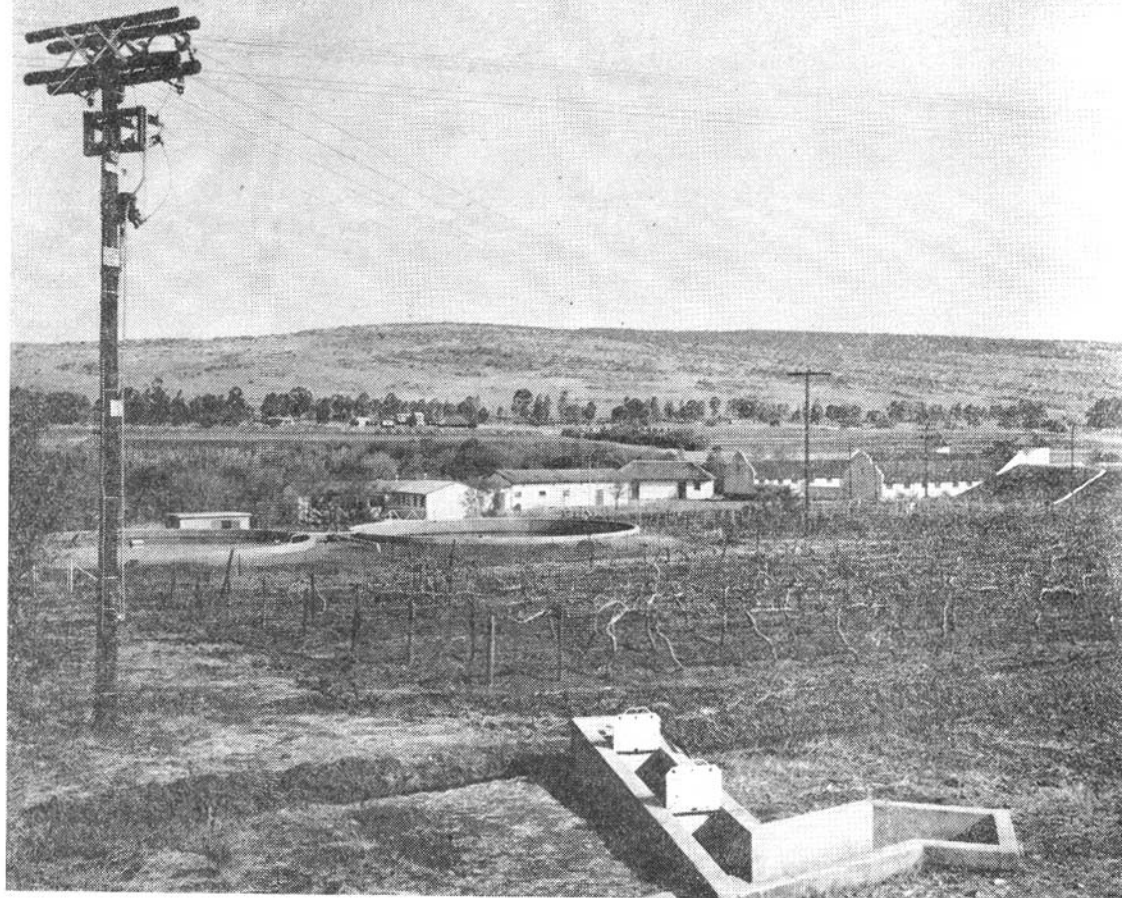
These further projects and borrowing powers therefor were approved on 6th June, 1963.

### Annual Capital Expenditure

Expenditure on Capital Account for the year 1963 amounted to a new record figure of R55,496,995.

The yearly expenditure on Capital Account over the years 1950-63, inclusive, is depicted in the following diagram:—





An Escom rural line crossing a vineyard at the Simon Bekker school farm

## PROGRESS WITH THE SUPPLY OF ELECTRICITY TO RURAL CONSUMERS DURING 1963

### General

As in previous years particular attention was paid to the supply of electricity to rural areas, and in the past year R4.5 million was spent on reticulation systems for farmers, small holdings and peri-urban areas. This amount does not include additional expenditure on power stations and distribution systems.

During the past year 739 farms were connected up, in comparison with 786 farms the previous year. A shortage of wood poles was responsible for the fact that the rate of expansion built up over the previous five years could not be maintained, and the indications are that due to the current shortage of poles it will again not be possible to make the desired progress in this work.

In all Undertakings Managers are working on extensions of existing schemes and the investigation of new rural schemes. Much work was done in connection with schemes which in the end did not come to fruition because the farmers considered the terms too high, and consequently Escom's plans had to be abandoned.

In order to increase the number of farms which are connected annually Escom has established a new undertaking for the supply of electricity in the Sunday River and Gamtoos River Valleys near Port Elizabeth. It is expected that some 400 farms will be connected in the two valleys in the following three years. The erection of the transmission line between Port Elizabeth and the Sundays River Valley has reached an advanced stage.

The area of supply of the Cape Western Undertaking has been enlarged to include an area near Citrusdal where a large farm scheme is being further extended.

Discussions with the Municipality of Pretoria led to the Municipality handing over a part of its area of supply near Brits to Escom. This step enabled Escom to plan a scheme for the farms surrounding Brits; this scheme has already been accepted and will be undertaken in 1964.

The tendency is still for farmers to start by using electricity for domestic purposes, and gradually to use the available power for farming purposes. Although Escom builds the power lines up to the farm, the farmer is put to considerable expenditure in the wiring of his premises and the purchase of electric appliances for the kitchen, so that the installation of power driven machinery is delayed for a time.

It is still difficult to obtain skilled linesmen, while electricians are drawn to the factories by the higher wages offered. Escom would have liked to have put into the field one or two more construction gangs for rural work in the Transvaal, but was unable to find the necessary labour. The development of the existing undertakings is reviewed in detail on the following pages.

### **Cape Western Undertaking**

Of the 807 applications received from farmers in the past year 235 were applications from farmers already using electricity and wanting a second or third point of supply on their properties. Terms were offered to 504 farmers but 145 were unable to accept the terms. Replies have not yet been received from all the applicants.

Sufficient acceptances were received to keep the construction gangs busy, and during 1963 a total of 167 miles of farm lines were built to connect an additional 130 farms and make available an additional 185 supply points for existing rural consumers. The demand of nine farmers increased to such an extent that they had to take a large-user supply.

Negotiations which commenced in 1962 were successful so that a scheme for 25 farms in the Moorreesburg district and 22 consumers in the village of Koringberg could be established in the year under review. On the other hand two similar farm schemes at Riebeek West and Tulbagh failed because the prices were found to be too high.

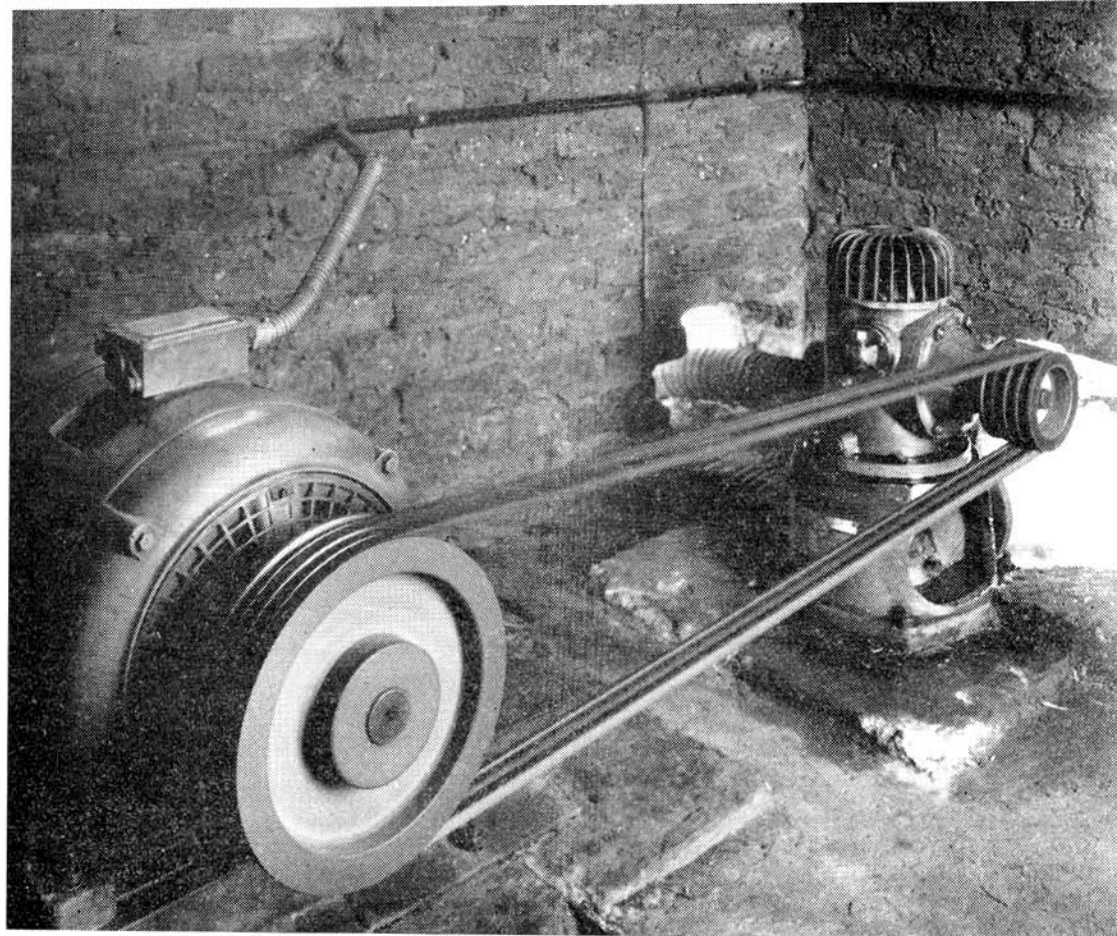
Terms were offered to 16 farm owners near Bonnievale. Only nine farmers accepted the terms but fortunately their farms were so situated that all could be connected in a smaller scheme.

A scheme was planned to provide electricity at 50 points on 22 farms in the Cold Bokkeveld. The terms were accepted and a total of 60 miles of 22 kV lines will shortly be constructed to the farms. A neighbouring group of 12 farm owners applied to be included in this scheme and offers will be sent out after an investigation has been made in the area. Another application was received from 16 farmers in the Swaarmond area of the Cold Bokkeveld.

Farm schemes are being planned for 134 farms in the Koo-Valley-Montagu-Barrydale area and 43 farms in the Caledon district. Terms will be offered as soon as the costs have been calculated.

The intention is to construct a 22 kV line from Leeu-Gamka to Prince Albert to provide a bulk supply at the latter town. The Municipality concerned has accepted the terms but is still awaiting the approval of the Provincial Administration of the Town Council's plan to take Escom power. The proposed power line will bring electricity within reach of some 30 farms along the route.

In the 23 towns in the Western Cape where Escom is operating reticulation systems 1,067 additional consumers were connected during the year.



Abundant water at low cost: A turbine pump driven by a 20 h.p. electric motor, delivering 20,000 g.p.h.

### **Cape Northern Undertaking**

The reticulation system in the Vaalharts Settlement has been extended and an additional 55 agricultural small holdings were connected. Supply lines now radiate throughout the area served by the main water canal, but there still are many small holdings where electricity is not used because the owners have not yet decided to take a supply.

Good progress has been made with the construction of a reticulation system for the holdings in the area served by the west water canal in the Settlement. Twenty of the 55 consumers connected in the Settlement were in the latter area. A number of houses and shops and the school at the social centre in the west canal area will be connected during 1964.

In addition to the agricultural holdings 21 farms were connected in the undertaking. Supply points were made available at four farms between Kimberley and Boshof and four farms along the Vaal River near Warrenton. The bone meal factory outside Warrenton was also connected. Work is in progress on the construction of a feeder to a 65 h.p. pump which is being installed near Riverton and will be used for irrigation purposes.

A temporary supply was made available at Vaal River where diamond diggers have built a weir and drained a part of the river bed in connection with their work.

Ten additional consumers were connected in the town Hartswater in the Settlement, five in Jan Kempdorp and four in town. There are about a dozen probable consumers in the village of Windsorton with whom negotiations are still in progress.



A reticulation system has been planned for the village of Danielskuil but offers have not yet been sent out. Terms for a bulk supply to the town of Olifantshoek have been submitted to the local authority, and the reply of the latter is being awaited.

### **Cape Eastern Undertaking**

The 22 kV line which is being constructed between Port Elizabeth and Kirkwood will be ready for service in May 1964 and thereafter it will be possible to make supplies available to farms in the Sundays River Valley. A total of 254 future consumers, of whom the majority are farmers, are waiting to be connected. The intention is to connect a large number during 1964.

In reply to an enquiry Escom informed the Railway Administration that it was not yet able to supply electricity to 13 Railway houses at Loeries Station.

A group of 20 farmers near Coega have asked that the possibility of supplying their properties be investigated. Escom will give attention to this application during 1964.

### **Border Undertaking**

In October 1963 supply was made available to the Railway Administration at Alicedale by means of an 11 kV power line which was erected some time ago between Grahamstown and Alicedale. The Railways in turn reticulate electricity to the residents of Alicedale.

During the past year a total of 16 farms and 5 other rural consumers were connected in the area served by the Border Undertaking. Farm owners in the coastal areas tend to use electricity solely for domestic purposes, but farmers in the interior usually use power for farming purposes as well as their households. No major new farm schemes were established and almost all the new connections were made within existing schemes which are scattered over the whole Undertaking.

In the Kat River Valley temporary supplies were made available at two temporary saw mills after a big fire had occurred in the forests and it became necessary to remove the burnt trees. A temporary supply was also given near King William's Town for the Bantu Trade Fair Association which lasted a month.

11 kV power lines to two relay stations of the S.A.B.C. near Grahamstown and Stutterheim were energised and a supply made available. It will be possible to supply a small number of farms from these lines. An 11 kV line has also been built to the Bethel Mission Station in the Transkei.

In the villages of Kidds Beach, Keiskama Hoek and Seymour an additional 10 consumers were connected.

A scheme was planned to supply 10 farms and the Agricultural Research Station near Bathurst. Terms have been offered and the replies of farmers are awaited. Terms have also been offered to the Municipality of Port Alfred for a supply to the Town Council's water works on the Cowie River.

A preliminary investigation has been made to determine whether electricity could be made available to the Railways Administration at Laing dam from where water is being pumped to Blaney Station. Negotiations are still in progress with the Railways in connection with this supply and the possibility of electricity supply at various stations in the Eastern Province.

Applications have been received from potential consumers in the areas around Sandflats and Paterson and from interested people on the North Coast in the vicinity of Bulugha. Cost calculations are being made and terms will be quoted in 1964.

### **Natal Central Undertaking**

Three comparatively large farm schemes were established in 1963 and commissioned. In the district of Winterton lines were constructed to 20 farms, between Glencoe and Impati a scheme has been completed for 19 farmers, and in the district of Bergville a reticulation system has been erected which serves 11 farms and one other rural consumer.

A rural line crossing a lucerne field on a farm in the Magaliesburg area



A total of 73 farmers and 7 other rural consumers were connected during the past twelve months. Besides the three farm schemes mentioned in the previous paragraph, the other farms connected up are spread over the whole Undertaking.

Applications from numerous farmers were investigated. A total of 125 farmers did not accept Escom's terms, while 129 have not yet decided. Of the farmers who accepted the terms 101 are awaiting their turn to be connected.

Two schemes which did not materialize because the farmers felt that they could not afford the prices were designed for 23 and 32 farms around Bethlehem and Vrede respectively. A scheme for 11 farms at Matiwane and another for 7 farms at Paul Roux also failed to materialize. In the case of these schemes prices were relatively high because the homesteads are far apart.

Supply to 10 rural consumers who were connected the year before last had to be reinforced because the demand had increased considerably. Two farmers found that it paid them to accept the bulk supply tariff.

An 11 kV power line was built between Lindley and Arlington and approximately 100 consumers were connected in the latter town. Farmers along the route of the power line will be connected in the near future.

Negotiations are in progress with the residents of the town of Kranskop. If the terms are accepted a rural scheme will be planned for properties in the town as well as a number of farms between Greytown and Kranskop.

### **Natal Southern Undertaking**

During the year 77 farms and 37 other rural consumers were connected. One of the schemes which was built supplies 16 farms at Braemar. At Driefontein 12 farms were connected and at Umlaas Road 6 farms. The other farms are spread over the Undertaking.

Larger supplies were made available at 11 farms because the demand had increased considerably. The Rainbow Poultry-farm at Hammersdale now uses 300 kVA and is the largest of its kind in the country.

As in the past many farmers did not see their way clear to accept Escom's terms. 71 have not yet replied, but 158 farmers have already intimated that they find the prices too high. The construction gangs were kept fully occupied, and 121 future consumers who have signed agreements are waiting to be connected.

A scheme for 37 supply points near Stanger was investigated, but was held in abeyance because the substation at Shakaskraal from where electricity will be transmitted will only be ready in 1965.

Negotiations are in progress with the Zululand Electrical Utility Company and may lead to Escom taking over the company's reticulation system in order to expand it and to supply more consumers. This system supplies electricity to Gingindlovu, Mtunzini and Nyoni in Zululand.

A reticulation system for the village of Highflats has been approved and residents will be supplied with electricity in about twelve months' time. A number of houses in the border industrial area at Hammersdale have been connected.

In the towns along the Natal North and South Coast the reticulation system had to be extended to new buildings erected during the year, and many of the feeder lines had to be reinforced to supply the increased demand.

### **Eastern Transvaal Undertaking**

During the past year attention was given to the area south of Groblersdal, after a 21 kV line had been built between Groblersdal and the Loskop dam to make a bulk supply available at the holiday resort. Twenty-two farms were connected along the route of the line.

The only area around Groblersdal which is not yet supplied with electricity is the area along Blood River south-east of the town. A scheme was planned to serve some 30 farmers, but failed because only seven farmers were prepared to accept Escom's terms.

Existing networks around Groblersdal were further extended to connect an additional 26 farmers. In the Toitskraal area only 7 additional farms were connected although a year ago some 30 farmers had agreed to take electricity. By reason of poor crops a large number of farmers asked that the extensions to the farms be deferred for a year or two.

The presence of a large number of farm lines in the Groblersdal area has brought electricity within reach of an additional 300 farms and small holdings. The construction gangs have been transferred to other areas because there are no schemes around Groblersdal waiting to be constructed. It is, however, expected that some 25 of these farm owners will apply annually to be connected to the existing networks.

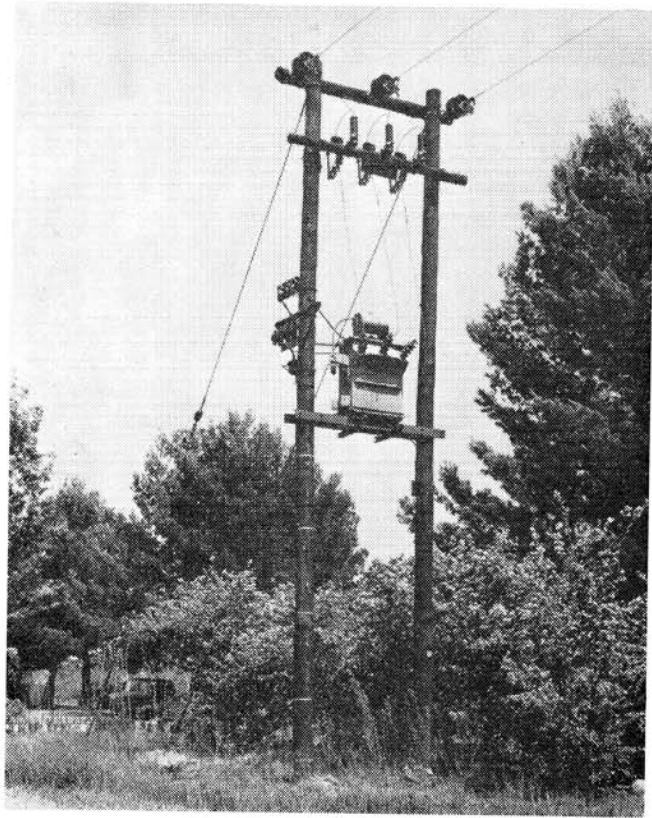
The farm scheme around Nelspruit which was constructed in 1962 to serve three saw mills and 50 farms was extended during the past year to an additional 19 farms and three other rural consumers. Five farmers took bulk supplies. In 1962 Escom bought power from the Nelspruit Municipality for distribution to farmers but with the extension of the reticulation to Nelspruit in 1963, it was no longer necessary to purchase municipal power.

An additional twelve farms were connected to the reticulation systems in the district of Ermelo. At Bethal a scheme has been planned for 20 farms. Some of the owners were not prepared to accept the terms but a smaller scheme was eventually constructed to supply twelve of these farms.

In the Barberton district an existing farm scheme was taken over from the Eastern Transvaal Consolidated Mines Ltd., and will be extended in the near future.

At Sabie a scheme was established for the supply of electricity to the fruit packing shed at Kiepersol and at Pretoriuskop in the Kruger National Park. Seven farms were connected along the route of the line between Sabie and the Park. A second scheme at Sabie which was completed during the past year was the erection of a line between the power station at Sabie and the village of Graskop. Escom has

A pole-mounted 25 kVA substation on a farm in the Tarlton area



taken over the existing reticulation system in Graskop and will rebuild it to serve more consumers. A saw mill near the town has also been connected.

Successful negotiations resulted in a reticulation system being established to serve future consumers in the village of Malelane, a fruit packing shed and 15 farms. Work is in progress on the scheme which will be commissioned in 1964. At Acornhoek a power line is being built to a saw mill and an establishment of the Department of Defence on top of Mariepskop. A scheme for a supply to 15 farms which has been approved at Morgenzon is waiting to be started.

A total of 127 farms and 59 other rural consumers were connected in 1963 in the area served by the Eastern Transvaal Undertaking.

In the towns in the Eastern Transvaal where Escom supplies consumers direct 260 new connections were made.

Applications from farmers along the Klaserie, Blyde, Letaba and Olifants Rivers will be attended to in 1964. Negotiations are in progress with farmers between Belfast and Wonderfontein and the indications are that the scheme will be established. Numerous other applications have been put on the waiting list.

