

ELECTRICITY SUPPLY COMMISSION 1962

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**Electricity Supply Commission**

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# Electricity Supply Commission

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Escom Centre,  
204, Smit Street,  
Johannesburg.

6th June, 1963.

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

Sir,

As required by Section 19 of the Electricity Act of 1958, the Commission has the honour to present its fortieth Annual Report and the Accounts covering its work during the financial year ended at 31st December, 1962.

The Report includes also brief comment upon the more important developments which have taken place in the period up to 30th April, 1963.

## CHAIRMAN

On 1st July, 1962, Dr. R. L. Straszacker, M.Sc. (Eng.), Dipl. Ing., Dr. Ing., M.S.A.I. Mech.E., M.I. Mech.E. (London), relinquished the Chair of Mechanical Engineering and his appointment as Head of the Department of Mechanical Engineering at the University of Stellenbosch to take office as full-time Chairman of Escom.

Dr. Straszacker was appointed a Member of the Commission on the 1st November, 1952, and thus combines an intimate knowledge of the work of the Commission during the past ten years with a wide academic knowledge gained in studies and research work in South Africa and overseas. He has also had considerable experience on a number of Boards of financial and industrial concerns.

## ESCOM'S UNDERTAKINGS

**Cape Eastern Undertaking.** On representations made by Farmers' Associations and others interested in securing electricity supply, an investigation was made into the possibilities of establishing a new Undertaking for the supply of electricity to the rural communities in the Sundays River Valley and the Gamtoos River Valley. The potential consumers are, for the most part, farmers; but include the Municipality of Kirkwood, residents in the villages of Patensie and Hankey and a few industrial enterprises established in the area.

The Commission, as charged in section 7 of the Act, applied to the Electricity Control Board on 27th June, 1962, for a licence for the proposed new undertaking, to be known as the Cape Eastern Undertaking.

The intentions are that electricity will be purchased for the Undertaking, in bulk, from the Municipality of Port Elizabeth at Zwartkops Power Station and from the hydro-electric power station under construction by the Department of Water Affairs at the dam on the Gamtoos River.

At the request of the Board, discussions took place with the Municipalities of Port Elizabeth and Uitenhage with a view to determining the most suitable boundaries for the areas of supply of the Commission and the two Municipalities; and the Commission's application for a licence was granted by the Board on the 19th February, 1963, subject to amendment of the area of supply to accord with the boundaries agreed upon.

The Commission's report and application in terms of section 7 of the Electricity Act having been laid before Parliament, the Minister on 5th April, 1963, approved the establishment of the new Undertaking.

**Licensed Areas.** The licensed areas of supply of Escom's Undertakings, with the extensions granted by the Board up to 31st March, 1963, and the area of the Cape Eastern Undertaking are shown in colour on the map which appears opposite page 8.

The map incorporates the following extensions which were granted during 1962 and the further enlargement of the Eastern Transvaal Undertaking granted on the 19th February, 1963:—

**Cape Western Undertaking.** The Commission's application dated 8th March, 1962, which sought, *inter alia*, two extensions of the area of supply to include certain farms north of Ceres and an area north of Citrusdal, was granted by the Board on 22nd October, 1962. These additional areas were desired primarily for extensions to Escom's rural reticulation.

**Eastern Transvaal Undertaking.** On 3rd August, 1962, the Commission applied for a further addition to the licensed area of the Eastern Transvaal Undertaking to include an extensive area around Phalaborwa. The principal consumers at this stage are Phosphate Development Corporation (Pty) Limited, who require additional supply for expansion of their activities, and Palabora Mining Company, Limited, for experimental work. It has been agreed in principle that Foskor will, in due course, surrender its licence, and the supplies in this area will be furnished by Escom: although no decision has been taken on the question whether the reticulation of electricity within Phalaborwa Township will be undertaken by Escom or by the local authority.

This application was granted by the Board on 19th February, 1963.