### **Rand and Orange Free State Undertaking**

The rural scheme in the area Muldersdrif/Boschkop north of Roodepoort where more than 600 small holdings and other rural consumers are now being supplied has been further extended to a 110 additional consumers.

Work was in progress in a number of areas between Johannesburg and Vereeniging where existing schemes are being further extended. Between Walkerville and De Deur 43 additional connections were made, 37 around Henley-on-Klip and 6 in the vicinity of Eikenhof.

The scheme supplying 240 consumers around Halfway House between Johannesburg and Pretoria was completed and seventeen new consumers were connected in the past year.

Good progress was made with the establishment of a farm scheme between Ventersdorp and Klerksdorp. The farms are situated along the Schoonspruit and 55 owners are already using electricity. In 1964 an additional 40 farms will be connected to this scheme.

The Gravett farm scheme near Heidelberg was further extended to 9 additional farms; and north of Johannesburg 15 consumers were connected to the network serving Witkoppen.

Work was in progress on a farm scheme between Welverdiend and Rysmierbult where lines were erected to 6 additional farms. Twenty-five farms are being served by this scheme which was planned for a much larger number of farms but had to be reduced because many farmers changed their minds and have not yet decided to take power.

A rural scheme was erected for the supply of electricity to consumers in the area Magaliesburg/Tarlton/Hekpoort, and 28 consumers were connected during the past 12 months. In the Sundra area near Springs a reticulation system was put into operation for the supply of electricity to 68 agricultural small farms.

Construction has begun on a scheme for rural consumers in the vicinity of the Loch Vaal-barrage where 29 consumers were connected in the year under review.

Negotiations were initiated with some 200 farms near Delmas but the tariffs were considered to be too high. A small group of 20 farmers accepted the scheme and 7 of the farms have already been connected.

A construction gang which worked throughout the year in the district of Viljoenskroon built some 121 miles of farm lines to serve 90 additional farms. Altogether 125 farms are now being supplied in this scheme. Extensions have been approved to an additional 72 farms in the area between Viljoenskroon and Bothaville, and a small scheme for 7 farms will also be erected between Balkfontein and Bothaville.

Negotiations with farmers south of Bothaville have been successful and a reticulation system for 108 farms will be erected as soon as the extensions in the Viljoenskroon area are completed. This scheme will require about 150 miles of 11 kV power lines.

Terms have been accepted by 67 rural consumers in the Crocodile River Valley between Krugersdorp and Pelindaba. The scheme will be commenced in 1964 and will require a capital expenditure of R156,000. Sufficient acceptances have also been received from farmers on small holdings around Monavoni and plans are ready for the reticulation system which will be built in the near future.

An amount of R1·8 million has been provided for a large farm scheme which will eventually supply some 1,000 farms in the district of Brits. Suitable routes are being sought for the power lines, and survey work has reached an advanced stage.

In the area east of Kaalfontein Station work is in progress on a rural scheme which is planned to supply 40 consumers.

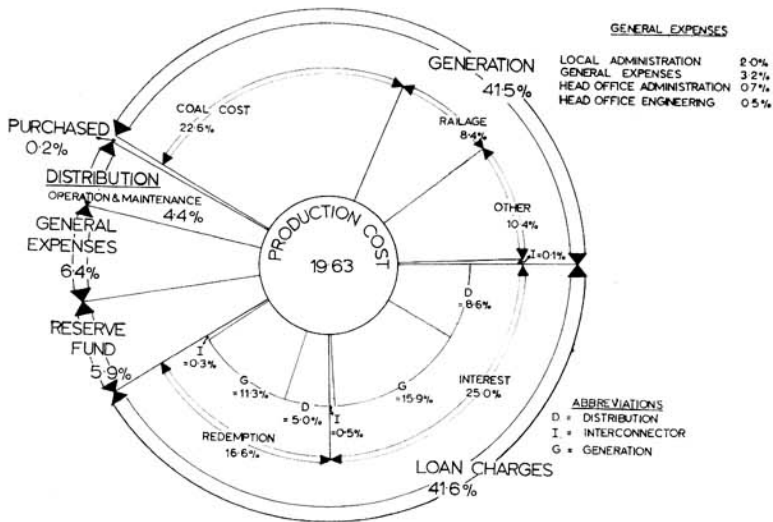
The terms offered to 59 farmers at Manana in the district of Lichtenburg have been accepted, and this scheme has been included in the construction programme. At the end of the year replies were awaited to offers made to farmers at Greylingstad Luipaardsvlei, Tweespruit, Westminster and Balfour. An application from 200 farmers in the district of Hoopstad was investigated, and an offer will shortly be made to the farmers.

A scheme planned for 200 farms between Kroonstad and Koppies was not accepted because the tariffs offered were considered to be too high.

During 1963 a total of 1,006 consumers were connected by the Rand and O.F.S. Undertaking in typical rural areas. This number includes 340 farms. Over and above these consumers the Undertaking connected an additional 776 consumers in towns and peri-urban areas on the Witwatersrand.

## COSTS AND TARIFFS

The more important components in Escom's cost structure are shown in the following diagram of Production Costs for the year 1963:—



The changes in tariffs made during the financial year 1963 were as follows:—

### Cape Western Undertaking

The amendments to the Schedule of Standard Prices for the Cape Western Undertaking which were approved by the Electricity Control Board on 22nd October, 1962, were introduced from 1st January, 1963.

### Cape Northern Undertaking

A further rebate of 5 per cent, bringing the total rebate to 10 per cent off the Standard Prices, was introduced as from 1st January, 1964.

### Border Undertaking

The amendments to the Schedule of Standard Prices for the Border Undertaking, that is, (i) the introduction of a service charge in the tariffs for small power users and lighting and domestic consumers, (ii) the demand charge for small power users based upon ampere-demand readings, and (iii) the adjustment of the unit charge to .84c per unit, were approved by the Electricity Control Board on 19th February, 1963, and were applied from 1st April, 1963.

### Natal Undertakings

No change was made in the tariffs for either of the Natal Undertakings in 1963; but a complete revision of the tariff structure was made, to take account of the changes in the cost structure as a result of the commissioning of Ingagane Power Station, and to eliminate the existing surcharges on the Standard Prices.

Applications were made to the Electricity Control Board on 28th November, 1963, for amendment of the Natal Southern Licence, 1925, and the Natal Central Licence, 1925, so that the Standard Prices would be the same in each Undertaking. These applications were supported by municipal and industrial consumers who appeared before the Board and urged an amalgamation of the two Undertakings in Natal.

The new tariffs were approved by the Board and applied from the April month; and an application for amalgamation of the Natal Undertakings has been made to the Board.

**Rand and O.F.S. undertaking**

In view of the accumulated surplus, a small adjustment by 1 per cent was made in January, 1964, by increasing the general discount allowed to consumers on the Rand and O.F.S. Undertaking from 5 per cent to 6 per cent discount. In terms of the proviso to the Extension Licences, the provisional surcharge in the outlying areas was reduced from  $9\frac{1}{2}\%$  to  $8\%$ .

An adjustment was also made in the surcharge levied upon Group Consumers, to recover the loss incurred on the supply of compressed air, so that the reduction in tariffs for Group Consumers amounted to 2 per cent.

## STATISTICAL SUMMARY

The figures of revenue, production costs, output and sales which are customarily set out in a Statistical Summary are shown in the table which appears on page 29.

This table has been extended to show the figures for the last five years, as well as showing the increase or decrease in 1963 as compared with 1962.



## FINANCIAL

### Loan Capital

During 1963 two local loans totalling R69,000,000 were raised as follows:—

<i>Date Issued</i>	<i>Amount</i>	<i>Interest</i>	<i>Issue Price</i>	<i>Redeemable</i>
30th April.....	R29,000,000	5%	R100%	31.5.83-88
8th October.....	40,000,000	5%	98.50%	30.4.80-83
	<hr/> <hr/>			
	R69,000,000			

These loans were fully subscribed; but at the year end the amount received on account of the loan issued on the 8th October was R38,569,405. The balance of R1,430,595 payable not later than the 31st January, 1964, in terms of the prospectus, has since been received. At the year end the loans raised locally as Local Registered Stock totalled R596,000,000. Loan No. 5 for R13,500,000 was redeemed on 30th April, 1963, and the total local loans repaid now amount to R19,500,000.

Of the loan of \$14,000,000 (R10,000,000) granted by the International Bank for Reconstruction and Development in 1961, the balance of R4,085,818 was received during 1963 and during the year R5,924,936 was repaid against this and other overseas loans.

These amounts increased the Commission's loans outstanding at the date of the Balance Sheet to R612,475,005.

## **Redemption Fund**

The amount in the Redemption Fund at the 31st December, 1963, totalled R161,671,372 which exceeded the amounts required for the redemption of the loans in accordance with the provisions of the Act.

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

## **Reserve Fund**

The amount in the Reserve Fund at the 31st December, 1963, was R42,642,861.

## **Capital Expenditure**

Expenditure on Capital Account during the year amounted to R55,496,995 which increased the total capital expenditure at the 31st December, 1963, to R637,076,261.

Expenditure on Capital Account will amount to approximately R823,000,000 on completion of all the works to which the Commission is committed and on projected works.

### STATISTICAL SUMMARY

Revenue, costs, output and sales, and other figures relating to the operation of the Commission's Undertakings during the years 1959 to 1963 are as follows:—

	1959	1960	1961	1962	1963	Increase 1963 over 1962
TOTAL REVENUE.....	R73,160,996	R81,883,686	R88,062,111	R94,046,323	R101,488,074	7·913%
TOTAL COSTS.....	72,120,404	80,783,418	86,105,133	93,465,561	100,096,561	7·095%
Difference between Total Revenue and Total Costs.....						
Costs.....						
Sales of Electricity, Air and Steam.....	1,040,592	1,100,268	1,956,978	580,762	1,391,513	R810,751
Net Costs (less Sundry Revenue).....	72,838,592	81,552,724	87,709,899	93,578,793	100,953,301	7·881%
Average Price per Unit Sold.....	71,798,000	80,452,456	85,752,921	92,998,031	99,561,788	7·058%
Average Cost per Unit Sold.....	·4951c	·5079c	·5155c	·5164c	·5177c	·252%
Average Net Cost per Unit Sold.....	·4898c	·5019c	·5061c	·5158c	·5133c	— ·479%
Cost of Coal Consumed (including Railage).....	20,969,868	25,372,518	27,712,566	29,230,355	31,008,884	— ·513%
Railage on Coal Consumed.....	6,698,232	8,912,074	8,849,261	8,626,661	8,428,356	6·085%
Coal Consumed (in tons of 2,000 lbs.).....	12,730,278	13,792,816	14,544,837	15,383,313	16,226,535	— 2·299%
Units Generated.....	16,926,480,087	18,543,341,972	19,575,396,581	20,805,518,186	22,312,389,427	5·481%
Units Sent Out.....	15,777,115,134	17,361,049,153	18,284,050,367	19,403,958,379	20,793,543,262	7·243%
Units Purchased.....	93,614,989	15,320,932	8,399,659	12,559,278	18,582,815	7·161%
Units Sold.....	14,724,457,291	16,094,129,276	17,013,161,822	18,121,036,829	19,500,013,697	47·960%
						7·610%

## **Investments**

The book value of securities, representing investments in stocks of Electricity Supply Commission, Republic of South Africa and Municipalities held by the Commission on behalf of the redemption and reserve funds at 31st December, 1963, was R201,997,604 the nominal value being R203,559,516. The market value of these investments at that date was R206,224,292.

## **Assets and Liabilities**

The Commission's total assets at the 31st December, 1963, amounted to R878,314,395 and its total liabilities to R640,718,995, the difference being R237,595,400 which is represented by the amounts in the redemption and reserve funds, loans repaid, and balance on revenue accounts.

## STAFF

### Home Ownership Scheme

The balance at 31st December, 1963, 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 R2,850,679.

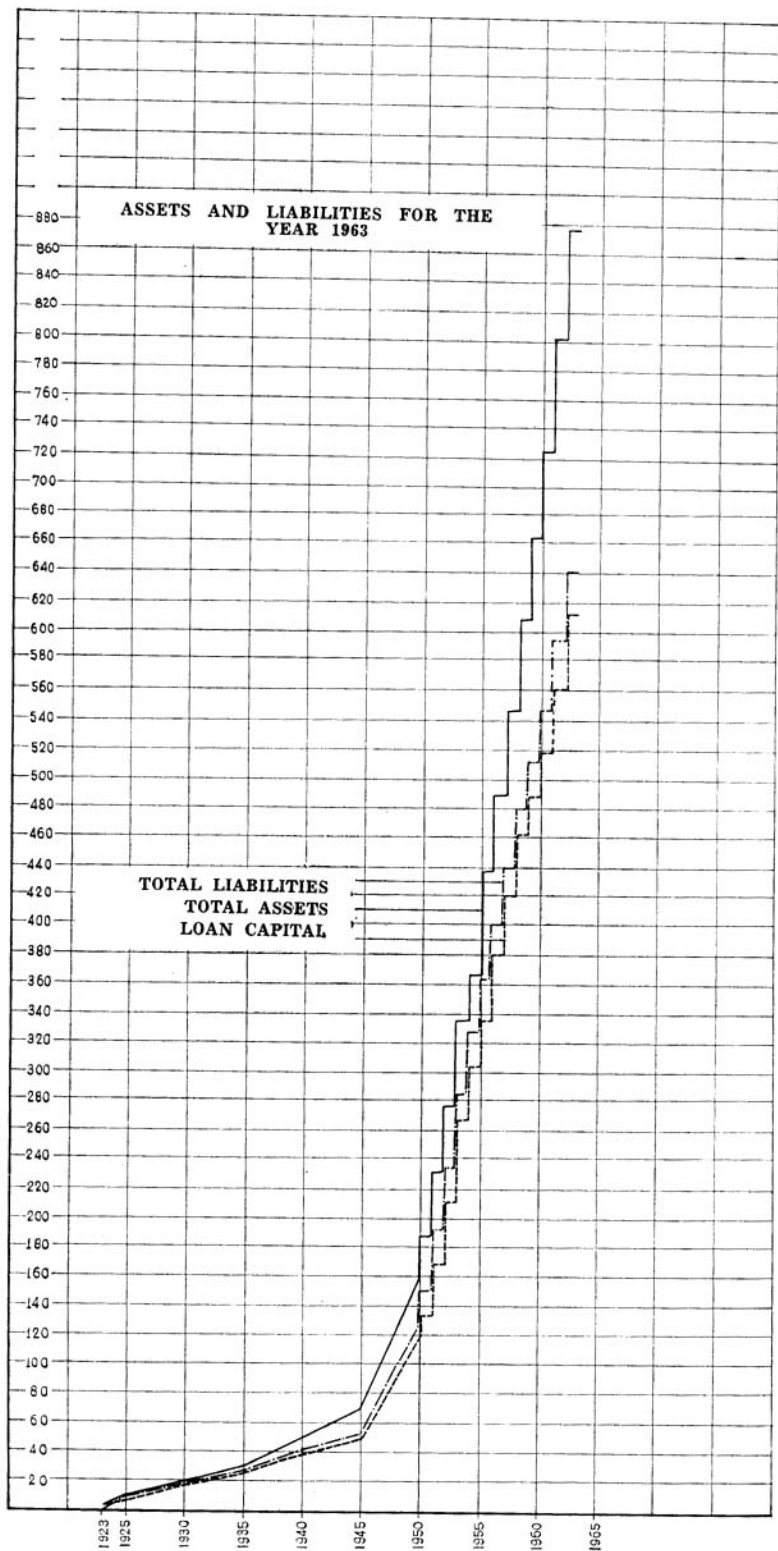
### Personnel

The staff employed by the Commission at the 31st December, 1963, numbered 16,804 employees, made up as follows:—

	1963	1962	<i>Increase</i>	
Whites.....	5,896	5,866	30	.5%
Coloured and Bantu.....	10,908	10,601	307	2.9%
	<u>16,804</u>	<u>16,467</u>	<u>337</u>	<u>2.0%</u>

The Commission desires to express to all employees its appreciation of their loyal and conscientious service.





## ESCOM'S UNDERTAKINGS

The operation and development 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

### Output and Sales

The output from the Undertaking's power stations rose by 10·5 per cent to provide total sales of 1,051·4 million units, which was an increase of 11·25 per cent on the sales for 1962.

The half-hourly maximum demand for the year was 213·8 MW, an increase of 13·6 MW.

Loading of the stations was similar to that of previous years. Salt River No. 2 Power Station was operated as a base load station, whilst regulation was done mainly from Hex River Power Station. Salt River No. 1 Station was used when necessary to meet peak loads.

The large increase in units sold to industrial consumers (22·7 per cent), together with the increase for bulk supplies to local authorities (10·2 per cent), reflects a marked up-turn in business activity at the Cape. Increases are shown in most consumers accounts; and large increases were recorded in the supplies to Consolidated Glass Works, Ltd., and S.A. Board Mills, Ltd.

### Hex River Power Station: Extensions

Extensions to the coal staith at Hex River Power Station, which increased the capacity to 20,000 tons, were completed in July.

The new 275,000 lb/hr boiler (No. 6) was completed and ready for steaming at the beginning of September; but a considerable amount of work remained to be done on the lagging.

No. 5 turbo generator (30,000 kW) was run up on 23rd October, 1963; and a further circulating water pump was commissioned in November, 1963.

### Major Transmission System

By the end of the year a large section of the 132 kV network between Salt River–Ysterplaat–Muldersvlei–Windmill was complete, and this portion with the associated carrier and substation equipment was commissioned at 66 kV.

Construction of the Windmill–Hex River 132 kV line commenced towards the end of the year.

During April the Koperfontein–Fisheries 66 kV line was commissioned, thus completing the improvement of the distribution system in that area. A duplicate 5 MVA transformer is on order for the Fisheries Substation.

The double circuit 66 kV line to Bellville South Substation was constructed and commissioned at 33 kV from the Oakdale–Eerste River 33 kV line. Delivery of the 66 kV switches and transformers is expected towards the end of 1964.

The Strand Traction Substation was commissioned in August, 1963.

A site has been selected for a new major stepdown centre at Acacia Park to provide a supply to the new refinery of Caltex Africa Limited, which is mentioned on page 14.

### Urban Distribution Systems

The demand for electricity in the urban areas of Goodwood, Parow and Bellville increased by 12·5 per cent during the year to a total of 46·8 MVA. This demand was met from the two stepdown centres at Elsies River and Oakdale, with installed capacities of 30 MVA and 25 MVA respectively. Towards the end of the year the Bellville South stepdown centre was commissioned with an initial capacity of 5 MVA. The combined stepdown transformer capacity feeding the urban 11 kV network is thus 60 MVA.

It is planned eventually to feed Bellville South Stepdown Substation by means of two 66 kV lines from Oakdale, through two 12·5 MVA 66/11 kV transformers.

During the year supply was given to S.A. Board Mills, Ltd., in Bellville South, the present demand of this consumer being 2,150 kVA. Consolidated Glass Works,

Ltd., which is situated in the same area, increased its maximum demand by 2,800 kVA to a total of 4,400 kVA. These installations together with the additional transformers installed for new consumers and the increase in transformer capacity provided in existing substations brought the total capacity of transformers connected to the urban networks to 83,265 kVA. A total of 74.3 miles of overhead lines and underground cables was added to the urban reticulation systems.

Altogether 1,067 new consumers were connected during the year, of which 14 were large users.

Sales of electricity from these systems rose from 158.4 million units in 1962 to 197.5 million units in 1963.

### Development of Rural Supplies

A report on the development of rural supplies is given on page 20.

### Financial

The revised Schedule of Standard Prices was introduced from January, 1963, excepting the ampere demand tariff for small power users which was applied from April, 1963, when the ampere demand meters were installed.

In the new tariffs the adjustment for the variation in the cost of coal is now expressed per unit sent out from the power stations. The coal costs and the corresponding unit rates in the tariffs were as follows:—

<i>Quarter 1962</i>	<i>Cost per unit sent out</i>	<i>Unit Rate in Tariff</i>	
		<i>Large user</i>	<i>Small user</i>
January–March.....	0.3156	0.435	0.92
April–June.....	0.3248	0.440	0.92
July–September.....	0.3136	0.440	0.92
October–December.....	0.3163	0.435	0.92

Total revenue for the year amounted to R11,631,828, while the average price per unit sold decreased from 1.1380c in 1962 to 1.1026c per unit sold in 1963.

A surplus of R197,909 was realised on the year's working.

## CAPE NORTHERN UNDERTAKING

### Output and Sales

During the year under review the sales increased by 17.8 per cent from 224.9 to 264.9 million units.

A maximum simultaneous demand of 55.2 megawatts was recorded in July, 1963.

The number of consumers supplied increased by 123 to 1,688.