**Natal Southern Undertaking.** Following negotiations with the Municipalities of Eshowe and Empangeni and S.A. Pulp and Paper Industries, Limited, application was made on 14th February, 1963, for extension of the area of supply of the Natal Southern Undertaking to include an area on the Natal coast between the Tugela and the Umduna Rivers.

This application is still before the Board.

## OUTPUT AND SALES

The total units generated in all Escom's Undertakings in the year 1962 amounted to 20,805 million units, which was an increase of 6·28 per cent over the figure for 1961.

Purchases from other undertakings amounted to 12 million units.

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

	1962	1961	Increase
Units generated.....	20,805,518,186	19,575,396,581	6·3%
Units purchased.....	12,559,278	8,399,659	—
Units sold.....	18,121,036,829	17,013,161,822	6·5%

The annual increase of 6·5 per cent reflects an upturn in the expansion of electricity supply in South Africa, by comparison with the figure of 5·7 per cent in 1961: but the rate of increase is lower than the average annual increase of 8·43 per cent over the past decade.

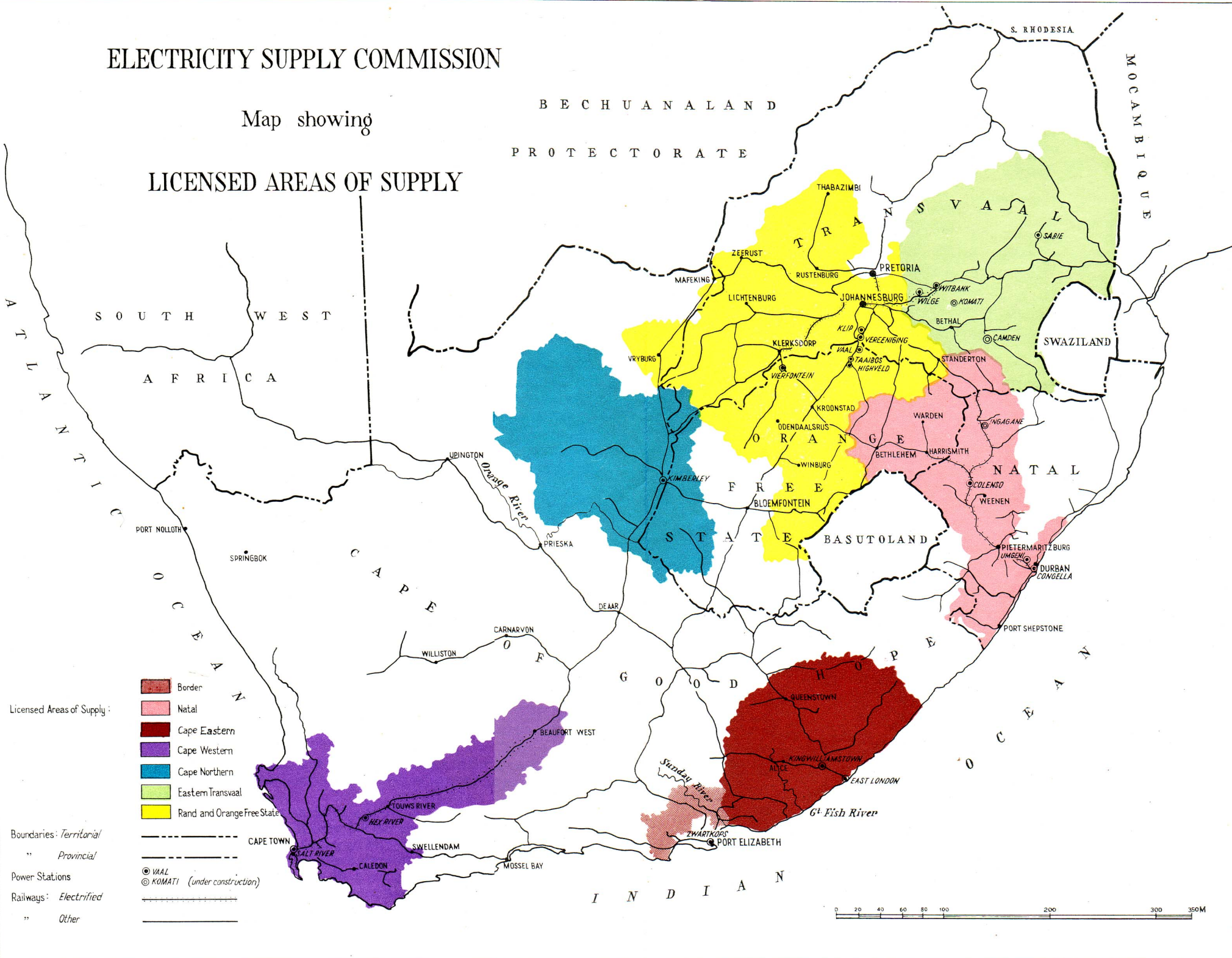
Total Sales (electricity, air and steam) for the year 1962 in the main categories of supply, with the corresponding figures for 1961 and the rate of increase in the year