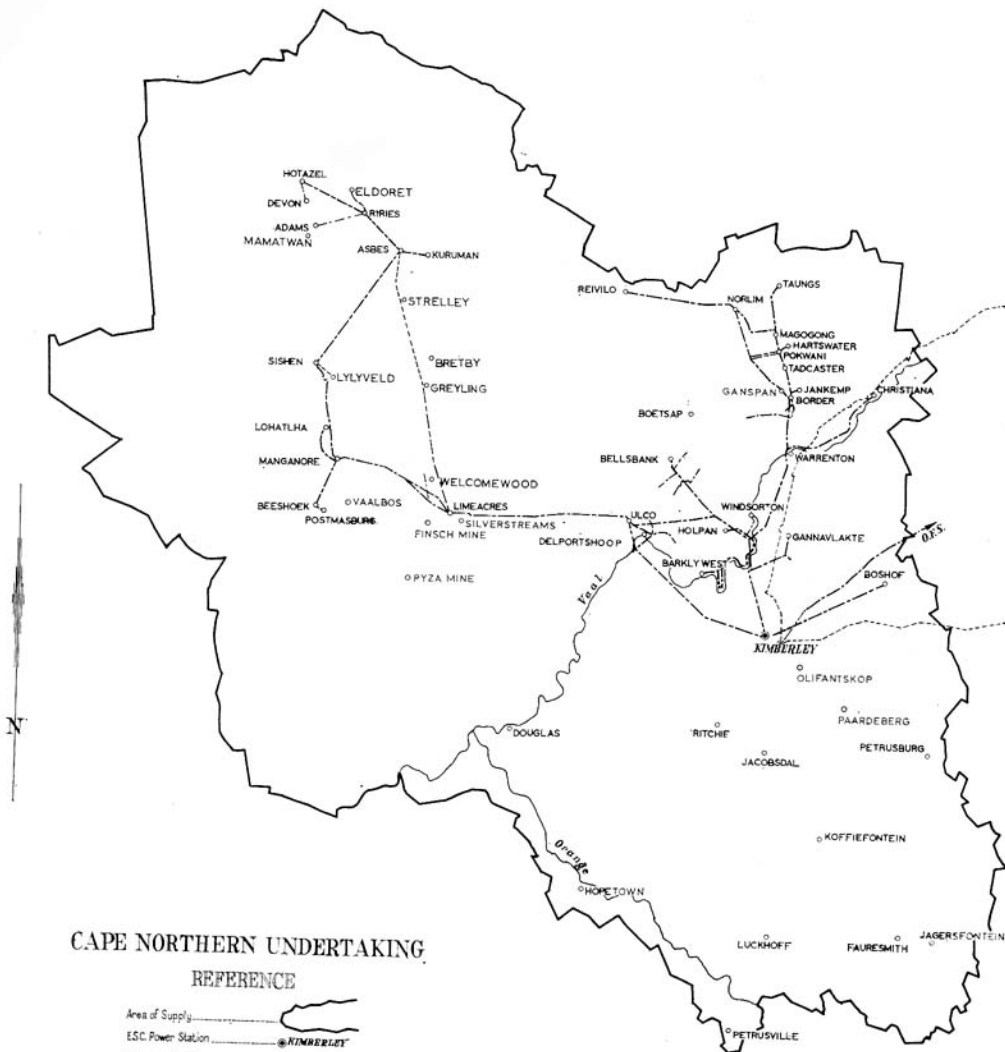
The supply to the Kimberley City Council increased by 10 per cent over the supply taken in 1962. As the rate of growth for the previous year was only 4.25 per cent, the average growth for the two years represents a return to the annual increase of 7½ per cent.

The increase of 7 per cent in the supply to De Beers Consolidated Mines Limited, was less than expected, but technical difficulties delayed the production of diamonds from the re-opened De Beers mine. This mine should attain full production by May, 1964, and a further increase in the power demand will arise when the existing steam winder at Wesselton mine is replaced by an electric winder towards the end of 1964.

Consumption by Anglo Alpha Cement Co. Ltd., at Ulco, rose in sympathy with increased building activity and, by the end of the year the supply reflected an increase in production of 13.4 per cent.

The small diamond mines in the Smith's Mine–Bellsbank area again made rapid progress, increasing their consumption by 57 per cent. Considerable further development is expected in view of the current high prices of gem stones.

Iscor's consumption at the Sishen iron ore mine increased to 7.3 million units during the year. Their new heavy media separation plant was brought into operation in December, increasing their demand from 2,000 to 3,000 kVA. Further plant extensions are planned, and it is expected that their demand will rise to 5,000 kVA by the end of 1965.







A construction supply was given to Amcor, at Lylyveld, in December. Iron ore from this mine is destined for the Newcastle blast furnaces.

The asbestos mines are now taking nearly 16 million units per annum.

The following table shows the breakdown of units sold for mining, quarrying and cement manufacture in 1963, which collectively amounted to 62·3 per cent of the Undertaking's sales.

	<i>Units (millions)</i>	<i>Per cent of total units sold</i>
Diamond mining.....	70·32	26·5
Lime and Cement.....	60·20	22·7
Iron Ore.....	11·57	4·4
Manganese.....	5·31	2·0
Blue Asbestos mining.....	15·85	6·0
Gypsum quarrying.....	1·83	0·7
	<hr/> 165·08	<hr/> 62·3 per cent

Sales of units to the smaller municipalities increased by large percentages.

Among these were Kuruman Municipality which purchased more than 3 million units, with a peak demand just short of 1,000 kVA; and Postmasburg Municipality, whose supply increased by 91 per cent. Half of this increase was attributable to the re-opened Treasure Troves West End diamond mine. Warrenton, Hartswater and Christiana Municipalities showed increases of 35, 27 and 19·3 per cent respectively.

The number of plottolders supplied on the Vaalharts Irrigation scheme increased by 62 to 746. Sales of units to these consumers increased by 29 per cent.

Sales of units in the Taung area increased by 38 per cent. Further increases will follow when supplies are given to the new Bantu schools, hostels and the mission hospital.

### **Interconnection with the Pooled Power Stations**

During the year 241·9 million units were drawn from the Grootkop Distribution Station, and 235·5 million units were received at the Kimberley Distribution Station.

86 per cent of the units sent out from the Kimberley Distribution Station were supplied from the Rand and Orange Free State network, compared with 82 per cent in 1962.

The Central Power Station contributed 20·2 megawatts towards meeting the peak system load of 55·2 MW, and was operated as a peaking and voltage regulating station, at an average monthly load factor of 32·7 per cent.

### **Development of the Undertaking**

66 kV wooden pole lines with an aggregate length of 24·4 miles were erected from Riries–Eldoret, Silverstreams–Welcome Wood and Sishen–Lylyveld. The above lines are being operated temporarily at 11 kV.

11·8 miles of 66 kV wooden pole line were erected in the Vaalharts to provide a loop feed to the new Midplots substation.

The Midplots 66/11 kV substation was erected at the load centre of the Vaalharts settlement, and Ganspan 66/11 kV substation was erected and commissioned in place of the old Andalusia substation, which was dismantled. Each substation is equipped with a single 2,000 kVA transformer.

The old Harts and Warrenton 66/11 kV substations, which were equipped with wooden pole structures, were completely rebuilt with steel structures, and the installed transformer capacity at these two substations was increased to 4,000 kVA and 1,500 kVA respectively.

A second 8,000 kVA 132/11 kV transformer was installed at Manganore substation.

A second 11 kV line was erected from Manganore to Beeshoek to provide for the rapid load growth at Beeshoek and Postmasburg.

Sundry short lengths of 11 kV line were erected to supply Amcor at Lylyveld, S.A. Manganese at Mamatwan and to enable the new Midplots and Ganspan substations to feed into the existing Vaalharts 11 kV network.

It is expected that the new cotton ginnery being erected in the Vaalharts by Messrs. J. L. Clark & Co., will require a 400 kVA supply by May, 1964.

A supply of 750 kVA initially, which will grow to 3.5 MW after two years, is to be furnished to De Beers Consolidated Mines, Ltd., at their new mine, Finsch Diamonds, during August, 1964. This mine is situated near Danielskuil, and water for the washing plant is to be pumped from the Harts-Vaal confluence some 50 miles to the east and 2,000 feet lower in contour level. The Department of Water Affairs will construct the pipe line, which will also serve the arid Postmasburg-Sishen area. Eventual pumping requirements are estimated at 3,000 kVA.

A supply is to be furnished, by September, 1964, to the South African Broadcasting Corporation FM transmitter at Olifantskop, some 12 miles south-east of Kimberley. This will bring Petrusburg Municipality within reach of our networks.

Major construction work scheduled for completion during 1964 includes:—

The installation and commissioning of a 75 MVA 132/165 kV transformer to couple the Kimberley Distribution Station to the up-rated Grootkop-Kimberley interconnector; erection and commissioning of the 275 kV transmission line from Everest Distribution Station to Kimberley; erection and commissioning of a 132 kV power line alongside the Kimberley-Johannesburg railway line to supply 6 of the 14 railway traction substations on the Klerksdorp-Kimberley section; completion of a further traction substation which will be fed from Herlear substation in Kimberley; and the completion of the 66 kV line from Silverstreams northwards along the Asbestos mountains as far as Gryppoport substation.

During 1964-1965 work will commence on the erection of the second 132 kV line from Kimberley to Sishen *via* Ulco and Silverstreams.

A 66 kV line is to be built from Silverstreams substation westwards to the proposed new 66/22 kV Vaalbos substation which will serve the growing needs of Postmasburg and new iron ore and manganese quarries in the vicinity.

### **Rural Development**

A report on rural development is made on page 21.

### **Financial**

Total revenue in 1963 amounted to R2,696,595, which reflects an increase by 20.2 per cent, compared with the increase of only 17.8 per cent in units sold. The more than proportionate increase in revenue includes extension charges on new supplies in outlying areas.

A revenue surplus of R219,477 is shown in the year's accounts, bringing the accumulated surplus to R580,871.

A further rebate of 5 per cent off the standard tariffs was introduced as from 1st January, 1964, bringing the total rebate to 10 per cent.

## **BORDER UNDERTAKING**

### **Output and Sales**

The total sales by the Undertaking amounted to 204,924,863 units, an increase of 8.65 per cent over the figure for the previous year, while the system maximum demand increased from 37,540 kW in 1962 to 41,830 kW in 1963.

East London Municipality purchased 163,385,500 units, the increase for the year being 8.27 per cent. The maximum demand for this supply was 32,760 kVA, an increase of 9.0 per cent.

All indications are that the accelerated rate of development will be maintained during the current year.

161 New consumers were connected during the year, the total number of consumers taking supply at the end of the year being 3,303.





### **West Bank Power Station**

Several factors caused delay in the commissioning of the Oerlikon 15 MW turbo-alternator in West Bank No. 2 Station, which was not available for the winter loading as planned, but was finally put into commercial operation on 1st September, 1963.

The blading system of Turbo-alternator 7, which failed in September, 1961, and was sent to the makers' works for reconditioning, was re-installed and the set was returned to service in April.

In August, Turbo-alternator 6 blading system failed and was also sent to the makers for reconditioning. The spare set of blading was installed.

Repairs to Boiler 5 were virtually complete at the close of the year; but repairs to the brickwork had still to be carried out.

In order to overcome the problem of "carry-over" on Boilers 1 and 2 in West Bank No. 2 Station, it was decided to replace the existing plate type steam scrubbers with cyclone separators. This work will be undertaken early in 1964.

Coal deliveries were generally satisfactory, although stocks were at a comparatively low level during the latter half of the year.

The efficiency of the combined stations increased slightly from 20.9 per cent in 1962 to 21.1 per cent in 1963.

### **King William's Town Power Station**

The steam plant in this station was brought on load for two periods in August during the installation of the additional 12 MVA transformer at Gately substation when it was necessary to reduce load on the substation for a period and also to isolate the substation for two short periods.

The 1,000 kW Diesel Set was used during the above periods and also on four other occasions for short periods to provide emergency supply.

### **Development of the Undertaking**

In order to cater for the development of the Inland System it was necessary to increase the capacity of Gately 11/66 kV substation. An additional 12 MVA transformer was installed and the two existing 6 MVA transformers "banked". This work was completed in August.

Work on Tyume substation near Alice was commenced in July. The establishment of a 66/33/11 kV substation at this point has become necessary in order to cater for the development taking place in the Alice, Fort Beaufort and Adelaide areas. The construction of an 11 kV line from this substation to Middeldrift, in preparation for the removal of Middeldrift substation, was completed.

Supply was given to the South African Broadcasting Corporation's FM Stations at Governor's Kop near Grahamstown in September and at Mount Kemp, 25 miles from King William's Town, in November.

Bethel Mission, a few miles from Butterworth, was connected to the system in October.

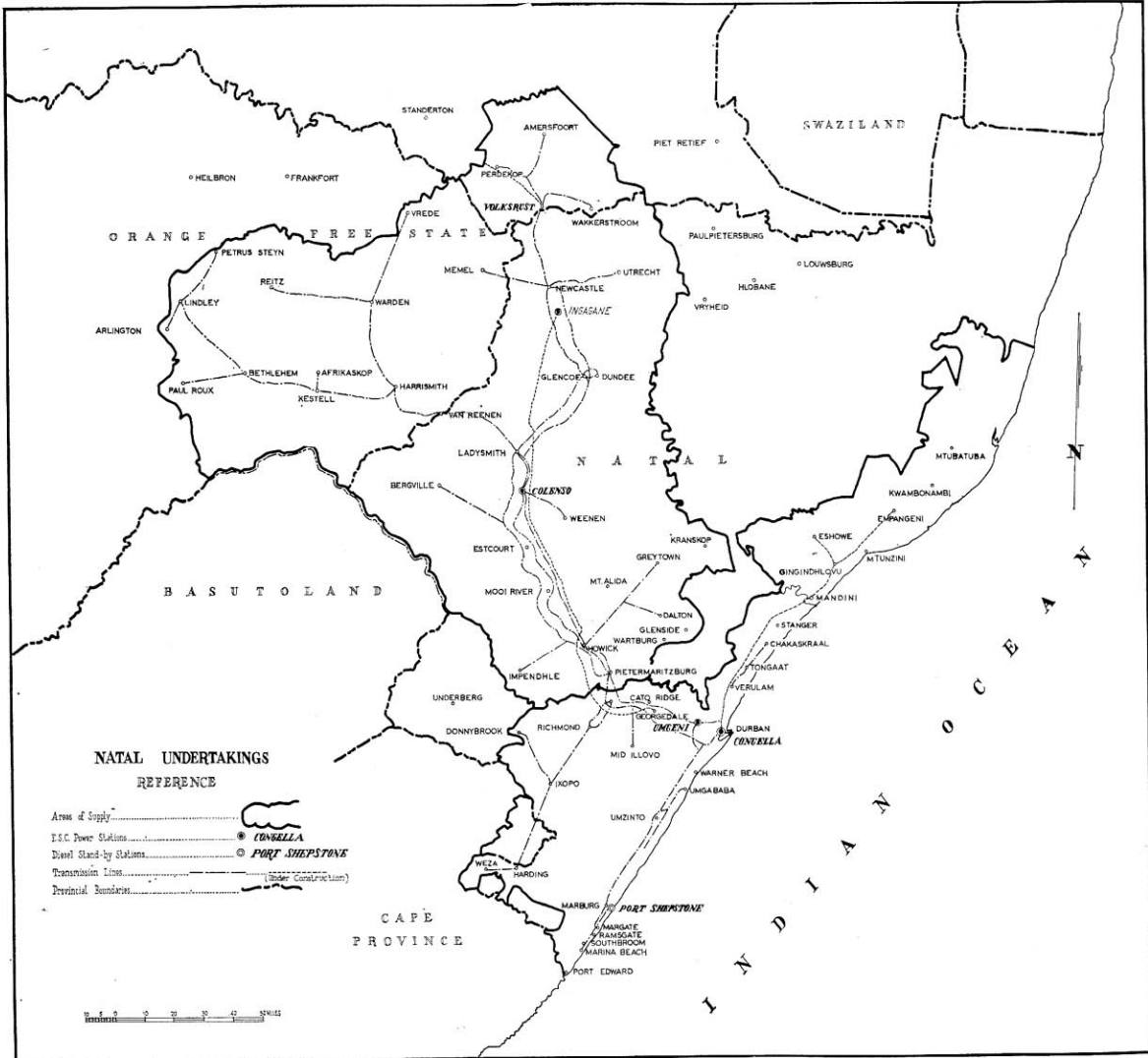
At the end of October supply was commenced to the S.A. Railways Administration at Alicedale.

### **Financial**

There was no change in the tariffs in force on the Undertaking except the introduction of the ampere demand tariff in the place of the installed horsepower tariff for small power users with effect from 1st April, 1963.

Total Revenue for the year amounted to R2,224,484 an increase of 10% on the revenue for 1962.

A surplus of R17,274 was realized on the year's working, and the accumulated deficit was thus reduced to R142,378.





## NATAL SOUTHERN UNDERTAKING

### Area of Supply

The extension of the area of supply of the Natal Southern Licence, 1925, to include the area north of the Tugela River and portion of Zululand is reported on page 8.

### Operation of the Pooled Power Stations

In terms of the amendments to the Natal Licences made in 1955, the power stations belonging to the two Undertakings were operated in the year under review as pooled stations, with Ingagane Power Station as a new addition to the pool.

The simultaneous maximum demand on the combined stations rose to 465,660 kW, which was an increase of 51.0 MW, equal to 12.3 per cent, over the corresponding peak demand in 1962.

The units supplied to each Undertaking from the pooled stations were as follows:—

	1963	1962	<i>Increase</i>
Natal Southern Undertaking	1,770,185,580	1,608,297,210	10.1%
Natal Central Undertaking	857,608,270	773,921,390	10.8%
	<u>2,627,793,850</u>	<u>2,382,218,600</u>	<u>10.3%</u>

### Sales of Electricity

Total sales by the Natal Southern Undertaking amounted to 1,589.5 million units, an increase of 11.0 per cent on sales for the previous year.

The increase of 26.9 per cent in units sold to the South African Railways for traction reflects a full year's working on the new electrified section from Durban to Duff's Road on the North Coast, as well as general increases in traffic on other sections.

The bulk supply taken by Durban Corporation increased by 11.2 per cent, to a total of 1,346.2 million units for the year.

### Distribution System

Considerable progress was made during the year at Georgedale Substation: but due to delays in the commissioning of the communications and telemetering system, transfer of the System Control from Colenso to Georgedale had to be delayed until early in 1964.

Turning-in the Umgeni-Mason's Mill 2 132 kV line into Georgedale was completed, and the 132 kV busbars were energised in November, 1963. Turning-in of the Umgeni-Mason's Mill 1 132 kV line and the Feralloys 132 kV lines into Georgedale was in progress at the year end.

Two 45 MVA 132/88 kV transformers and two 150 MVA 275/132 kV transformers had been delivered to site at Georgedale, but were not in commission. The programme provides for energizing the 275 kV busbars in May, 1964, when the first Ingagane-Georgedale 275 kV transmission line is expected to be complete, while the 88 kV lines are to be turned into Georgedale during the period May to August, 1964.

All material for the increased supply to Feralloys had been received on site at the year end and had been installed, except the 40 MVA 132/33 kV transformer, which was due in January, 1964.

By the end of the year construction of Hammarsdale Substation was well advanced. The switchhouse and outdoor foundations had been completed, the steelwork had been erected and the 11 kV switchgear installed. The 7.5 MVA 88/11 kV transformers arrived on site at the end of the year.

Construction of the Cato Ridge-Georgedale-Northdene 88 kV line was in progress.

A report on the construction of the lines to provide supplies to the Zululand area is given on page 15.



NATAL CENTRAL UNDERTAKING

CONSUMER	SALES				REVENUE FROM SALES		Average Price per Unit Sold	
	Number		Units		1963		1962	
	1963	1962	1963	1962	1963	1962	1963	1962
Class					63/62	62/61		
					% Increase			
Traction.....	1	1	308,024,629	299,659,363	+ 2.792	+ 5.448	R	R
Bulk.....	17	17	325,746,485	294,510,343	+ 10.606	+ 6.364	2,369,644	2,249,546
Mining.....	19	17	64,626,978	57,018,918	+ 13.343	+ 15.140	2,498,099	2,247,706
Industrial.....	837	844	64,136,411	61,330,442	+ 4.575	+ 16.571	519,959	456,570
Domestic and Street Lighting.....	5,011	4,707	16,476,449	18,454,288	- 10.718	- 11.427	677,057	585,433
Total.....	5,885	5,586	779,010,952	730,973,354	+ 6.572	+ 6.862	323,447	363,321
					1963		1962	
Total Revenue.....					R	R	Accumulated to 31.12.63	
Working Costs.....					6,438,017	5,921,394	R	
Surplus.....					6,149,727	5,870,019	120,485	
Deficit.....					288,290	51,375	47,504,017	
Capital Expenditure.....					6,205,056	9,970,242		
					Colenso Power Station		Ilanganeg Powre Station	
					1963	1962	1963	
Electricity Units Sent Out.....								
Maximum.....					614,542,450	688,131,390	253,737,700	
Demand kW S.O. } Half-hour.....					121,940	118,430	96,000	
Load Factor %.....					140,000	138,000		
Thermal Efficiency % S.O.....					57.5	66.3	45.7	
					18.2	18.1	28.9	
FUEL:								
Coal Consumed—tons.....					498,144	575,670	138,658	
Average per unit sent out—lb.....					1.621	1.673	1.093	
Calorific Value B.Th.U./lb.....					11,550	11,290	10,790	
Total Cost—Rand.....					1,732,384	1,935,004	313,183	
Cost per ton—Rand.....					3.48	3.36	2.26	

Supplies were given to twenty-six large users during the year; and one temporary supply was terminated.

### **Rural Development**

A report on rural supplies in this Undertaking is given on page 23.

### **Financial**

There was no change in tariffs during 1963: but due to the terms of the new coal contract and the commissioning of the first machine in Ingagane Power Station — where fuel costs are lower — the unit charges were reduced from .29c to .27c per unit for large users, and from .705c to .685c per unit for domestic and small power consumers.

Revenue for the year amounted to R11,833,088, against Working Costs of R10,628,419. A surplus of R187,236 was realized on the year's working.

## **NATAL CENTRAL UNDERTAKING**

### **Area of Supply**

The extension of the area of supply of the Natal Central Licence, 1925, to include the area around Vryheid is reported on page 8.

### **Operation of the Pooled Power Stations**

In terms of the amendments to the Natal Licences made in 1955, Colenso Power Station and the new power station, Ingagane, were operated with the power stations of the Natal Southern Undertaking as a single system of pooled stations.

Ingagane Power Station which was taken into commercial operation on 29th April, 1963, made a contribution of 253.7 million units sent out. Coal costs being lower at Ingagane and the thermal efficiency appreciably higher, the output from Ingagane will bring, in increasing measure, a reduction in the over-all unit costs.

The figures of output from the pooled stations and the units taken by each Undertaking are given on page 48.

### **Sales of Electricity**

Sales of the Natal Central Undertaking in 1963 amounted to 779.0 million units, an increase of 6.6 per cent on the previous year.

### **Ingagane Power Station: Extensions**

The second 100 MW set and boiler at Ingagane Power Station were taken into service in February and April, 1964, respectively; and, as reported on page 15, orders have been placed for two further sets and boilers of like capacity which are scheduled to be in service in 1967 and 1968.

### **Distribution System**

At Colenso a second 45 MVA 88/132 kV step-up transformer bank was installed in August. This transformer was moved from Mason's Mill substation after it had been replaced by two 60 MVA units.

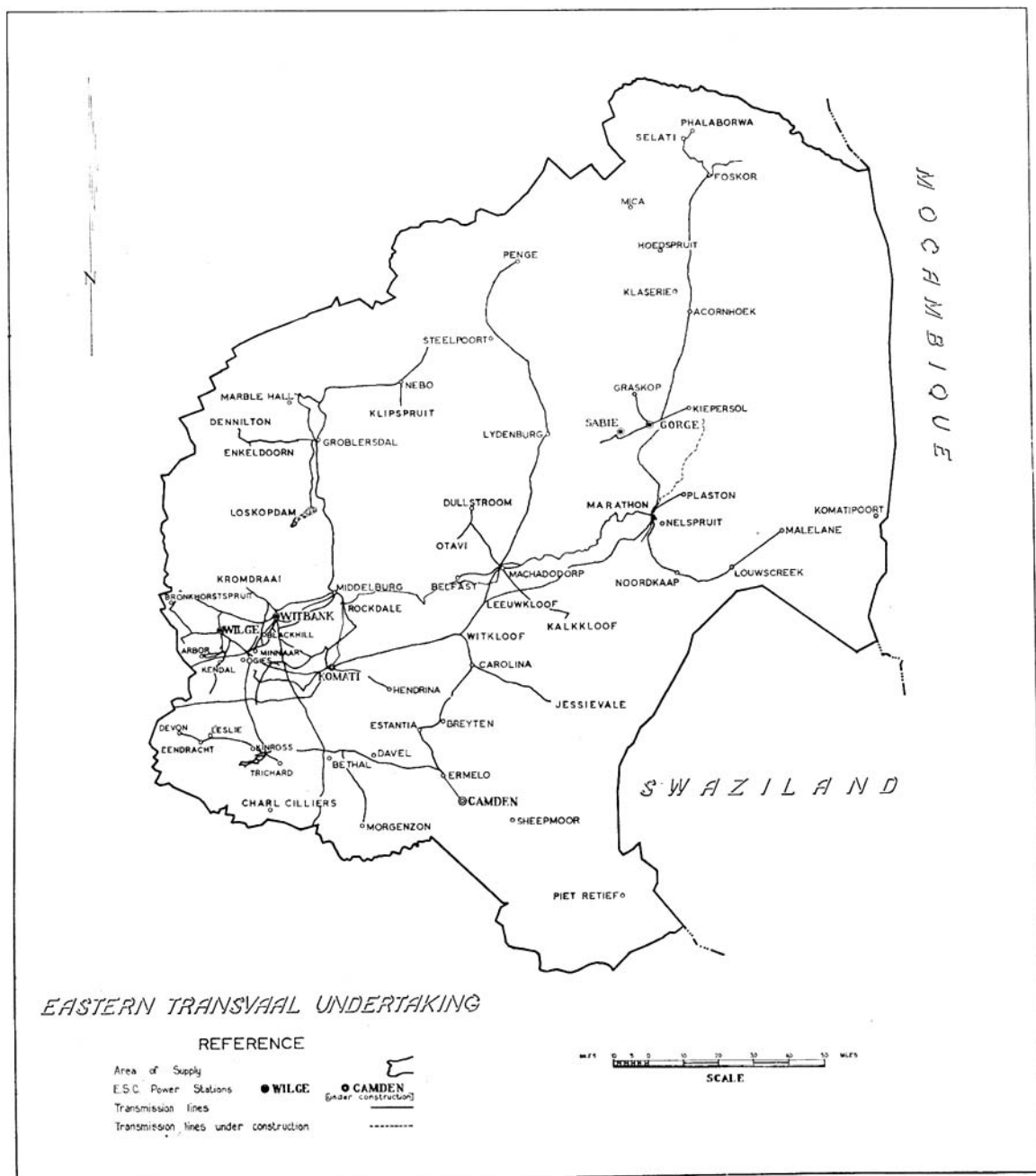
The cutting-in of the 88 kV lines into Ingagane Power Station yard was completed.

At Cedara the third 2.5 MVA 88/11 kV transformer was commissioned and three 2.5 MVA 11 kV unit regulators installed and taken into use. The second 11 kV feeder for the S.A. Rubber Manufacturing Co., Ltd., supply was commissioned at Howick.

The redundant two 2.4 MVA 88/6.6 kV transformers at New Leigh were disconnected and moved from the yard. Due to the rapidly increasing load at Mooi River, the 7.5 MVA 88/11 kV transformers ordered for Newcastle were diverted to New Leigh Substation, and were delivered on site at the year end. Certain alterations to the substation are to be made before these transformers can be installed.

The 88 kV tee-lines to the South African Railways traction substation at Dannhauser were connected and the redundant equipment from the old Dannhauser and Alcockspruit M.A.R. Substation removed.





At Volksrust, the extensions to the substation to cater for the supplies to traction substations North of Volksrust have been completed. Three 88 kV switches, control panels, additional steelwork, links and 88 kV voltage transformers were installed. Due to increased loading in the area the two 2.5 MVA 88/11 kV units are to be replaced with 7.5 MVA units. By the year end one unit had been commissioned and the other was on site.

Construction of the 88 kV line between Volksrust and Platrand was completed in December, 1963, while the substations at Sandspruit and Perdekop for the supply to the traction substations were completed except for the installation of the remote control equipment for the 88 kV lines.

### **Rural Development**

A report on the further development of rural supplies on this Undertaking is given on page 23.

### **Financial**

There was no change in tariffs during 1963: but as a result of the new coal contract and the commissioning of the first machine in Ingagane Power Station — where fuel costs are lower, as explained above — the unit charges were reduced from .29c to .27c per unit for large users and from .705c to .685c per unit for small power and domestic consumers.

Revenue for the year amounted to R6,439,017, against Working Costs of R6,149,727: so that a surplus of R288,290 was realized on the year's accounts. The accumulated deficit was thus reduced to the amount of R120,485.

## **EASTERN TRANSVAAL UNDERTAKING**

### **Area of Supply**

The extension of the area of supply of the Eastern Transvaal Licence to include the area around Gravelotte and an area within 5 miles of the north bank of the Great Letaba River is reported on page 8.

A further extension of the area of supply will be necessary if the offer of a supply is accepted by the Municipality of Tzaneen.

### **Sales of Electricity**

Total sales in 1963 reached 1,212.1 million units, which is an increase of 19.8 per cent on the previous year, and an increase of 62.4 per cent on the sales figure of three years ago.

Units sold to Gold Mines increased by 55.6 million units to a total of 301.5 million; while sales to Collieries increased by 10.7 million units to a total of 164.5 million kilowatt-hours.

Units sold to consumers classified as "Industrial" increased by 116.4 million to the total of 556.8 million units. The greater part of this increase was in the supply to Ferrometals Limited, at Witbank, who purchased an additional 99.4 million units; while Phosphate Development Corporation (Pty) Ltd. ("Foskor") took a supply of 20.9 million units during the portion of the year commencing on 7th August, 1963.

### **Witbank Power Station**

The operating statistics for 1963 show a decline in the units sent out from Witbank Power Station from 719.8 million to 652.2 million units, and a corresponding reduction in the annual load factor from 69.5 per cent to 63.1 per cent.

### **Komati Power Station**

A summary of the progress of construction at Komati Power Station is given on page 16.

This Station, which had been built to the capacity of 400 MW by the end of the year, made a contribution of 1,506.2 million units to the output of the pooled power stations, at an average cost of approximately .3c per unit sent out. Some reduction in this cost is expected when the Station and its associated Colliery is working nearer to the design output.

### Transmission and Distribution System

The development and expansion of the transmission and distribution system in this Undertaking have been exceptional; and reports on the major network extensions to the Phalaborwa area, the Lowveld districts and for the Witbank-Komatipoort electrification appear on page 15.

In the Witbank area two 21 kV feeder panels were equipped in the Witbank Power Station to provide for an additional feeder cable to the Witbank Municipal substation and to Rand Carbide, Limited. Cables and other materials for these extensions were on site at the year end, but further work had not started.

An additional 21 kV transmission line (3.9 miles) was constructed between Witbank Power Station and Ferrometals, Limited, to provide the additional supply to this consumer in April, 1963.

On the Evander gold field the capacity of Wildebees Distribution Station was increased by the addition of a 90 MVA 132/88/21 kV transformer and switchgear, which was put on load in January, 1964. A temporary construction supply for the fourth gold mine in this area, Kinross Gold Mining Co. Ltd., was made available on 28th November, 1963, and pegging was complete for the construction of 11 miles of 88 kV line from Wildebees-Kinross-Bracken to supply the further needs of this Company.

In preparation for the construction of Kruispunt Distribution Station (approximately 25 miles south of Witbank), the existing 275 kV lines Komati-Nevis were turned in to Kruispunt and coupled through temporarily. Two 250 MVA 275/132 kV transformers are to be installed at Kruispunt, with two 132 kV feeders to Wildebees and two to Grootpan. A third 275 kV line Komati-Kruispunt is to be built by the end of 1965.

A supply was furnished by temporary equipment to the Springbok Colliery, Hope Section, on 23rd September, 1963.

A small supply for construction at Camden Power Station was made available at the site on 2nd April, 1963, and supply via an 88 kV line from Ermelo was provided in February, 1964.

Survey is in progress for the 56 mile 275 kV interconnector between Komati and Camden, which is scheduled to be completed by January, 1966.

Work has started also on the planning and surveying of routes for the 88 kV transmission lines and substations which will provide supplies to the Usutu Collieries and to the Jericho dam, from whence Camden Power Station will draw its coal and water supplies.

Survey of the 9.7 mile 132 kV line route to the new substation of Transalloys Limited, near Cluwer, was complete at the end of the year and the work of equipping the sub-station with two 45 MVA 132/22 kV transformers was well advanced. This new supply was furnished on 1st May, 1964, and is expected to increase to 35 MVA.

By the end of the year also work was well advanced in the construction of 21.5 mile 132 kV line from Kudu to Rockdale Distribution Station (near Middelburg) and the equipping of this substation for the supply to R.M.B. Alloys (Pty.) Ltd. This supply which is expected to increase to 90 MVA, was made available on 29th March, 1964.

A supply was provided to Montrose Exploration Corporation, Limited, from the new Steelpoort Substation in March, 1964.

A temporary substation was established and supply made available in the Kiepersol area on 16th May, 1963, from a 22 kV line built from the Gorge Power Station. Construction of a 66 kV line from Marathon to Kiepersol is progressing.

As reported, a bulk supply of electricity was commenced to Barberton Municipality in September, 1963; and supplies of electricity were made available to Graskop Village in May, 1963.

A total of 343 new consumers were connected to the reticulation systems operated by the Undertaking in urban areas.

### Rural Electrification

During the year a total of 151.75 miles of rural distribution lines of 22 kV, 11 kV and lower voltages were built and taken into use; and supplies were given to 187 new consumers.

A detailed report on rural electrification in this Undertaking appears on page 24.

### Financial

There was no change in tariffs during the year under review.

Total Revenue amounted to R6,209,205, which reflected an increase of 17.7 per cent, against Working Costs of R6,110,047; so that a surplus of R99,159 is shown in the year's accounts.

## RAND AND ORANGE FREE STATE UNDERTAKING

### Area of Supply

The application for extension of the area of supply of the Greater Rand Extension and Orange Free State Licence to include Brits and the farming areas around Brits is reported on page 9.

### Sales of Electricity

The total sales by the Undertaking (electricity, compressed air and steam) during the year amounted to 14,223 million units. This was an increase of 5.9 per cent over the sales for 1962, the increase in the previous year having been 5.7 per cent.

Traction supplies were higher by 5.6%; and supplies in bulk to Local Authorities which draw their requirements from Escom showed the considerable increase in industrial activity in an increase of 13.5 per cent over 1962, compared with the previous increase of 9.7 per cent over 1961.

Bulk supplies were given during the year to the local authorities of Ottosdal and Deneyville.

Sales to mining consumers rose to 8,836 million units in 1963; but the increase was only 2.0 per cent above the corresponding figure for 1962, as compared with the average annual increase of 6.9 per cent over the past 10 years.

In the industrial sector the continued growth of South African industries is reflected in the increase in total sales of 13.7 per cent; the increase recorded for 1961 was 9.3 per cent. The following table indicates the nature of industries supplied by the Undertaking and the units sold to each group during the past two years:—

	<i>Units sold (millions kWh)</i>	
	1963	1962
Building and Cement (including quarrying).....	267.3	246.6
Chemical (including Pharmaceutical).....	527.7	474.2
Engineering, including the Motor Industry.....	192.4	162.3
Foodstuffs, Consumer Goods and Commercial.....	464.7	433.8
Iron, Steel and base metals.....	1,276.5	1,129.5
Paper production.....	211.6	193.0

### Operation of the Pooled Power Stations

The electric power stations of the Rand and Orange Free State Undertaking and the Eastern Transvaal Undertaking are operated in terms of the Licences as a single system of pooled stations.

With the completion of Highveld Power Station and the commissioning of two further sets at Komati Power Station a total of 320,000 kW of additional generating plant was added to the system during 1963. A further 100,000 kW set and boiler at Komati Power Station was available for the winter of 1964.

Brakpan Power Station was closed down at the end of August, 1963.

The total output from the pooled power stations was 16,730 million units; this is an increase of 6.5% over the output for 1962. The maximum simultaneous demand

## RAND AND ORANGE FREE STATE UNDERTAKING

CONSUMER	Number		Units		SALES		REVENUE FROM SALES		Average Price per Unit Sold	
	1963	1962	1963	1962	63/62	62/61	1963	1962	1963	1962
					% Increase		R	R	c	c
Class										
Traction.....	2	2	505,756,389	478,955,653	+ 5.596	+ 0.329	2,539,899	2,415,346	0.5022	0.5043
Bulk.....	100	97	1,741,779,559	1,535,322,734	+ 13.447	+ 9.698	8,079,003	7,178,253	0.4638	0.4675
Mining.....	113	109	8,734,833,861	8,539,298,385	+ 2.051	+ 4.409	34,968,449	34,322,582	0.4003	0.4011
Industrial.....	979	924	3,038,962,089	2,672,751,373	+ 13.702	+ 9.316	12,052,686	10,659,221	0.3966	0.3988
Domestic and Street Lighting.....	9,020	7,301	86,511,372	67,737,181	+ 27.716	+ 20.166	874,396	681,558	1.0107	1.0062
Total.....	10,214	8,433	14,107,843,270	13,314,065,326	+ 5.962	+ 5.867	58,514,433	55,266,960	0.4148	0.4151
AIR and STEAM:										
Bulk.....	1	1	4,037,856	3,363,713	+ 20.042	+ 16.592				
Mining.....	9	11	101,712,196	103,367,342	- 1.601	- 7.730				
Industrial.....	22	22	9,453,554	9,051,701	+ 4.440	+ 1.984				
Total.....	32	34	115,203,606	115,782,756	- 0.500	- 6.467	1,601,062	1,587,299	1.3898	1.3709
Total.....	10,246	8,467	14,223,046,876	13,429,848,082	+ 5.906	+ 5.747	60,115,495	56,854,259	0.4227	0.4233
Total Revenue.....							1963	1962	Accumulated to 31.12.63	
Working Costs.....							R	R	R	
Surplus.....							60,382,201	57,123,965	3,436,248	
Capital Expenditure.....							60,000,033	56,830,707	341,304,668	
							382,168	293,258		
							13,740,236	16,518,167		



**RAND AND ORANGE FREE STATE UNDERTAKING—(continued)**

	Brakpan Power Station		Highveld Power Station	
	1963	1962	1963	1962
Electricity Units Sent Out.....				
Maximum hour.....	28,752,694	60,361,295	2,993,350,326	2,372,962,035
Demand kW S.O. }.....	38,621	36,940	459,650	339,507
Load Factor %.....	12.9	18.7	74.3	79.8
Thermal Efficiency % S.O.....	11.2	11.9	28.5	28.3
<b>FUEL:</b>				
Coal Consumed—tons.....	43,726	86,767	2,050,504	1,623,629
Average per unit sent out—lb.....	3.042	2.875	1.370	1.368
Calorific Value B.Th.U./lb.....	10,060	9,990	8,740	8,810
Total Cost—Rand.....	81,309	160,193	3,172,880	2,478,831
Cost per ton—Rand.....	1.83	1.82	1.55	1.53
	Klip Power Station		Rosherville Power Station	
	1963	1962	1963	1962
Electricity Units Sent Out.....				
Maximum hour.....	2,388,920,738	2,383,570,070	26,684,672	40,874,980
Demand kW S.O. }.....	375,927	366,367	30,257	29,494
Load Factor %.....	72.5	74.3	10.1	15.8
Thermal Efficiency % S.O.....	20.3	20.1	9.1	9.1
<b>FUEL:</b>				
Coal Consumed—tons.....	2,096,275	2,064,694	51,217	77,496
Average per unit sent out—lb.....	1.755	1.732	3.839	3.792
Calorific Value B.Th.U./lb.....	9,590	9,790	9,760	9,910
Total Cost—Rand.....	4,279,711	4,394,812	273,472	318,267
Cost per ton—Rand.....	2.04	2.13	2.13	2.08

RAND AND ORANGE FREE STATE UNDERTAKING—(continued)

	Taaibos Power Station		Vaal Power Station	
	1963	1962	1963	1962
Electricity Units Sent Out.....				
Maximum	3,057,745,248	3,012,142,930	2,068,309,230	2,005,982,308
Demand kW SO }.....	441,885	447,120	291,842	294,337
Load Factor %.....	79·0	76·9	80·9	77·8
Thermal Efficiency % S.O.....	26·0	26·0	21·0	21·2
<b>FUEL:</b>				
Coal Consumed—tons.....	2,247,275	2,256,688	2,015,140	1,929,498
Average per unit sent out—lb.....	1·470	1·498	1·949	1·924
Calorific Value B.Th.U./lb.....	8,910	8,750	8,330	8,370
Total Cost—Rand.....	3,818,517	3,963,880	2,065,822	1,838,447
Cost per ton—Rand.....	1·70	1·75	1·03	0·95
	Vereeniging Power Station		Vierfontein Power Station	
	1963	1962	1963	1962
Electricity Units Sent Out.....				
Maximum	712,382,065	824,494,378	1,757,404,058	1,898,800,114
Demand kW S.O. }.....	135,805	137,083	310,891	315,306
Load Factor %.....	59·9	68·7	64·5	68·7
Thermal Efficiency % S.O.....	15·0	15·4	22·4	23·1
<b>FUEL:</b>				
Coal Consumed—tons.....	954,451	1,051,146	1,475,552	1,527,224
Average per unit sent out—lb.....	2·680	2·550	1·679	1·609
Calorific Value B.Th.U./lb.....	8,490	8,680	9,080	9,190
Total Cost—Rand.....	1,020,753	1,072,680	2,107,152	2,226,579
Cost per ton—Rand.....	1·07	1·02	1·43	1·46





**RAND AND ORANGE FREE STATE UNDERTAKING—(continued)**

	Wilge Power Station	
	1963	1962
Electricity Units Sent Out.....		
Maximum.....	1,537,911,392	1,426,143,890
Demand kW S.O. } .....	221,448	220,183
Load Factor %.....	79.3	73.9
Thermal Efficiency % S.O.....	25.1	26.0
<b>FUEL:</b>		
Coal Consumed—tons.....	1,085,574	966,807
Average per unit sent out—lb.....	1.412	1.356
Calorific value B. Th. U./lb.....	9,610	9,690
Total Cost—Rand.....	1,033,426	937,773
Cost per ton—Rand.....	0.95	0.97



**RAND AND ORANGE FREE STATE UNDERTAKING**

**REFERENCE**

- Area of Supply ..... 
- E.S.C. Power Stations ..... 
- Transmission Lines ..... 
- Transmission Lines under construction ..... 



on the system was 2,476,176 kW recorded in July, 1963; the load factor (calculated on the average demand for twelve months) was slightly higher, at 83%.

The supplies taken by the three Undertakings which draw their requirements from this system were as follows:—

	<i>Maximum demand in the year</i>	<i>Total units (millions kWh)</i>
Rand and Orange Free State Undertaking...	2,273,042 kW	15,289·8
Eastern Transvaal Undertaking.....	188,236 kW	1,195·7
Cape Northern Undertaking.....	39,473 kW	248·8

The cost of generation per unit sent out from the pooled power stations during the year was 2986c which is a slight decrease in cost in comparison with the previous year. The cost of coal burnt was unchanged, at R1·46 per ton.

### Transmission and Distribution System

The two 275 kV lines from Highveld Generating Station to Scaffell Distribution Station and the 275 kV yard at this Station were commissioned in May, 1963. The 132 kV line from Scaffell to Technimetals Substation were completed and taken into service in April, 1963.

During the year some 200 miles of 88 kV lines were built between Snowden Distribution Station, Standerton and Platrand Substation to cater for the electrification of the Union-Volksrust section of the main line to Durban. Existing 88 kV lines from Vaal and Klip Power Stations to the East Rand were turned in to Snowden, and the two Nevis-Highveld 275 kV lines were looped into Snowden in December, 1963. Supplies were made available to the South African Railways for testing and proving of plant during February and March, 1964; and the section was converted to electric traction at the end of March, 1964.

Reinforcement of existing networks was effected by the extensions at the major Distribution Stations at Esselen (North Rand), Union (south of Germiston) and at Everest in the Orange Free State.

Over the whole Undertaking the following additional circuits were completed and taken into commercial service during the year:—

<i>Route miles of Transmission Lines and Cables taken into Service during 1963.</i>				
<i>275 kV</i>	<i>132 kV</i>	<i>88/33 kV</i>	<i>22 kV and lower</i>	<i>Total (miles)</i>
21·0	·6	289·7	404·5	715·8

### Rural Electrification Department

Sales of electricity from the reticulation networks of the Rural Electrification Department rose during 1963 to 114·4 million units, an increase of 21·9 per cent over the figure for 1962. The maximum demand on the networks was 31,290 kW.

During the year a total of 479 miles of circuits of 11 kV and lower voltages was constructed and taken into service, which represents a substantial increase over the figure of 315 miles built in the previous year.

The greater part of this work was in rural areas, where 356 new farm supplies were given during the year. A total of 1,323 other consumers situated on small holdings and in peri-urban areas were also connected up during 1963.

A report on the more important farm schemes appears on page 25.

### Financial

Total Revenue from the sale of Electricity, Compressed Air and Steam was R60,115,495, and a surplus of R382,168 was shown on the year's accounts.

In view of the accumulated surplus, a reduction of tariffs by 1 per cent was made from January, 1964, *vide* report on page 28.

## MUNICIPAL ELECTRICITY SUPPLY SCHEMES — 1964

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

### TRANSVAAL:

#### New Schemes

Ottosdal  
Pongola  
Waterval Boven

#### Extensions

Duiwelskloof  
Lenasia  
Nelspruit  
Pietersburg  
Rensburg  
Residensia

### CAPE:

Olifantshoek  
Plettenberg Bay

Albertinia  
Beaufort West  
Colesberg  
Riversdale  
Uniondale  
Victoria West  
Ladysmith

### NATAL:

### ORANGE FREE STATE:

Tweeling

Up to the 31st December, 1963, a total of 1,811 reports on municipal supply schemes had been submitted by the Commission. Of these 296 were in respect of new schemes, 887 were in respect of extension schemes and 628 were reports on tenders.

## ANNEXURES

The Commission submits for the 1963 with this Report:—

### ANNEXURE A :. AUDITORS' REPORT AND ACCOUNTS.

The Report of the Auditors

Balance Sheet

Schedule No. 1—Expenditure on Capital Account.

Schedule No. 2—Investments of the Redemption Fund.

Schedule No. 3—Loan Capital.

Account No. 1—Redemption Fund Account.

Account No. 2—Reserve Fund Account.

Revenue Accounts in respect of:

Account No. 3—Cape Western Undertaking.

Account No. 4—Cape Northern Undertaking.

Account No. 5—Border Undertaking.

Account No. 6—Natal Southern Undertaking.

Account No. 7—Natal Central Undertaking.

Statement of Pooled Costs and Allocation for Natal Southern and Natal Central Undertakings.

Account No. 8—Eastern Transvaal Undertaking.

Account No. 9—Rand and Orange Free State Undertaking.

Statement of Pooled Costs and Allocation for Rand and Orange Free State and Eastern Transvaal Undertakings.

### ANNEXURE B :. STATISTICAL AND OTHER STATEMENTS

Statement No. 1—Summary of principal plant and equipment installed at the Commission's several undertakings as at 31st December, 1963.

Statement No. 2—Summary of principal plant and equipment in course of installation or on order as at 31st December, 1963.

Statement No. 3—Units sold to all consumers during the past thirty-nine years.

Statement No. 4—Units sold and number of consumers, 1963.

Statement No. 5—Power Station Statistics, 1963.

Statement No. 6—Power purchased, 1963.

Statement No. 7—Water consumed by power stations, 1963.

Statement No. 8—Showing the price or rent of land or rights or interests in or over land or other property acquired or hired by the Commission during the 1963.

Statement No. 9—Coal used at the Commission's steamdriven power stations.

### ANNEXURE C — NATIONAL STATISTICS.

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

Yours faithfully,



Chairman.

# THE REPORT OF THE AUDITORS

Johannesburg,  
27th May, 1964.

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

GENTLEMEN,

We have completed the audit of the books and accounts of the Commission for the year ended 31st December, 1963.

## **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 the records of the Commission the Fund is divided into sections corresponding to its Undertakings. The Commission has invested the moneys accruing to each section of the Fund in the investments prescribed in the Schedule to the Act, and in valuing the Fund at 31st December, 1963, we have taken into account the market value of the investments at that date. The value of the Fund at 31st December, 1963, was in excess of the sum required, in terms of the Schedule to the Act, for the redemption of the respective loans.

In the case of long term loans, the redemption period fixed by the Commission does not exceed the maximum term of the respective loans. In the case of medium term loans, for periods of 17 years or less, the period of redemption fixed is 25 years from the date of issue of the respective loans.

The Minister has fixed the dates from which provision for redemption of Loans Nos. 44, 45, 46 and 47 commenced at 1st April, 1963, 1st September, 1963, 1st October, 1963, and 1st February, 1964, respectively. In accordance with the usual practice provision has also been made for the redemption of moneys expended out of subsequent loans on works which had come into commercial operation before 31st December, 1963.

## **OVERSEAS LOANS**

Repayments of capital, in respect of Overseas Loans, 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.

Repayment of Loan No. 28 from the International Bank for Reconstruction and Development was completed during the year. During the currency of this loan R2,822,075 was repaid out of contributions charged to Revenue Accounts of Undertakings and the balance of R18,631,837 was repaid out of the proceeds of local loans.

Loan No. 41 raised in Switzerland, has to be repaid by ten annual instalments from 1965 to 1974 but provision is being made for repayment by setting aside amounts over the period of the loan, i.e. 15 years.

The balance, not drawn at 31st December, 1962, of Loan No. 48 from the International Bank for Reconstruction and Development was drawn during the year. The loan is repayable by half-yearly instalments over a period of 8½ years from 1st December, 1963, but contributions are charged to Revenue Accounts of Undertakings on a 25 year sinking fund basis, the shortfall being met from local loans.

## **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 Account of all Undertakings in commercial operation.

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

### REVENUE ACCOUNTS

The following is a summary of the operations of the Commission's Undertakings for 1962 and 1963 —

	<i>Surplus + Deficit —</i>		<i>Amounts set aside to Reserve Fund</i>	
	1962	1963	1962	1963
Cape Western.....	+ R214,890	+ R197,909	R495,000	R582,000
Cape Northern.....	+ 57,511	+ 219,477	180,000	192,000
Border.....	— 17,094	+ 17,274	90,000	90,000
Natal Southern.....	— 91,149	+ 187,236	501,000	501,000
Natal Central.....	+ 51,375	+ 288,290	270,000	300,000
Eastern Transvaal..	+ 71,971	+ 99,159	363,000	503,000
Rand and O.F.S....	+ 293,258	+ 382,168	3,486,000	3,675,000
	<u>+ R580,762</u>	<u>+ R1,391,513</u>	<u>R5,385,000</u>	<u>R5,843,000</u>
Brought forward from previous year.....		R3,477,246		
Net Accumulated sur- plus at end of year as detailed in Balance Sheet.....		<u>R4,868,759</u>		

In general revenue exceeded estimates due to the buoyant economic conditions in the Republic and operations at all the Undertakings resulted in surpluses. The accumulated surplus of the Cape Northern Undertaking is high in relation to revenue being earned but charges were reduced with effect from January, 1964. In the case of all other undertakings the accumulated balances on Revenue Account are reasonable in relation to the revenue of the Undertakings, indicating that the Commission is successfully applying the principle that its Undertakings shall, as far as practicable, be carried on neither at a profit nor at a loss.

### GENERAL

As the result of our audit of the books and accounts of the Commission for the year 1963 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 as 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.)*  
*Registered Accountants and Auditors*

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**ACCOUNTS**

STATISTICAL AND OTHER STATEMENTS  
NATIONAL STATISTICS

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# Electricity Supply

Established under the  
BALANCE SHEET AT

1962			
R560,056,483	<b>Loans Outstanding</b> .....		R612,475,005
	(Schedule No. 3)		
12,807,545	<b>Loans Repaid Less Assets Sold</b> .....		28,412,408
26,924,496	Loans repaid (Schedule No. 3).....	R43,092,141	
14,116,951	Less: Cost of Assets sold proceeds credited to Redemption Fund.....	14,679,733	
154,374,047	<b>Redemption Fund</b> .....		161,671,372
	(Account No. 1)		
35,782,754	<b>Reserve Fund</b> .....		42,642,861
	(Account No. 2)		
3,477,246	<b>Balance on Revenue Accounts</b> .....		4,868,759
	(Accounts Nos. 3 to 9)		
205,779	Cape Western Undertaking.....	403,688	
361,394	Cape Northern Undertaking.....	580,871	
Dr. 159,652	Border Undertaking.....	Dr. 142,378	
92,549	Natal Southern Undertaking.....	279,785	
Dr. 408,775	Natal Central Undertaking.....	Dr. 120,485	
331,871	Eastern Transvaal Undertaking.....	431,030	
3,054,080	Rand & Orange Free State Undertaking.....	3,436,248	
27,972,444	<b>Creditors and Provisions</b> .....		28,243,990
18,403,819	Creditors.....	17,349,273	
5,879,581	Interest accrued on loans.....	6,239,602	
3,689,044	Provisions including provisions for repayment of overseas loans.....	4,655,115	
6,313,318	<b>Temporary Borrowings</b> .....		—
	Advances at call and amount due to Bankers less Cash on Current Accounts and on hand.		
<b>NOTE:</b>			
In addition to the liabilities shown above the Commission is committed to the extent of approximately R122,750,000 expenditure on Capital Account, and R2,924,000 chargeable against Reserve Fund.			
In addition to the annual contributions the Commission is committed to pay R130,204 annually to the Electricity Supply Commission Pension and Provident Fund for the period ending 31st December, 1969, and R22,054 during 1970.			
The Commission is committed to purchase R5,250,000 Electricity Supply Commission 5 per cent. Local Registered Stock 1983/88 from a stockholder at par on or before 30th November, 1966.			
<u>R800,783,837</u>		<u>R878,314,395</u>	

Johannesburg,  
26th March, 1964.

R. L. STRASZACKER, *Chairman*.  
J. VAN NIEKERK, *Chief Accountant*.

# Commission

Electricity Act, 1922  
31st DECEMBER, 1963

			1962	1962
<b>Capital Expenditure at Cost</b> .....			R637,076,261	R581,579,266
(Schedule No. 1)				
Land and Rights.....	R 6,848,278			6,140,994
Buildings and Civil Works.....	135,006,641			124,274,583
Machinery and Plant.....	495,221,342			451,163,689
<b>Stores and Movable Plant</b> .....			23,692,954	22,238,919
Stores and Materials at cost.....	20,276,517			19,066,922
Movable plant and equipment at cost less depreciation	3,416,437			3,171,997
<b>Investment of Redemption Fund</b> .....			160,224,039	148,692,383
(Schedule No. 2)				
	Nominal Value	Market Value		
1963	R161,628,963	R162,780,861		
1962	R149,977,445	R151,552,831		
<b>Investment of Reserve Fund</b> .....			41,773,566	35,934,054
Stocks of Electricity Supply Commission, Republic of South Africa and Municipalities including Interest Accrued				
	Nominal Value	Market Value		
1963	R 41,930,553	R 43,443,431		
1962	R 35,970,448	R 37,732,506		
<b>Sundry Investments</b> .....			4,032,553	3,862,900
Electricity Supply Commission Swiss Loan Bonds including Interest Accrued.....	1,180,674			1,117,856
	Nominal Value	Market Value		
1963	R 1,261,729	R 1,192,334		
1962	R 1,200,165	R 1,152,159		
Entire Share capital of the Rand Mines Power Supply Company Limited.....		1,200		1,200
Housing Loans to Employees secured by First Mortgages		2,850,679		2,743,844
<b>Debtors and Payments in Advance</b> .....			9,148,437	8,476,315
Debtors.....	9,035,587			8,317,586
Payments in advance.....	112,850			158,729
<b>Cash at Bankers and on Hand</b> .....			2,366,585	—
<u>R800,783,837</u>		<u>R878,314,395</u>		<u>R800,783,837</u>

Referred to in our report of 27th May, 1964.

HALSEY, BUTTON & PERRY,  
ALEX. AIKEN & CARTER  
*Registered Accountants and Auditors.*

# Electricity Supply Commission

## Schedule of Capital Expenditure at 31st December, 1963

Expenditure in connection with Electricity Undertakings	Total at 31st December 1962	Year Ended 31st December 1963	Total at 31st December 1963
<b>Cape Western Undertaking</b>			
Land and Rights.....	R 707,796	R 66,886	R 774,682
Buildings and Civil Works.....	13,783,895	106 293	13,890,188
Machinery and Plant.....	50,800,508	2,828,143	53,628,651
	<u>R 65,292,199</u>	<u>R 3,001,322</u>	<u>R 68,293,521</u>
<b>Cape Northern Undertaking</b>			
Land and Rights.....	R 83,099	R 45,174	R 128,273
Buildings and Civil Works.....	513,463	24,772	538,235
Machinery and Plant.....	8,953,588	1,439,357	10,392,945
	<u>R 9,550,150</u>	<u>R 1,509,303</u>	<u>R 11,059,453</u>
<b>Cape Eastern Undertaking</b>			
Land and Rights.....		R 9,466	R 9,466
Buildings and Civil Works.....		—	—
Machinery and Plant.....		72,629	72,629
		<u>R 82,095</u>	<u>R 82,095</u>
<b>Border Undertaking</b>			
Land and Rights.....	R 41,942	R 288	R 42,230
Buildings and Civil Works.....	1,990,365	73,340	2,063,705
Machinery and Plant.....	9,263,410	570,113	9,833,523
	<u>R 11,295,717</u>	<u>R 643,741</u>	<u>R 11,939,458</u>
<b>Natal Southern Undertaking</b>			
Land and Rights.....	R 467,035	R 229,597	R 696,632
Buildings and Civil Works.....	11,375,014	423,423	11,798,437
Machinery and Plant.....	42,412,598	8,471,027	50,883,625
	<u>R 54,254,647</u>	<u>R 9,124,047</u>	<u>R 63,378,694</u>
<b>Natal Central Undertaking</b>			
Land and Rights.....	R 460,948	Cr. R 116,854	R 344,094
Buildings and Civil Works.....	11,101,451	1,465,742	12,567,193
Machinery and Plant.....	29,736,562	4,856,168	34,592,730
	<u>R 41,298,961</u>	<u>R 6,205,056</u>	<u>R 47,504,017</u>

Johannesburg,  
26th March, 1964.

Expenditure in connection with Electricity Undertakings	Total at 31st December, 1962	Year Ended 31st December, 1963	Total at 31st December, 1963
<b>Eastern Transvaal Undertaking</b>			
Land and Rights.....	R 857,840	R 213,714	R 1,071,554
Buildings and Civil Works.....	19,008,466	5,197,320	24,205,786
Machinery and Plant.....	47,759,941	15,777,698	63,537,639
	<u>R 67,626,247</u>	<u>R 21,188,732</u>	<u>R 88,814,979</u>
<b>Rand and Orange Free State Undertaking</b>			
Land and Rights.....	R 2,998,892	R 259,013	R 3,257,905
Buildings and Civil Works.....	62,328,458	3,438,705	65,767,163
Machinery and Plant.....	262,237,082	10,042,518	272,279,600
	<u>R 327,564,432</u>	<u>R 13,740,236</u>	<u>R 341,304,668</u>
<b>Head office</b>			
Land.....	R 523,442	—	R 523,442
Buildings and Equipment.....	4,173,471	R 2,463	4,175,934
	<u>R 4,696,913</u>	<u>R 2,463</u>	<u>R 4,699,376</u>
<b>Summary</b>			
Land and Rights.....	R 6,140,994	R 707,284	R 6,848,278
Buildings and Civil Works.....	124,274,583	10,732,058	135,006,641
Machinery and Plant.....	451,163,689	44,057,653	495,221,342
	<u>R 581,579,266</u>	<u>R 55,496,995</u>	<u>R 637,076,261</u>

J. VAN NIEKERK, *Chief Accountant.*

## Electricity Supply

Schedule of Investments of the

INVESTMENTS.	Nominal Value	Book Value
<b>LOCAL REGISTERED STOCKS.</b>		
<b>Electricity Supply Commission—</b>		
3½ per cent. 1959/64.....	R 806,456	R 784,549
3½ per cent. 1956/66.....	875,684	805,492
3½ per cent. 1957/67.....	817,256	764,831
3 per cent. 1959/64.....	1,667,860	1,584,497
3 per cent. 1960/65.....	1,621,360	1,552,015
3½ per cent. 1961/66.....	1,246,408	1,169,929
3½ per cent. 1965/70.....	1,150,800	1,102,788
3 per cent. 1967/73.....	1,319,080	1,246,619
3 per cent. 1968/74.....	2,332,920	2,264,494
3 per cent. 1968/73.....	13,431,440	13,311,968
3 per cent. 1969/74.....	680,000	638,966
3 per cent. 1969/74.....	139,536	129,564
3 per cent. 1965/67.....	599,368	566,399
3 per cent. 1964/67.....	2,236,608	2,121,045
3 per cent. 1964/68.....	488,800	452,537
4½ per cent. 1964/67.....	1,741,820	1,694,434
5 per cent. 1964/67.....	1,999,601	1,957,145
5 per cent. 1966/68.....	1,066,564	1,050,310
5 per cent. 1967/69.....	1,134,122	1,114,437
5 per cent. 1968/70.....	1,132,510	1,105,622
5 per cent. 1967/70.....	5,600,700	5,481,436
5 per cent. 1971/74.....	1,702,486	1,676,427
5 per cent. 1971/75.....	3,358,978	3,308,878
4 per cent. 1975/80.....	9,612,200	9,571,819
4 per cent. 1975/80.....	8,138,000	8,082,812
5 per cent. 1976/81.....	4,839,600	4,753,872
5 per cent. 1977/82.....	955,100	941,151
5 per cent. 1976/82.....	3,889,530	3,834,029
5 per cent. 1977/83.....	9,866,620	9,779,941
5 per cent. 1978/83.....	3,640,431	3,595,390
5 per cent. 1979/84.....	5,006,918	4,974,547
5 per cent. 1979/84.....	6,906,300	6,750,836
5 per cent. 1979/85.....	5,854,900	5,751,099
5 per cent. 1980/85.....	7,022,950	6,900,671
5½ per cent. 1980/86.....	4,858,800	4,725,417
5 per cent. 1981/86.....	7,113,200	7,051,879
6 per cent. 1981/86.....	6,152,000	6,087,471
6 per cent. 1982/87.....	5,752,075	5,670,360
5 per cent. 1982/87.....	6,343,700	6,265,610
5 per cent. 1983/88.....	6,825,682	6,740,403
5 per cent. 1980/83.....	6,000,000	5,835,000
<b>Republic of South Africa</b>		
3½ per cent. 1955/65.....	4,600	4,600
3 per cent. 1957/66.....	1,070,000	1,042,524
3 per cent. 1958/68.....	30,000	29,698
3 per cent. 1959/69.....	200,000	187,746
3 per cent. 1960/70.....	687,400	659,533
5½ per cent. 1979.....	300,000	299,625
<b>Municipal — Johannesburg</b>		
3½ per cent. 1956/66.....	3,200	3,200
3 per cent. 1960/65.....	40,000	38,113
3½ per cent. 1962/67.....	258,000	234,386
3½ per cent. 1965.....	2,400	2,400
3 per cent. 1965/70.....	588,000	567,101
3 per cent. 1967/77.....	60,000	60,000
5 per cent. 1974/79.....	194,000	192,545
Carried forward.....	R159,365,963	R156,518,160

Johannesburg,  
26th March, 1964.

## Commission

Redemption Fund at 31st December, 1963

SCHEDULE No. 2

	Nominal Value	Book Value
<i>Brought forward</i> .....	R159,365,963	R156,518,160
<b>Municipal — Cape Town</b>		
3½ per cent. 1960/65.....	4,000	4,000
3½ per cent. 1962/67.....	450,000	445,136
3 per cent. 1976.....	200,000	189,510
5 per cent. 1980/85.....	300,000	296,250
<b>Municipal — Durban</b>		
3½ per cent. 1962/72.....	231,000	180,180
3½ per cent. 1965/75.....	90,000	81,787
3½ per cent. 1966/76.....	100,000	100,000
3 per cent. 1967/77.....	668,000	635,065
5 per cent. 1974/79.....	120,000	118,500
<b>Municipal — Bloemfontein</b>		
5 per cent. 1975/80.....	80,000	79,000
<b>Municipal — Germiston</b>		
5 per cent. 1985.....	20,000	19,750
	R161,628,963	R158,667,338
<b>Interest Accrued</b> .....		1,556,701
		R160,224,039
<b>Market Value</b> .....	R162,780,861	

### ALLOCATION OF INVESTMENTS TO UNDERTAKINGS

	Nominal Value	Book Value including Interest accrued
Cape Western Undertaking.....	R17,073,956	R16,944,150
Cape Northern Undertaking.....	1,834,519	1,820,995
Border Undertaking.....	2,492,082	2,472,691
Natal Southern Undertaking.....	14,707,784	14,559,324
Natal Central Undertaking.....	10,486,914	10,396,946
Eastern Transvaal Undertaking.....	6,143,657	6,089,888
Rand and Orange Free State Undertaking.....	99,802,509	98,839,025
Undertaking which has been sold.....	6,500,000	6,525,463
Head Office.....	2,587,542	2,575,557
	R161,628,963	R160,224,039

J. VAN NIEKERK, *Chief Accountant*.

# Electricity Supply Commission

SCHEDULE No. 3

Loans at 31st December, 1963

Loans Nos. 1 and 2 R16,000,000 repaid out of subsequent loans			
Loan No.	Local Registered Stocks	Outstanding	Repaid
3	R1,000,000 4½ per cent. 1953/63.....		R1,000,000
4	R5,000,000 4½ per cent. 1953.....		5,000,000
5	R13,500,000 3½ per cent. 1954/64.....		13,500,000
6	R5,000,000 3½ per cent. 1959/64.....	R 5,000,000	
7	R4,000,000 3½ per cent. 1956/66.....	4,000,000	
8	R4,000,000 3½ per cent. 1957/67.....	4,000,000	
9	R4,000,000 3½ per cent. 1959/64.....	4,000,000	
10	R3,000,000 3½ per cent. 1960/65.....	3,000,000	
11	R4,000,000 3½ per cent. 1961/66.....	4,000,000	
12	R5,000,000 3½ per cent. 1965/70.....	5,000,000	
13	R6,000,000 3 per cent. 1967/73.....	6,000,000	
14	R6,000,000 3 per cent. 1968/74.....	6,000,000	
15	R30,000,000 3½ per cent. 1968/73.....	30,000,000	
16	R6,000,000 3 per cent. 1969/74.....	6,000,000	
17	R6,000,000 3 per cent. 1969/74.....	6,000,000	
18	R10,500,000 3 per cent. 1965/67.....	10,500,000	
19	R6,000,000 3 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 4 per cent. 1975/80.....	16,000,000	
34	R16,000,000 4 per cent. 1975/80.....	16,000,000	
35	R16,500,000 5 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 5 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 6½ per cent. 1982/87.....	18,000,000	
50	R22,000,000 5½ per cent. 1982/87.....	22,000,000	
51	R29,000,000 5 per cent. 1983/88.....	29,000,000	
52	R40,000,000 5 per cent. 1980/83.....		
(Payable in full not later than the 31st January, 1964, in terms of the Prospectus)			
	Fully Paid.....	R37,479,400	
	Partly Paid.....	1,090,005	38,569,405
R596,000,000	Total Local Registered Stocks.....	R575,069,405	R19,500,000

Loan No.	R596,000,000	Brought forward	Outstanding R575,069,405	Repaid R19,500,000
<b>INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT</b>				
20	R21,464,843	\$30,000,000 4 per cent. Repayable by half-yearly instalments 1954/70.....	10,607,157	10,857,686
28	R2,822,075	\$30,000,000 4½ per cent. Repayable by half-yearly instalments 1955/63.....	R21,453,912	
		Less repaid out of local loans.....	18,631,837	
			<u>R2,822,075</u>	2,822,075
48	R9,684,560	\$14,000,000 5½ per cent. Repayable by half-yearly instalments 1963/71.....	R10,011,734	
		Less repaid out of local loans.....	327,174	
			<u>R9,684,560</u>	9,546,935
				137,625
<b>EXPORT-IMPORT BANK OF WASHINGTON</b>				
24	R14,016,587	\$19,600,000 4 per cent. Repayable by half-yearly instalments 1956/70.....	7,576,787	6,439,800
<b>COMMONWEALTH DEVELOPMENT FINANCE COMPANY LIMITED</b>				
30	R4,000,000	5 per cent. Repayable by half-yearly instalments 1954/68.....	1,400,000	2,600,000
<b>SWISS LOAN</b>				
41	R8,274,721	Swiss Francs 50,000,000 5 per cent. Repayable by annual instalments 1965/74	8,274,721	
	<u>R656,262,786</u>		<u>R612,475,005</u>	R42,357,186
		Sundry Loans.....		734,955
				<u>R43,092,141</u>

# Electricity Supply Commission

Redemption Fund Account for the

Year Ended 31st December, 1963

1962	
Repayment of Local Registered Stock..... 3¼ per cent. 1954/64 (Loan No. 5)	R 13,500,000
R154,374,047 Balance as per Balance Sheet.....	161,671,372
18,164,076 1,610,677 2,132,519 13,840,353 13,700,126 6,266,509 89,473,093 2,686,694 6,500,000	Cape Western Undertaking..... R16,969,095 Cape Northern Undertaking..... 1,964,932 Border Undertaking..... 2,537,632 Natal Southern Undertaking..... 14,985,346 Natal Central Undertaking..... 7,587,981 Eastern Transvaal Undertaking..... 6,211,976 Rand and Orange Free State Undertaking..... 102,341,095 Head Office..... 2,573,315 Original Cost of an Undertaking which has been sold..... 6,500,000

R154,374,047

R175,171,372

Johannesburg,  
26th March, 1964.

J. VAN NIEKERK, *Chief Accountant.*

1962		
Balance Brought Forward.....	R154,374,047	R135,400,461
Cape Western Undertaking..... R18,164,076 Cape Northern Undertaking..... 1,610,677 Border Undertaking..... 2,132,519 Natal Southern Undertaking..... 13,840,353 Natal Central Undertaking..... 13,700,126 Eastern Transvaal Undertaking..... 6,266,509 Rand and Orange Free State Undertaking..... 89,473,093 Head Office..... 2,686,694 Assets Sold..... 6,500,000		15,855,669 1,281,242 1,764,775 11,947,320 12,638,294 5,173,309 77,664,689 2,575,163 6,500,000
Amounts Contributed During the Year as per Revenue Accounts.....	13,347,806	12,325,451
Cape Western Undertaking..... 1,553,351 Cape Northern Undertaking..... 267,844 Border Undertaking..... 286,652 Natal Southern Undertaking..... 1,296,243 Natal Central Undertaking..... 698,236 Eastern Transvaal Undertaking..... 1,103,064 Rand and Orange Free State Undertaking..... 8,142,416		1,475,799 241,304 271,405 1,237,179 479,117 866,204 7,754,443
Other Contributions.....	71,634	59,747
Proceeds of Sales of Fixed Property.....	229,837	105,627
Profit on Redemption of Investment.....	62,303	—
Interest Earned on Investments.....	7,085,745	6,482,761
	<u>R175,171,372</u>	<u>R154,374,047</u>

R175,171,372

R154,374,047

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 27th May, 1964.

HALSEY, BUTTON & PERRY,  
ALEX. AIKEN & CARTER  
*Registered Accountants and Auditors.*

# Electricity Supply Commission

Reserve Fund Account for the

Year Ended 31st December, 1963

1962		R989,539
R1,192,977	<b>Expenditure During the Year on Replacements and Betterment.....</b>	
212,094	Cape Western Undertaking.....	R217,255
667	Cape Northern Undertaking.....	2,220
14,020	Border Undertaking.....	25,510
159,804	Natal Southern Undertaking.....	62,239
329,631	Natal Central Undertaking.....	206,795
14,480	Eastern Transvaal Undertaking.....	20,859
462,281	Rand and Orange Free State Undertaking.....	454,661
		<hr/>
35,782,754	<b>Balance as per Balance Sheet.....</b>	42,642,861
		<hr/>
3,601,164	Cape Western Undertaking.....	4,160,146
708,126	Cape Northern Undertaking.....	940,042
521,059	Border Undertaking.....	614,614
2,341,793	Natal Southern Undertaking.....	2,915,463
2,659,796	Natal Central Undertaking.....	2,895,962
1,670,700	Eastern Transvaal Undertaking.....	2,252,085
24,280,116	Rand and Orange Free State Undertaking.....	28,864,549
		<hr/>
<u>R36,975,731</u>		<u>R43,632,400</u>

	1962	1962
<b>Balance Brought Forward.....</b>	R35,782,754	R29,903,360
		<hr/>
Cape Western Undertaking.....	R3,601,164	3,144,451
Cape Northern Undertaking.....	708,126	498,845
Border Undertaking.....	521,059	420,865
Natal Southern Undertaking.....	2,341,793	1,894,039
Natal Central Undertaking.....	2,659,796	2,582,169
Eastern Transvaal Undertaking.....	1,670,700	1,248,181
Rand and Orange Free State Undertaking.....	24,280,116	20,114,810
		<hr/>
<b>Amounts set aside during the year as per Revenue Accounts.....</b>	5,843,000	5,385,000
		<hr/>
Cape Western Undertaking.....	582,000	495,000
Cape Northern Undertaking.....	192,000	180,000
Border Undertaking.....	90,000	90,000
Natal Southern Undertaking.....	501,000	501,000
Natal Central Undertaking.....	300,000	270,000
Eastern Transvaal Undertaking.....	503,000	363,000
Rand and Orange Free State Undertaking.....	3,675,000	3,486,000
		<hr/>
<b>Interest Earned on Investments.....</b>	2,001,356	1,687,371
<b>Profit on Redemption of Investments.....</b>	5,290	—
		<hr/>
	<u>R43,632,400</u>	<u>R36,975,731</u>



# Electricity Supply Commission

ACCOUNT No. 3

Cape Western Undertaking

Revenue Account for the Year

Ended 31st December, 1963

1962		
R3,855,134	Generation.....	R4,424,021
2,986,770	Operation—	
70,100	Fuel.....	R3,494,967
333,704	Water and Stores.....	80,398
9,392	Salaries and Wages.....	351,379
58,954	Other Expenses.....	19,753
357,745	Maintenance—	
38,469	Stores.....	52,030
	Salaries and Wages.....	375,290
	Other Expenses.....	50,204
728,571	Distribution.....	750,079
74,237	Operation and Maintenance—	
527,427	Stores.....	89,766
126,907	Salaries and Wages.....	536,275
	Other Expenses.....	124,038
987,649	General Expenses.....	1,101,120
309,792	Local Administration and Technical Management.....	391,912
521,448	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.).....	535,190
88,939	Head Office Administration Expenses.....	97,010
67,470	Head Office Engineering Expenses.....	77,008
5,003,612	Capital Charges.....	5,158,699
2,865,839	Interest.....	2,864,060
1,475,799	Redemption Fund.....	1,553,351
166,974	Instalments and Provision for Repayment of Overseas and Sundry Loans.....	159,288
495,000	Reserve Fund.....	582,000
10,574,966		11,433,919
214,890	Balance carried down.....	197,909
<u>R10,789,856</u>		<u>R11,631,828</u>
R9,111	Balance brought forward.....	R403,688
205,779	Balance as per Balance Sheet.....	R403,688
<u>R214,890</u>		<u>R403,688</u>

Johannesburg,  
26th March, 1964.

J. VAN NIEKERK, *Chief Accountant.*

1962		
R11,592,820	Sales of Electricity.....	R10,753,885
R3,583,637	Traction Supplies.....	3,544,960
2,165,378	Bulk Supplies.....	2,098,784
3,434,436	Industrial Supplies.....	2,890,723
2,409,369	Domestic and Lighting Supplies.....	2,219,418
39,008	Other Revenue.....	35,971
<u>R11,631,828</u>		<u>R10,789,856</u>
R205,779	Balance brought forward.....	R214,890
197,909	Balance brought down.....	R214,890
<u>R403,688</u>		<u>R214,890</u>

Referred to in our report of 27th May, 1964.

HALSEY, BUTTON & PERRY  
ALEX. AIKEN & CARTER  
*Registered Accountants and Auditors.*

# Electricity Supply

Cape Northern

Revenue Account for the Year

1962					
R1,091,629	<b>Generation</b> .....			R1,257,269	
642,221	Proportion of Pooled Costs of Rand and Orange Free State and Eastern Transvaal Undertakings	R791,169			
77,947	Proportion of Transmission Costs charged by Rand and Orange Free State Undertaking....	92,081			
	Operation—				
222,872	Fuel.....	224,783			
28,094	Water and Stores.....	30,391			
59,089	Salaries and Wages.....	60,632			
16,698	Other Expenses.....	11,757			
	Maintenance—				
3,668	Stores.....	3,441			
35,422	Salaries and Wages.....	38,292			
5,618	Other Expenses.....	4,723			
83,014	<b>Distribution</b> .....			104,628	
	Operation and Maintenance—				
14,910	Stores.....	24,598			
41,297	Salaries and Wages.....	53,118			
26,807	Other Expenses.....	26,912			
115,769	<b>General Expenses</b> .....			127,048	
48,370	Local Administration and Technical Management.....	52,675			
45,825	General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.).....	50,371			
12,267	Head Office Administration Expenses.....	13,381			
9,307	Head Office Engineering Expenses.....	10,621			
894,237	<b>Capital Charges</b> .....			988,173	
471,995	Interest.....	528,028			
241,304	Redemption Fund.....	267,844			
938	Instalments and Provision for Repayment of Overseas Loans.....	301			
180,000	Reserve Fund.....	192,000			
2,184,649				2,477,118	
57,511	Balance carried down.....			219,477	
<u>R2,242,160</u>				<u>R2,696,595</u>	
R361,394	Balance as per Balance Sheet.....			R580,871	
<u>R361,394</u>				<u>R580,871</u>	

J. VAN NIEKERK, *Chief Accountant.*

Johannesburg,  
26th March, 1964.

# Commission

Undertaking

Ended 31st December, 1963

ACCOUNT No. 4

					1962
	<b>Sales of Electricity</b> .....			R2,693,332	R2,239,596
	Bulk Supplies.....	R729,255			637,747
	Mining Supplies.....	1,383,267			1,048,963
	Industrial Supplies.....	439,297			406,010
	Domestic and Lighting Supplies.....	141,513			146,876
	<b>Other Revenue</b> .....			3,263	2,564
				<u>R2,696,595</u>	<u>R2,242,160</u>
	Balance brought forward.....			R361,394	R303,883
	Balance brought down.....			219,477	57,511
				<u>R580,871</u>	<u>R361,394</u>

Referred to in our report of 27th May, 1964.

HALSEY, BUTTON & PERRY  
ALEX. AIKEN & CARTER  
*Registered Accountants and Auditors.*

# Electricity Supply Commission

ACCOUNT No. 5

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 Border
 

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 Undertaking
 

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Revenue Account for the Year

Ended 31st December, 1963

1962				1962
R908,267	<b>Generation</b> .....		R1,000,963	R2,221,220
	Operation—			
653,301	Fuel.....	R735,022		
9,950	Water and Stores.....	11,253		
111,914	Salaries and Wages.....	127,943		
9,074	Other Expenses.....	2,275		
	Maintenance—			
27,016	Stores.....	24,684		
85,006	Salaries and Wages.....	84,142		
12,006	Other Expenses.....	15,644		
	<b>Electricity Purchased</b> .....		1,279	
92,724	<b>Distribution</b> .....		114,892	
	Operation and Maintenance—			
10,613	Stores.....	15,939		
64,105	Salaries and Wages.....	77,338		
18,006	Other Expenses.....	21,615		
	<b>General Expenses</b> .....		166,123	
150,179	Local Administration and Technical Management.....	62,626		
59,630	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.).....	85,495		
74,369	Head Office Administration Expenses.....	10,036		
9,200	Head Office Engineering Expenses.....	7,966		
6,980				
	<b>Capital Charges</b> .....		923,953	
520,837	Interest.....	545,268		
271,405	Redemption Fund.....	286,652		
	Instalments and Provision for Repayment of Overseas and Sundry Loans.....	2,033		
5,373	Reserve Fund.....	90,000		
90,000				
	Balance carried down.....		2,207,210	
			17,274	
<u>R2,038,799</u>			<u>R2,224,484</u>	
R17,094	Balance brought down.....			R17,274
142,558	Balance brought forward.....		R159,652	
<u>R159,652</u>			<u>R159,652</u>	
				<u>R2,038,799</u>
				R159,652
				R159,652

R1,773,979	<b>Sales of Electricity</b> .....	R2,221,220	R2,019,647
	Bulk Supplies.....		1,602,563
	Industrial Supplies.....		158,785
	Domestic and Lighting Supplies.....		258,299
	<b>Other Revenue</b> .....	3,264	2,058
	Balance carried down.....		17,094

Referred to in our report of 27th May, 1964.

# Electricity Supply

Natal Southern

Revenue Account for the Year

1962		R10,035,586
R9,268,733	<b>Generation.....</b>	
9,264,914	Proportion of Pooled Costs (statement attached)	R10,032,433
	Other Operation and Maintenance Costs	
	Operation—	
969	Fuel.....	854
34	Stores.....	18
1,576	Salaries and Wages.....	1,366
43	Other Expenses.....	40
	Maintenance—	
96	Stores.....	165
1,013	Salaries and Wages.....	688
88	Other Expenses.....	22
92,010	<b>Electricity Purchased.....</b>	110,311
473,282	<b>Distribution.....</b>	530,762
	Operation and Maintenance—	
63,351	Stores.....	89,809
206,624	Salaries and Wages.....	211,365
223,011	Other Expenses.....	251,491
		552,665
492,986	Less Charged to Pooled Costs (Interconnector)	21,903
19,704		
229,774	<b>General Expenses.....</b>	244,254
241,570	Local Administration and Technical Management.....	255,075
	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	239,501
230,225	Head Office Administration Expenses.....	97,010
88,939	Head Office Engineering Expenses.....	77,008
67,470		668,594
	Less Charged to Pooled Costs.....	424,340
628,204		
398,430		
655,769	<b>Capital Charges.....</b>	724,939
2,414,968	Interest.....	2,509,265
1,237,179	Redemption Fund.....	1,296,243
	Instalments and Provision for Repayment of Overseas Loans.....	201,130
198,169	Reserve Fund.....	501,000
501,000		4,507,638
	Less Charged to Pooled Costs.....	3,782,699
4,351,316		11,645,852
3,695,547	Balance carried down.....	187,236
R10,719,568		R11,833,088
R91,149	Balance brought down.....	R279,785
92,549	Balance as per Balance Sheet.....	R279,785
R183,698		

Johannesburg,  
26th March, 1964.

J. VAN NIEKERK, *Chief Accountant.*

# Commission

Undertaking

Ended 31st December, 1963

ACCOUNT No. 6

1962		R10,621,971
R11,826,616	<b>Sales of Electricity.....</b>	
	Traction Supplies.....	926,392
R1,163,711	Bulk Supplies.....	7,680,578
8,573,568	Industrial Supplies.....	1,455,941
1,551,569	Domestic and Lighting Supplies.....	559,060
537,768		
	<b>Other Revenue.....</b>	6,448
	Other Revenue.....	14,977
	Less Credited to Pooled Costs.....	8,505
	Balance carried down.....	91,149
R11,833,088		R10,719,568
	Balance brought forward.....	R183,698
	Balance brought down.....	187,236
		R183,698

Referred to in our Report of 27th May, 1964.

HALSEY, BUTTON & PERRY  
ALEX. AIKEN & CARTER  
*Registered Accountants and Auditors.*

# Electricity Supply

Natal Central

Revenue Account for the Year

1962				
R4,382,626	<b>Generation</b> .....		R4,776,755	
	Proportion of Pooled Costs (statement attached)			
332,864	<b>Distribution</b> .....		375,980	
	Operation and Maintenance—			
52,355	Stores.....	R72,785		
240,477	Salaries and Wages.....	276,924		
55,805	Other Expenses.....	43,470		
348,637		393,179		
15,773	Less Charged to Pooled Costs (Interconnector)	17,199		
349,765	<b>General Expenses</b> .....		293,851	
	Local Administration and Technical Management.....	169,364		
161,046	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	270,683		
286,119	Head Office Administration Expenses.....	86,975		
79,739	Head Office Engineering Expenses.....	69,041		
60,490		596,063		
587,394	Less Charged to Pooled Costs.....	302,212		
237,629				
804,764	<b>Capital Charges</b> .....		703,141	
	Interest.....	1,398,503		
1,152,568	Redemption Fund.....	698,236		
479,117	Instalments and Provision for Repayment of Overseas Loans.....	71,019		
69,787	Reserve Fund.....	300,000		
270,000		2,467,758		
1,971,472	Less Charged to Pooled Costs.....	1,764,617		
1,166,708				
51,375	Balance carried down.....	6,149,727		
		288,290		
R5,921,394		R6,438,017		
R460,150	Balance brought forward.....	R408,775		
R460,150		R408,775		

Johannesburg,  
26th March, 1964.

J. VAN NIEKERK, *Chief Accountant.*

# Commission

Undertaking

Ended 31st December, 1963

ACCOUNT No. 7

				1962
	<b>Sales of Electricity</b> .....		R6,388,206	R5,902,576
	Traction Supplies.....	R2,369,644		2,249,546
	Bulk Supplies.....	2,498,099		2,247,706
	Mining Supplies.....	519,959		456,570
	Industrial Supplies.....	677,057		585,433
	Domestic and Lighting Supplies.....	323,447		363,321
	<b>Other Revenue</b> .....		49,811	18,818
	Other Revenue.....	81,444		36,187
	Less Credited to Pooled Costs.....	31,633		17,369

Referred to in our Report of 27th May, 1964.

HALSEY, BUTTON & PERRY  
ALEX. AIKEN & CARTER  
*Registered Accountants and Auditors.*

## Electricity Supply Commission

Natal Southern and Natal Central Undertakings

### Statement of Pooled Costs and Allocation for the Year Ended 31st December, 1963

1962		
R8,139,283	<b>Generation</b> .....	R8,536,356
<div style="border: 1px solid black; padding: 2px;">           6,468,471            208,778            596,643            67,753             233,904            525,466            38,268         </div>	Operation— Fuel..... R6,692,931 Water and Stores..... 216,201 Salaries and Wages..... 653,946 Other Expenses..... 80,200  Maintenance— Stores..... 263,514 Salaries and Wages..... 574,667 Other Expenses..... 54,897	
35,477	<b>Interconnector</b> .....	39,102
<div style="border: 1px solid black; padding: 2px;">           2,201            15,128            18,148         </div>	Operation and Maintenance— Stores..... 1,956 Salaries and Wages..... 10,852 Other Expenses..... 26,294	
636,059	<b>General Expenses</b> .....	726,552
<div style="border: 1px solid black; padding: 2px;">           170,374             249,948             215,737         </div>	Local Administration and Technical Management..... 181,027 General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)..... 287,499 Head Office Administration and Engineering Expenses..... 258,026	
4,862,255	<b>Capital Charges</b> .....	5,547,316
<div style="border: 1px solid black; padding: 2px;">           2,603,293            1,397,407             267,955            593,600         </div>	Interest..... 3,006,191 Redemption Fund..... 1,629,976 Instalments and Provision for Repayment of Overseas Loans..... 272,149 Reserve Fund..... 639,000	
<u>R13,673,074</u>		<u>R14,849,326</u>

Johannesburg,  
26th March, 1964.

J. VAN NIEKERK, *Chief Accountant.*

	1962	1962
<b>Sundry Revenue</b> .....	R40,138	R25,534
Natal Southern Undertaking..... R8,505 Natal Central Undertaking..... 31,633	<div style="border: 1px solid black; padding: 2px;">           8,165            17,369         </div>	
<b>Allocation</b> .....	14,809,188	13,647,540
Natal Southern Undertaking..... 10,032,433 Natal Central Undertaking..... 4,776,755	<div style="border: 1px solid black; padding: 2px;">           9,264,914            4,382,626         </div>	
	<u>R14,849,326</u>	<u>R13,673,074</u>

Referred to in our Report of 27th May, 1964.

HALSEY, BUTTON & PERRY  
ALEX. AIKEN & CARTER  
*Registered Accountants and Auditors.*

# Electricity Supply

Eastern Transvaal

Revenue Account for the Year

1962 R3,144,889	<b>Generation</b> .....		R3,763,680
3,130,020	Proportion of Pooled Costs (statement attached)	R3,745,835	
	Other Operation and Maintenance Costs—		
	Operation—		
1,391	Water and Stores.....	111	
11,714	Salaries and Wages.....	12,212	
429	Other Expenses.....	1,563	
	Maintenance—		
61	Stores.....	1,308	
1,155	Salaries and Wages.....	2,617	
119	Other Expenses.....	34	
237,651	<b>Electricity Purchased</b> .....		263,147
19,675	Electricity Purchased.....	46,293	
217,976	Electricity Supplied by Rand and Orange Free State Undertaking.....	216,854	
270,223	<b>Distribution</b> .....		282,709
	Operation and Maintenance—		
28,292	Stores.....	36,362	
167,487	Salaries and Wages.....	174,930	
74,444	Other Expenses.....	71,417	
284,172	<b>General Expenses</b> .....		327,704
151,925	Local Administration and Technical Management.....	183,352	
	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.).....	282,131	
230,958	Head Office Administration Expenses.....	110,391	
101,207	Head Office Engineering Expenses.....	87,629	
76,776			
560,866		663,503	
276,694	Less Charged to Pooled Costs.....	335,799	
1,266,547	<b>Capital Charges</b> .....		1,472,807
1,721,063	Interest.....	2,487,318	
866,204	Redemption Fund.....	1,103,064	
	Instalments and Provision for Repayment of Overseas Loans.....	117,863	
39,402	Reserve Fund.....	503,000	
363,000			
2,989,669		4,211,245	
1,723,122	Less Charged to Pooled Costs.....	2,738,438	
5,203,482			6,110,047
71,971	Balance carried down.....		99,159
<u>R5,275,453</u>			<u>R6,209,206</u>
R331,871	Balance as per Balance Sheet.....		R431,030
<u>R331,871</u>			<u>R431,030</u>

Johannesburg,  
26th March, 1964.

J. VAN NIEKERK, *Chief Accountant*.

# Commission

Undertaking

ended 31st December, 1963

ACCOUNT No. 8

	<b>Sales of Electricity</b> .....		R6,115,612	1962 R5,186,859
	Traction Supplies.....	R458,685		453,983
	Bulk Supplies.....	341,880		311,204
	Mining Supplies.....	2,602,025		2,329,379
	Industrial Supplies.....	2,396,398		1,836,610
	Domestic and Lighting Supplies.....	316,624		255,683
	<b>Other Revenue</b> .....		93,594	88,594
	Other Revenue.....	139,001		123,423
	Less Credited to Pooled Costs.....	45,407		34,829

Referred to in our Report of 27th May, 1964.

HALSEY, BUTTON & PERRY  
ALEX. AIKEN & CARTER  
*Registered Accountants and Auditors.*

## Electricity Supply

Rand and Orange Free

Revenue Account for the Year

1962			1962
R44,761,447	<b>Generation</b> .....		R46,922,882
44,220,941	Proportion of Pooled Costs (statement attached)	R46,427,909	
	Other Operation and Maintenance Costs		
	Operation—		
159,419	Fuel.....	165,306	
28,817	Water and Stores.....	29,428	
122,876	Salaries and Wages.....	119,544	
1,840	Other Expenses.....	1,903	
	Maintenance—		
40,527	Stores.....	30,284	
183,745	Salaries and Wages.....	145,815	
3,282	Other Expenses.....	2,693	
2,253,782	<b>Distribution</b> .....		2,284,926
	Operation and Maintenance—		
	Stores.....	524,013	
511,939	Salaries and Wages.....	1,812,845	
1,739,171	Other Expenses.....	111,919	
151,235			
2,402,345		2,448,777	
	Less charged to:—		
70,616	Pooled Costs (Interconnector).....	71,770	
77,947	Cape Northern Undertaking.....	92,081	
901,589	<b>General Expenses</b> .....		1,023,108
850,715	Local Administration and Technical Management.....	903,140	
	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	1,727,754	
1,550,397	Head Office Administration Expenses.....	254,234	
233,082	Head Office Engineering Expenses.....	201,813	
176,818			
2,811,012		3,086,941	
1,909,423	Less Charged to Pooled Costs.....	2,063,833	
8,913,889	<b>Capital Charges</b> .....		9,769,117
13,990,091	Interest.....	14,728,833	
7,754,443	Redemption Fund.....	8,142,416	
	Instalments and Provision for Repayment of Overseas Loans.....	2,684,987	
2,586,487	Reserve Fund.....	3,675,000	
3,486,000			
27,817,021		29,231,236	
18,903,132	Less Charged to Pooled Costs.....	19,462,119	
56,830,707			60,000,033
293,258	Balance carried down.....		382,168
R57,123,965			R60,382,201
R3,054,080	Balance as per Balance Sheet.....		R3,436,248
R3,054,080			R3,436,248

Johannesburg,  
26th March, 1964.J. VAN NIEKERK, *Chief Accountant.*

## Commission

State Undertaking

Ended 31st December, 1963.

ACCOUNT No. 9

	1962	1962
<b>Sales of Electricity</b> .....	R58,514,433	R55,266,960
Traction Supplies.....	R2,539,899	2,415,346
Bulk Supplies.....	8,079,003	7,178,253
Mining Supplies.....	34,968,449	34,332,582
Industrial Supplies.....	12,052,686	10,659,221
Domestic and Lighting Supplies.....	874,396	681,558
<b>Sales of Air and Steam</b> .....	1,601,062	1,587,299
<b>Electricity Supplied to Eastern Transvaal Undertaking</b> .....	60,115,495	56,854,259
<b>Other Revenue</b> .....	216,854	217,976
Other Revenue.....	49,852	51,730
Less Credited to Pooled Costs.....	253,816	252,714
	203,964	200,984

Referred to in our Report of 27th May, 1964.

HALSEY, BUTTON & PERRY  
ALEX. AIKEN & CARTER  
*Registered Accountants and Auditors.*



## Electricity Supply

Rand and Orange Free State and

Statement of Pooled Costs and Allocation

1962		1962
R25,340,507	<b>Generation</b> .....	R26,528,137
	<b>Operation—</b>	
18,947,222	Fuel.....	R19,950,431
333,419	Water and Stores.....	317,442
2,386,068	Salaries and Wages.....	2,446,012
186,356	Other Expenses.....	188,640
	<b>Maintenance—</b>	
1,190,209	Stores.....	1,331,501
2,150,387	Salaries and Wages.....	2,154,070
146,846	Other Expenses.....	140,041
5,501	<b>Electricity Purchased</b> .....	14,188
70,616	<b>Interconnector</b> .....	71,770
	<b>Operation and Maintenance—</b>	
15,140	Stores.....	15,535
50,046	Salaries and Wages.....	52,373
5,430	Other Expenses.....	3,862
2,186,117	<b>General Expenses</b> .....	2,399,632
	<b>Local Administration and Technical Management</b> .....	718,732
682,388	General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.).....	1,253,915
1,120,344	Head Office Administration and Engineering Expenses.....	426,985
383,385		
20,626,254	<b>Capital Charges</b> .....	22,200,557
	<b>Interest</b> .....	11,200,812
10,335,518	Redemption Fund.....	5,818,499
5,443,121	Instalments and Provision for Repayment of Overseas Loans.....	2,567,952
2,421,843	Reserve Fund.....	2,613,294
2,425,772		
<u>R48,228,995</u>		<u>R51,214,284</u>

## Commission

Eastern Transvaal Undertakings

for the Year Ended 31st December, 1963

	1962	1962
<b>Sundry Revenue</b> .....	R249,371	R235,813
<b>Allocation</b> .....	50,964,913	47,993,182
Rand and Orange Free State Undertaking.....	R46,427,909	44,220,941
Eastern Transvaal Undertaking.....	3,745,835	3,130,020
Cape Northern Undertaking.....	791,169	642,221
	<u>R51,214,284</u>	<u>R48,228,995</u>

# Electricity Supply Commission

## ANNEXURE B

### POWER STATIONS: PRINCIPAL EQUIPMENT INSTALLED AS AT 31ST DECEMBER, 1963.

Undertaking and Area (Square Miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS		
			Boilers Thousand lb/hr	Generators MW	No.	Continuous Maximum Rating Each Thousand lb/hr	No.	Normal Rating Each MW	No.	Normal Rating Each MW	
Border 21,500	King William's Town	Steam	10·0 36·0	3·0 0·5	1 3	10·0 12·0	2 1	1·5 0·5			
	King William's Town	Oil	46·0	3·5	4		3				
	King William's Town Total		46·0	1·0			1	1·0			
	West Bank No. 1	Steam	129·0 220·0	1·5 8·0 22·5	6 4	21·5 55·0	1 2 3	1·5 4·0 7·5			
	West Bank No. 1 Total		349·0	32·0	10		6				
	West Bank No. 2	Steam	510·0	45·0	3	170·0	3	15·0			
	West Bank No. 1 and 2 Total		859·0	77·0	13		9				
	TOTAL BORDER UNDERTAKING		Steam & Oil	905·0	81·5	17		13			

Undertaking and Area (Square Miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb/hr	Generators MW	No.	Continuous Maximum Rating Each Thousand lb/hr	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Cape Western 23,600	Salt River No. 1	Steam	120-0 600-0	30-0 60-0 0-3	2 6	60-0 100-0	3 3	10-0 20-0	1	0-3
	Salt River No. 1 Total		720-0	90-3	8		6		1	
	Salt River No. 2	Steam	1,560-0	120-0	6	260-0	4	30-0		
	Salt River No. 1 and 2 Total		2,280-0	210-3	14		10		1	
	Hex River	Steam	800-0 550-0	60-0 60-0	4 2	200-0 275-0	3 2	20-0 30-0		
	Hex River Total		1,350-0	120-0	6		5			
	TOTAL CAPE WESTERN UNDERTAKING	Steam	3,630-0	330-3	20				15	
Natal Central 21,400	Colenso No. 1 and 2	Steam	480-0 320-0 900-0 400-0	60-0 75-0 30-0	8 4 5 2	60-0 80-0 180-0 200-0	5 3 1	12-0 25-0 30-0		
	Colenso No. 1 and 2 Total		2,100-0	165-0	19		9			
	Ingagane	Steam	900-0	100-0	1	900-0	1	100-0		
	TOTAL NATAL CENTRAL UNDERTAKING	Steam	3,000-0	265-0	20				10	

Undertaking and Area (Square Miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb/hr	Generators MW	No.	Continuous Maximum Rating Each Thousand lb/hr	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Natal Southern 8,200	Congella No. 1 and 2	Steam	360·0 400·0 1,600·0	36·0 20·0 30·0 120·0	6 4 8	60·0 100·0 200·0	3 1 1 3	12·0 20·0 30·0 40·0		
	Congella No. 1 and 2 Total		2,360·0	206·0	18		8			
	Port Shepstone	Oil		1·4 2·0				2 2	0·7 1·0	
	Port Shepstone Total			3·4			4			
	Umgeni	Steam	1,440·0 1,300·0	120·0 120·0	8 5	180·0 260·0	4 2	30·0 60·0		
	Umgeni Total		2,740·0	240·0	13		6			
	TOTAL NATAL SOUTHERN UNDERTAKING	Steam & Oil	5,100·0	449·4	31			18		
	TOTAL NATAL CENTRAL AND SOUTHERN UNDERTAKING	Steam & Oil	8,100·0	714·4	51			28		
	Komati	Steam	3,600·0	400·0	4	900·0		4	100·0	
	Sabie Gorge	Hydro		1·35				3	0·45	
Eastern Transvaal 35,200	Witbank	Steam	1,400·0 160·0	120·0 8·0	20 2	70·0 80·0	6	20·0	1	8·0
	Witbank Total		1,560·0	128·0	22		6		1	
	TOTAL EASTERN TRANSVAAL UNDERTAKING	Steam and Hydro	5,160·0	529·35	26			13		1

Undertaking and Area (Square Miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb/hr	Generators MW	No.	Continuous Maximum Rating Each Thousand lb/hr	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Rand & O.F.S. 55,500	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
	Klip Total		4,500·0	424·0	25		12		4	
	Rosherville	Steam	532·0 384·0	38·4	14 8	38·0 48·0	4	9·6		
	Rosherville Total		916·0	38·4	22		4			
	Taaibos	Steam	4,640·0	480·0	8	580·0	8	60·0		
	Vaal	Steam	3,420·0	297·0 21·0	18	190·0	9	33·0	3	7·0
	Vaal Total		3,420·0	318·0	18		9		3	
	Vereeniging	Steam	900·0 120·0	60·0	20 2	45·0 60·0	3	20·0		
	Vereeniging Total		1,080·0	90·0	6	180·0	3	30·0		
	Vierfontein	Steam	2,100·0	150·0	28		6			
	Wilge	Steam	3,990·0	360·0	19	210·0	12	30·0		
	Wilge Total		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 RAND & O.F.S. UNDERTAKING		Steam	26,646·0	2,490·4	137			64	7	

Undertaking and Area (Square Miles)	Electric Power Station	Type	STATION CAPACITY		BOILERS		MAIN GENERATORS		HOUSE SETS	
			Boilers Thousand lb/hr	Generators MW	No.	Continuous Maximum Rating Each Thousand lb/hr	No.	Normal Rating Each MW	No.	Normal Rating Each MW
Cape Northern 26,700	Central Kimberley	Steam	240·0 300·0	3·0 15·0 12·0	8 4	30·0 75·0	1 3 2	3·0 5·0 6·0		
	Central Kimberley Total		540·0	30·0	12		6			
	TOTAL ALL ESCOM	Oil Hydro Steam Steam	44,981·0 44,981·0	4·4 1·35 4,112·9 57·3	263 263		5 3 131 139		9 9	
<b>MAJOR ITEMS OF PLANT COMMISSIONED 1963</b>										
Border	West Bank No. 2	Steam		15·0			1	15·0		
Cape Western	Hex River	Steam	275·0	30·0	1	275·0	1	30·0		
Natal Central	Ingagane	Steam	900·0	100·0	1	900·0	1	100·0		
Eastern Transvaal	Komati	Steam	1,800·0	200·0	2	900·0	2	100·0		
Rand & O.F.S.	Highveld	Steam	1,100·0	120·0	2	550·0	2	60·0		
	TOTAL ALL ESCOM	Steam	4,075·0	465·0	6		7			

**TRANSMISSION LINES AND CABLES: CIRCUIT MILES (EXCLUDING SERVICE CONNECTIONS ON RETICULATION SYSTEMS) AT 31st DECEMBER 1963.**

(a) TRANSMISSION LINES

Undertaking	275kV	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	Totale
Border.....				107·10		67·70	93·81	524·74		3·71		84·08	881·14
Cape Eastern.....		289·94		264·93			·50	605·31				18·72	1,179·40
Cape Northern...		497·107		632·258		145·909		1,635·573	292·764			1,013·359	4,216·970
Cape Western....		285·93		57·70			793·85	794·01	39·17	8·40	42·60	141·59	2,635·170
Eastern Transvaal	120·6		351·32			227·25	34·30	1,036·33	253·93		0·95	174·120	2,404·89
Natal Central.....		75·17	602·84			96·44		752·91	42·84	0·29		241·41	1,431·13
Natal Southern..		117·53	179·71					994·65	201·29		5·62	461·10	7,362·36
Rand & O.F.S....	426·17	1,267·13	2,581·97		1,261·49		162·94						
Totals.....	546·77	2,532·807	3,715·84	1,061·988	1,261·49	537·299	1,085·400	6,343·523	829·994	12·40	49·170	2,134·379	20,111·060

(b) UNDERGROUND CABLES

Border.....							0·32	23·24		2·34		6·48	32·38
Cape Eastern.....													
Cape Northern...						69·227		108·811	4·275	2·128		95·017	306·963
Cape Western....		4·081		23·324		19·24		15·08	1·29		1·04	59·20	95·85
Eastern Transvaal						4·46		48·44	49·61		0·010	60·54	158·60
Natal Central.....					4·42		80·89	41·073	14007			190127	78·73
Natal Southern..								55·60	160·70			63·64	365·25
Rand & O.F.S....													
Totals.....		4·081		23·324	4·42	92·927	81·21	292·244	229·945	4·468	1·050	304·004	1,037·673

## STATEMENT No. 1. (Cont)

## CAPACITY OF TRANSFORMERS IN SERVICE AT 31st DECEMBER, 1963.

Undertaking	Number	MVA
Border.....	424	104·9
Cape Eastern.....	—	—
Cape Northern.....	1,161	374·9
Cape Western.....	4,357	1198·7
Eastern Transvaal.....	2,316	1185·6
Natal Central.....	2,340	1,077·4
Natal Southern.....	1,434	821·3
Rand & O.F.S.....	5,405	14,971·5
At Compressor Stations, Rand.....	40	324·6
<b>TOTALS.....</b>	<b>17,477</b>	<b>20,058·9</b>
10 kVA and under .. .. .	6,379	Transformers
Over 10 and under 100 .. .. .	5,829	..
100 and over but under 200 .. .. .	983	..
200 and over but under 500 .. .. .	887	..
500 and over but under 1,000 .. .. .	740	..
1,000 and over but under 10,000 .. .. .	2,203	..
10,000 and over but under 20,000 .. .. .	239	..
20,000 and over .. .. .	217	..
<b>TOTAL .. .. .</b>	<b>17,477</b>	<b>..</b>

## STATEMENT No. 2.

## PRINCIPAL EQUIPMENT ON ORDER AS AT 31st DECEMBER 1963.

Undertaking	Electric Power Stations	BOILERS		GENERATORS	
		No.	Continuous Maximum Rating Each Thousand lb/hr	No.	Normal Rating Each MW
Border.....	—	—	—	—	—
Cape Eastern.....	—	—	—	—	—
Cape Northern.....	—	—	—	—	—
Cape Western.....	—	—	—	—	—
Eastern Transvaal.....	{ Camden { Komati	2	1,800	2	200
		{ 1 { 4	900 1,125	1 4	100 125
Natal Central.....	—	1	900	1	100
Natal Southern.....	—	—	—	—	—
Rand.....	—	—	—	—	—

## SUMMARY:

Number of boilers .. .. .	8 .. .. .	C.M.R. 9,900,000 lb/hr
Number of Generators .. .. .	8 .. .. .	Total Rating 1,100 MW



## STATEMENT No. 3

UNITS SOLD BY THE UNDERTAKINGS TO ALL CONSUMERS DURING THE PAST THIRTY-NINE YEARS.

Million Units

Year	Border	Cape Northern	Cape Western	Eastern Transvaal	Klip	Natal Central	Natal Southern	Rand & O.F.S.	Sabie	Vaal	Totals
1926			0.3	160.0		0.7			0.7		161.7
1927			5.8	439.1		104.2			1.9		551.0
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		161.1	103.9		6.6		867.1
1932			64.3	610.3		100.3	109.8		6.1		890.7
1933			100.7	639.4		109.2	118.5		6.3		974.1
1934			73.6	648.2		124.9	131.1		7.3		985.2
1935			80.0	727.9		154.3	149.9		7.2		1,119.2
1936			85.8	696.4	557.0	171.5	170.5		6.9		1,688.0
1937			94.0	684.5	1,349.9	210.6	189.4		7.2		2,535.6
1938			98.8	768.1	1,666.9	234.9	209.5		7.2		2,985.5
1939			106.5	767.7	2,193.2	266.2	233.7		6.4		3,573.7
1940			119.8	853.3	2,566.5	281.1	242.7		6.7		4,070.2
1941			136.2	862.6	2,675.9	302.4	270.3		6.6		4,254.0
1942			151.8	873.4	2,707.8	307.7	273.7		6.3		4,320.8
1943			145.7	849.1	2,669.1	312.4	293.4		5.9		4,275.6
1944			158.7	889.2	2,703.6	336.0	321.6		6.7		4,415.8
1945			165.9	830.7	2,643.0	333.2	348.8		6.6	377.9	4,706.1
1946			184.6	896.9	2,614.3	347.0	369.7		7.4	582.5	5,002.4
1947			198.6	887.7	2,547.2	346.0	402.6		7.6	668.6	5,114.5
1948	56.2		222.4	633.2	1,207.4	367.9	448.7	2,185.7	7.3	433.1	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		303.5	386.8		433.4	617.0	5,563.2	6.1		7,456.5
1952	97.7		341.2	425.0		454.0	655.6	6,039.6	6.1		8,080.6
1953	107.8		375.5	409.9		492.3	713.2	6,559.9	6.4		8,732.2
1954	118.2		436.2	270.5		532.5	777.7	7,465.2	5.6		9,676.6
1955	130.8		527.1	394.6		546.4	870.0	8,416.3	5.7		10,964.0
1956	139.1		585.1	505.9		595.4	957.7	9,151.6	6.0		12,019.5
1957	143.1		698.6	536.6		621.7	1,018.7	9,652.5	5.9		12,763.1
1958	152.9		826.0	584.1		616.1	1,104.1	10,200.6	3.0		13,602.2
1959	165.0		861.8	633.3		629.4	1,228.6	11,034.8			14,724.5
1960	172.3		871.6	762.0		649.3	1,409.0	12,044.8			16,094.1
1961	178.8		860.0	901.5		684.0	1,497.5	12,700.0			17,013.2
1962	188.6		945.0	1,012.2		731.0	1,589.5	13,429.8			18,121.0
1963	204.9		1,051.4	1,212.1		779.0	1,764.6	14,223.1			19,500.0

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

(2) Sabie Undertaking incorporated in Eastern Transvaal Undertaking since 1st July, 1958 in terms of the Amended Licence.

## UNITS SOLD AND NUMBER OF CONSUMERS,

Energy Used:—  
ELECTRICITY = 99·410% of Total

Undertaking	TRACTION			BULK			MINING	
	Units	Per cent Traction	No. Cons.	Units	Per cent Bulk	No. Cons.	Units	Per cent Mining
Border.....	—	—	—	181,921,115	4·551	14	—	—
Cape Northern...	—	—	—	86,512,744	2·164	8	120,558,864	1·280
Cape Western...	340,456,327	24·511	3	237,079,444	5·930	31	—	—
Eastern Transvaal	76,755,038	5·526	1	64,639,802	1·617	12	496,238,089	5·270
Natal Central....	308,024,629	22·177	1	325,746,485	8·149	17	64,626,978	0·686
Natal Southern..	157,973,781	11·373	1	1,359,850,335	34·017	4	—	—
Rand & O.F.S...	505,756,389	36·413	2	1,741,779,559	43·572	100	8,734,833,861	92·764
<b>Total Electricity</b>	<b>1,388,966,164</b>	<b>100·000</b>	<b>8</b>	<b>3,997,529,484</b>	<b>100·000</b>	<b>186</b>	<b>9,416,257,792</b>	<b>100·000</b>
Per cent. of Total	7·165			20·622			48·575	

AIR AND STEAM = 0·590% of Total

Rand & O.F.S.: Air.....				4,037,856		1	101,382,741	
Steam.....							329,455	
<b>Total Air and Steam</b>				<b>4,037,856</b>		<b>1</b>	<b>101,712,196</b>	
Per cent of Total				3·505			88·289	

ELECTRICITY, AIR AND STEAM = 100%

Grand Total all Sales	1,388,966,164		8	4,001,567,340		187	9,517,969,988	
Per cent of Grand Total	7·122			20·528			48·811	

Energy Used by Provinces:

ELECTRICITY, AIR AND STEAM

Cape.....	340,456,327	24·511	3	523,299,631	13·077	53	120,084,064	1·263
Natal.....	452,985,192	32·613	2	1,650,550,360	41·262	16	64,626,978	0·676
O.F.S.....	61,456,247	4·425	2	249,485,264	6·235	40	2,354,203,570	24·735
Transvaal.....	534,068,398	38·451	2	1,578,232,085	39·426	78	6,979,055,376	73·326
<b>Total.....</b>	<b>1,388,966,164</b>	<b>100·000</b>	<b>9</b>	<b>4,001,567,340</b>	<b>100·000</b>	<b>187</b>	<b>9,517,969,988</b>	<b>100·000</b>

## 1963 (Electricity, Air and Steam)

No. Cons.	INDUSTRIAL			DOMESTIC AND STREET LIGHTING			TOTAL UNITS SOLD		
	Units	Per cent. Ind.	No. Cons.	Units	Per cent. D. & S.L.	No. Cons.	Units	Per cent. Total	No. Cons.
—	9,429,745	0·221	315	13,574,003	4·124	2,974	204,924,863	1·057	3,303
46	51,393,255	1·209	181	6,463,516	1·964	1,453	264,928,379	1·366	1,688
—	316,437,722	7·440	3,438	157,421,669	47·837	32,531	1,051,395,162	5·424	36,003
52	556,842,344	13·093	685	17,654,068	5·365	3,372	1,212,129,341	6·253	4,122
19	64,136,411	1·508	837	16,476,449	5·006	5,011	779,010,952	4·019	5,885
—	215,772,473	5·074	693	30,981,535	9·415	6,732	1,764,578,124	9·103	7,430
113	3,038,962,089	71·445	979	86,511,372	26·289	9,020	14,107,843,270	72·778	10,214
<b>230</b>	<b>4,252,974,039</b>	<b>100·000</b>	<b>7,128</b>	<b>329,082,612</b>	<b>100·000</b>	<b>61,093</b>	<b>19,384,810,091</b>	<b>100·000</b>	<b>68,645</b>
	21·940			1·698			100·000		

9	9,453,554		22						32
9	9,453,554		22				115,203,606		32
	8·206						100·000		

239	4,262,427,593		7,150	329,082,612		61,093	19,500,013,697		68,677
	21·858			1·688			100·000		

45	377,214,440	8·850	3,925	177,217,728	53·852	36,881	1,538,272,190	7·889	40,907
19	275,560,295	6·465	1,308	40,511,117	12·310	9,180	2,484,233,942	12·740	10,525
16	104,342,505	2·448	134	3,704,317	1·126	1,156	2,773,191,903	14·221	1,348
159	3,505,310,353	82·237	1,783	107,649,450	32·712	13,875	12,704,315,662	65·150	15,897
<b>239</b>	<b>4,262,427,593</b>	<b>100·000</b>	<b>7,150</b>	<b>329,082,612</b>	<b>100·000</b>	<b>61,092</b>	<b>19,500,013,697</b>	<b>100·000</b>	<b>68,677</b>

## POWER STATION OPERATING STATISTICS 1963

Power Station	Units Generated Kwh	Units Sent Out Kwh	MAXIMUM DEMANDS		Station Load Factor Sent Out %	Coal Burnt Tons (2,000 lb.)	COAL CONSUMED		WEIGHTED AVERAGE	HEAT CONSUMED		OVERALL THERMAL EFFICIENCY	
			½ Hour (or Hour) Sent Out kW	2 Min. Peak kW			Calorific Value of Coal as Received B.Th.U.	Per Unit Generated B.Th.U.	Per Unit Sent Out B.Th.U.	Generated %	Sent Out %		
<b>Border Undertaking:</b>													
King William's Town.....	271,230	256,230	2,800	3,000	12.3	325	2.390	2.530	N.A.	N.A.	N.A.	N.A.	N.A.
West Bank Nos. 1 and 2.....	221,435,840	209,423,280	41,830	44,900	57.2	146,134	1.320	1.396	11,580	15,290	16,170	22.3	21.1
Total.....	221,707,070	209,679,510				146,459							
<b>Cape Western Undertaking:</b>													
Hex River.....	389,458,700	368,298,910	88,400	—	47.6	223,462	1.148	1.213	11,530	13,240	13,990	25.8	24.4
Salt River No. 1.....	40,400,215	36,419,230	44,361	49,000	9.4	26,466	1.744	1.934	11,540	20,130	22,320	16.9	15.3
Salt River No. 2.....	762,181,300	727,940,470	116,988	128,000	71.0	408,127	1.053	1.102	11,540	12,150	12,720	28.1	26.8
Total.....	1,192,040,215	1,132,658,610				658,055							
<b>Natal Central Undertaking:</b>													
Colenso Nos. 1 and 2.....	657,846,570	614,542,450	121,940	140,000	57.5	498,144	1.514	1.621	11,550	17,490	18,720	19.5	18.2
Ingagane.....	276,556,000	253,737,700	96,000	—	45.7	138,658	1.003	1.093	10,790	10,820	11,790	31.0	28.9
Total.....	934,402,570	868,280,150				636,802							
<b>Natal Southern Undertaking:</b>													
Congella Nos. 1 and 2.....	680,311,100	630,387,900	136,510	150,000	52.7	448,962	1.328	1.424	11,450	15,120	16,300	22.6	20.9
Umgeni.....	1,197,411,600	1,129,125,800	200,000	216,000	64.4	683,698	1.142	1.211	11,560	13,200	14,000	25.8	24.4
Total.....	1,877,722,700	1,759,513,700				1,132,660							
Total N.C.U.+N.S.U.....	2,812,125,270	2,627,793,850				1,769,462							
<b>Eastern Transvaal Undertaking:</b>													
Komati.....	1,643,631,458	1,506,252,122	353,779	—	48.6	862,771	1.050	1.146	10,320	10,840	11,830	31.5	28.8
Witbank.....	704,842,572	652,244,511	118,011	—	63.1	638,730	1.812	1.959	10,890	19,730	21,330	17.3	16.0
Total.....	2,348,474,030	2,158,496,633				1,501,501							
<b>Rand and O.F.S. Undertaking:</b>													
Brakpan.....	31,927,180	28,752,694	38,621	—	12.9	43,726	2.730	3.042	10,060	27,390	30,600	12.5	11.2
Highveld.....	3,187,122,957	2,993,350,326	459,650	—	74.3	2,050,504	1.287	1.370	8,740	11,250	11,970	30.3	28.5
Klip.....	2,562,345,569	2,388,920,738	375,927	—	72.5	2,096,275	1.636	1.755	9,590	15,690	16,830	21.7	20.3
Rosherville.....	29,085,636	26,684,672	31,821	—	10.1	51,217	3.522	3.839	9,760	34,370	37,470	9.9	9.1
Taaibos.....	3,303,321,144	3,057,745,248	441,885	—	79.0	2,247,275	1.361	1.470	8,910	12,130	13,100	28.1	26.0
Vaal.....	2,201,328,053	2,068,309,230	291,842	—	80.9	2,015,140	1.831	1.949	8,330	15,250	16,240	22.4	21.0
Vereeniging.....	769,892,353	712,382,065	135,805	—	59.9	954,451	2.479	2.680	8,490	21,050	22,750	16.2	15.0
Vierfontein.....	1,886,776,507	1,757,404,058	310,891	—	64.5	1,475,552	1.564	1.679	9,080	14,200	15,250	24.0	22.4
Wilge.....	1,663,957,591	1,537,911,392	221,448	—	79.3	1,085,574	1.305	1.412	9,610	12,540	13,570	27.2	25.1
Total.....	15,635,756,990	14,571,460,423				12,019,714							
<b>Cape Northern Undertaking:</b>													
Central, Kimberley.....	46,930,400	38,415,705	18,610	20,900	23.8	54,534	2.324	2.862	11,370	26,430	32,480	12.9	10.5
Total CNU+ETU+R & OFSU..	18,031,161,420	16,768,372,761				13,575,749							
<b>GRAND TOTAL.....</b>	<b>22,257,033,975</b>	<b>20,738,504,731</b>				<b>16,149,725</b>							

\* No. 1 also receives Steam from No. 2.

N.A. = not available.

## Statement No. 5 (Con.)

## STEAM PLANT

Station	Units Generated	Units Sent Out	Coal Burnt (Tons of 2,000 lb.)	Coal per Unit Sent Out lb.	Maximum Sustained Load over 1 hour kWh	Station L.F. %
Brakpan.....	336,630	329,455	596	3·618	1,390	4·7
Electricity Total Units			Units Generated	Units Sent Out	Coal Burnt	Coal Burnt
{ Steam.....			22,257,033,975	20,738,504,731	16,149,725	16,149,725
{ Hydro.....			4,454,940	4,287,240	—	—
{ Diesel.....			75,282	73,836	—	—
Air Units at Steam Driven Stations.....			22,261,564,197	20,742,865,807	16,149,725	16,149,725
Steam Units (Brakpan).....			50,488,600	50,348,000	76,864	76,864
Grand Total—1963.....			336,630	329,455	596	596
Total for 1962.....			22,312,389,427	20,793,543,262	16,227,185	16,227,185
Change on 1962 (Units or Tons).....			20,805,518,186	19,403,958,379	15,383,313	15,383,313
Per Cent.....			1,506,871,241	1,389,584,883	843,872	843,872
			+7,243	+7·161	+5·486	+5·486

## HYDRO ELECTRIC POWER STATIONS

Power Station	Units Generated	Units Sent Out	MAXIMUM DEMAND kW		RAIN	
			½ Hr. Sent Out	2 Mins. Gen.	Station Load Factor Sent Out	Inches
Sabie Gorge.....	4,452,100	4,284,400	1,000	1,100	48·91	840·0
Sabie Falls.....	2,840	2,840	85	95	74·00*	—
Total.....	4,454,940	4,287,240				

\* Based on 44 Hours.

**POWER STATION OPERATING STATISTICS 1963**

Statement No. 5

**DIESEL ELECTRIC POWER STATIONS**

Power Station	Units Generated	Units Sent Out	MAXIMUM DEMAND KW		FUEL CONSUMED		Lubricating Oil (gal.)
			½ Hour	2 Mins.	Total lb.	Per kWh Sent Out	
King William's Town.....	11,790	11,790	3,429	3,465	6,782	0.575	—
Port Shepstone.....	63,492	62,046			36,706	0.590	—
<b>Total.....</b>	<b>75,282</b>	<b>73,836</b>			<b>43,488</b>		

**COMPRESSED AIR PLANT**

Stations	Type**	AIR UNITS		COAL BURNED		ELECTRIC INPUT		L.F. %
		Generated	Sent Out	Total Tons	Per Unit Sent Out lb.	Total kWh excl. Loss		
Rosherville.....	Steam	50,488,600	50,348,000	41.3	3.053	—	} 34.6	
Robinson.....	Electric	44,418,400	44,418,400	36.5	—	55,676,261		
Canada Dam.....	Electric	26,987,700	26,987,700	22.2	—	32,818,451		
<b>Totals.....</b>		<b>121,894,700</b>	<b>121,754,100</b>	<b>100.0</b>	<b>—</b>	<b>88,494,712</b>		

\*\* Electrically Driven Compressors are fed from the Electric Distribution System of the Rand Undertaking.

**POWER PURCHASED FROM OUTSIDE SOURCES IN 1963**

STATEMENT No. 6

Undertaking	Purchased from	Maximum Demands	Units
Border.....	East London Municipality.....	—	92,640
Eastern Transvaal.....	Nelspruit.....	—	2,197,980
Natal Southern.....	City of Durban — Canelands.....	3,416	12,946,095
Rand and O.F.S. Undertaking.....	Pretoria Municipality.....	34,400	3,346,100
<b>Total Units Purchased.....</b>			<b>18,582,815</b>
<b>Total Units Sold—1963.....</b>			<b>19,500,013,697</b>
<b>Purchased as % of Sales.....</b>			<b>0.095</b>

NOTE.—The transfer of power from one Undertaking to another is not shown above, as such is not "power purchased", but "interchanged power"

**WATER (OTHER THAN SEA WATER) CONSUMED BY POWER  
STATIONS FOR THE YEAR 1963**

(Millions of Gallons)

Undertakings	Potable Water		Crude River Water		Water from Other Sources including Boreholes, Dams and Sewage	
	1962	1963	1962	1963	1962	1963
Border.....	24	28	—	—	—	—
Cape Eastern.....	—	—	—	—	—	—
Cape Northern.....	89	88	—	—	—	—
Cape Western.....	275	278	—	—	—	—
Natal Central.....	39	91	522	476	—	412
Natal Southern.....	913	954	—	—	—	—
Rand (including Komati and Witbank Power Stations).....	338	315	17,113	17,391	214	178

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

**STATEMENT No. 8**

**STATEMENT SHOWING THE PRICE OR RENT OF LAND OR INTERESTS  
IN OR OVER LAND OR OTHER PROPERTY ACQUIRED OR HIRED BY  
THE COMMISSION DURING THE YEAR 1963.**

(See previous Annual Reports for Rights or Interests in or over land acquired prior to 1963.)

**Cape Western Undertaking**

Immovable property acquired for considerations amounting to .. R2,021·00  
 Servitudes acquired — capitalised payments amounting to .. .. R11,011·22

**Cape Northern Undertaking**

Immovable property acquired for considerations amounting to .. R1,600·00  
 Servitudes acquired — capitalised payments amounting to .. .. R133·26

**Natal Central Undertaking**

Immovable property acquired for considerations amounting to .. R3,800·00  
 Servitudes acquired — capitalised payments amounting to .. .. R32,673·99

**Natal Southern Undertaking**

Immovable property acquired for considerations amounting to .. R446·00  
 Servitudes acquired — capitalised payments amounting to .. .. R5,096·50

**Eastern Transvaal Undertaking**

Immovable property acquired for considerations amounting to .. R34,182·54  
 Servitudes acquired — capitalised payments amounting to .. .. R11,696·65  
 Servitudes acquired — annual payments amounting to .. .. R13·80

**Border Undertaking**

Immovable property acquired for considerations amounting to .. R402·31

**Rand and O.F.S. Undertaking**

Immovable property acquired for considerations amounting to .. R101,145·88  
 Servitudes acquired — capitalised payments amounting to .. .. R168,282·60  
 Servitudes acquired — option moneys paid amounting to .. .. R22,736·00  
 Leases acquired for annual rentals amounting to .. .. R90·4

PRICE OF COAL USED AT COMMISSION'S POWER STATIONS

Average cost per ton (2,000 lb.)

STATEMENT No. 9

Power Station	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
	R	R	R	R	R	R	R	R	R	R	R
Brakpan .. ..	1.01	1.33	1.42	1.50	1.65	1.73	1.93	1.70	1.77	1.82	1.83
Colenso... ..	1.99	2.15	2.52	2.71	2.87	2.97	3.17	3.12	3.11	3.36	3.48
Congella .. ..	2.54	2.72	3.13	3.25	3.43	3.58	3.82	3.79	3.75	3.91	3.59
Hex River .. ..	3.53	3.70	3.89	4.06	4.17	4.54	4.70	4.68	4.76	4.93	5.21
Highveld .. ..	—	—	—	—	—	—	1.33	1.45	1.60	1.53	1.55
Ingagane .. ..	—	—	—	—	—	—	—	—	—	—	2.27
Kimberley Central	2.78	2.91	3.08	3.28	3.40	3.59	3.83	3.78	3.75	3.90	4.12
Klip .. ..	1.16	1.31	1.45	1.61	1.73	1.79	1.82	2.09	2.14	2.13	2.04
King William's Town .. ..	3.98	4.24	4.57	4.68	4.84	4.81	4.54	—	4.58	—	4.58
Komati .. ..	—	—	—	—	—	—	—	—	1.19	1.29	1.53
Rosherville .. ..	1.50	1.55	1.65	1.72	1.87	1.92	2.04	1.86	1.90	2.08	2.13
Salt River .. ..	3.75	4.10	4.07	4.22	4.38	4.57	4.86	4.83	4.85	5.03	5.36
Taaibos .. ..	—	.89	.87	.73	.76	.84	.93	1.83	1.98	1.75	1.70
Umgeni .. ..	—	3.07	3.28	3.31	3.49	3.72	4.05	4.04	4.01	4.28	4.37
Vaal .. ..	.68	.68	.71	.71	.73	.73	.74	.79	.93	.95	1.03
Vereeniging .. ..	.72	.76	.82	.85	.92	.98	.91	.87	.96	1.02	1.07
Vierfontein .. ..	.94	.82	.83	.96	1.10	1.23	1.23	1.50	1.56	1.46	1.43
West Bank .. ..	3.53	3.78	4.18	4.08	4.17	4.39	4.66	4.61	4.59	4.77	5.02
Wilge .. ..	—	.81	.78	.79	.89	.91	.97	.90	.94	.97	.95
Witbank .. ..	.70	.70	.76	1.03	1.03	1.05	1.11	1.06	1.05	1.14	1.15

# POWER SUPPLY IN SOUTH AFRICA: ESCOM AND REPUBLIC

Year	Escom Undertakings				Coal Burnt (tons)	Sales in the Republic	
	A Capital Expenditure  (R)	B Installed Capacity  MW	C Total Employees	D Sales		E Escom, including V.F.P.	F Escom, including V.F.P.
1925.....		1·35		0·1	1,602·6	1,036·5	1,376·4
1926.....		61·35		161·7	1,674·4	1,094·2	1,516·9
1927.....		121·35		551·0	1,760·1	1,251·2	1,694·2
1928.....	1,399,678	175·65		627·9	1,934·9	1,411·4	1,807·4
1929.....	1,575,492	194·65	633	797·0	2,086·1	1,560·5	2,007·6
1930.....	16,167,114	215·65	668	889·6	2,166·4	1,632·4	2,126·8
1931.....	16,591,164	215·65	664	867·1	2,237·2	1,689·5	
1932.....	16,823,332	227·65	645	890·7	2,388·0	1,814·2	
1933.....	17,275,780	247·65	678	974·1	2,542·0	1,929·0	2,462·2
1934.....	18,786,190	287·65	706	985·2	2,831·3	2,140·3	2,853·9
1935.....	22,980,968	307·65	778	1,119·2	3,152·3	2,414·9	3,246·2
1936.....	27,103,556	486·843	862	1,688·0	3,584·3	2,820·6	3,767·9
1937.....	30,563,380	519·843	1,024	2,535·6	3,844·2	3,288·5	4,361·3
1938.....	34,296,968	623·346	1,097	2,985·4	4,176·4	3,639·7	4,898·2
1939.....	36,645,076	737·656	1,100	3,573·7	4,409·2	4,095·6	5,453·4
1940.....	38,661,664	770·631	1,189	4,070·2	4,626·0	4,516·9	6,121·9
1941.....	40,808,068	771·300		4,254·0	4,903·7	4,833·5	6,504·7
1942.....	43,762,646	770·551		4,320·8	5,111·9	4,920·0	6,767·7
1943.....	46,573,506	795·456	1,238	4,275·6	4,977·6	4,795·8	6,638·4
1944.....	48,036,044	796·856	1,328	4,415·8	5,164·2	4,970·5	6,919·7
1945.....	49,913,496	862·856	1,531	4,706·1	5,309·2	5,101·1	7,142·4
1946.....	52,852,790	975·690	1,836	5,002·4	5,321·9	5,218·8	7,338·3
1947.....	57,649,694	1,033·190	2,169	5,144·5	6,000·3	5,341·7	7,493·6
1948.....	90,815,886	1,385·071	2,692	5,576·9	6,126·0	5,787·0	8,089·2
1949.....	100,234,082	1,411·985	8,764	6,222·2	6,365·6		8,829·0
1950.....	115,128,520	1,439·985	9,352	6,910·6	6,970·4		9,749·8
1951.....	137,283,154	1,520·590	10,336	7,456·5	7,344·8		10,473·9
1952.....	176,559,102	1,624·590	10,889	8,080·6	7,841·1		11,233·5
1953.....	218,739,074	1,806·070	11,518	8,732·2	8,150·3		11,806·3
1954.....	270,621,248	2,051·010	12,317	9,676·6	8,846·0		12,811·9
1955.....	304,341,966	2,377·721	12,490	10,964·0	9,920·5		14,309·9
1956.....	342,068,024	2,734·871	12,977	12,019·5	10,679·8		15,780·8
1957.....	377,265,178	2,826·700	13,421	12,763·1	11,266·2		17,084·2
1958.....	417,700,898	3,036·550	14,312	13,602·2	11,887·4		18,173·1
1959.....	453,130,370	3,289·450	13,947	14,724·5	12,730·3		19,106·2
1960.....	491,471,208	3,408·950	14,654	16,094·1	13,792·8		
1961.....	529,565,151	3,558·950	15,441	17,013·2	14,544·8		
1962.....	581,579,266	3,758·950	16,467	18,121·0	15,383·3		
1963.....	637,076,261	4,175·950	16,804	19,500·0	16,227·2		

- A. Capital expenditure for Escom Undertakings (Land & Rights + Buildings & Civil Works + Machinery & Plant).  
 B. Generating Plant installed as at 31st December, 1925-1963, in MW.  
 C. Total employees, Escom only.  
 D. Total Sales by Escom (millions of units).  
 E. Coal Burnt: Escom + V.F.P. + Air Compressors.  
 F. Sales, Escom and V.F.P.  
 G. Republic of South Africa — Total Sales Electricity.

\* Victoria Falls and Transvaal Power Co. Ltd. taken over by Escom 1.7.48.