# ELECTRICITY SUPPLY COMMISSION

Map showing

## LICENSED AREAS OF SUPPLY



- Licensed Areas of Supply:
- Natal
  - Cape Eastern
  - Cape Western
  - Cape Northern
  - Eastern Transvaal
  - Rand and Orange Free State

- Boundaries: Territorial
- " Provincial
- Power Stations
- Railways: Electrified
- " Other



under review, are shown in the following table. The final column gives the average rate of increase over the 10 years 1953–1962.

	1962	1961	% Increase 1962	Average Annual Increase in 10 Years
<i>Bulk Supplies:</i>				
Municipalities.....	3,573,766,595	3,371,128,826	6.0	9.5
<i>Direct Supplies:</i>				
Traction.....	1,296,352,748	1,178,261,737	10.0	9.0
Mining.....	9,246,759,274	8,737,922,874	5.8	7.3
Industrial.....	3,700,839,193	3,446,356,759	7.4	10.7
Domestic.....	296,379,011	273,021,833	8.6	8.7
Street Lighting.....	6,940,008	6,469,793	7.3	9.6
	<u>18,121,036,829</u>	<u>17,013,161,822</u>	<u>6.5</u>	<u>8.4</u>

Total Revenue for the year amounted to R94,002,952, which is an increase of 6.8 per cent over the revenue for the previous year.

The year's Accounts reflect a small increase in the average cost per unit sold, which was 1.9 per cent above the similar figure for 1961. Part of this increase is attributable to the higher costs that are incurred in distributing electricity to new consumers in outlying areas: but where this is the case, the higher costs are borne by the new consumers in the form of extension charges, so that these costs do not fall on consumers in the old areas.

**Bulk Supplies to Municipalities.** The arrangement with the City Council of Cape Town covering a partial supply to the Council terminated at the end of 1961.

New bulk supplies were given during 1962 to the Municipality of Kuruman, from the Cape Northern Undertaking; to the Municipality of Idutywa, from the Border Undertaking; and from the Rand and Orange Free State Undertaking to the Municipalities of Thaba 'Nchu, Greylingstad, Bloemhof, Sannieshof, Delareyville and Vryburg, and also to the Peri-Urban Areas Health Board for reticulation in Lenasia Township.

**Traction Supplies.** The conversion to electric traction of the section of the Cape main line between Touws River and Beaufort West was reported last year. This extension of the electrification accounts for the greater part of the increase in units sold to the South African Railways for traction purposes.

In the early part of March, 1963, five suspension towers of the transmission line to Beaufort West were damaged by a freak localised storm, and steam traction had to be used during the interruption to supply. A study is being made of the localities in which such storms have been known to occur.

Supplies for traction furnished from the Natal Undertakings showed an increase of about 5 per cent.

**Mining Supplies.** Mining supplies account for 51·03 per cent of the Commission's sales in 1962; and the increase of 508 million units in this category represents 46 per cent of the year's increase.

Although this advance in Escom's sales of electricity and compressed air to Mining Consumers represents an increase of only 5·8 per cent, the statistics published by the Transvaal and Orange Free State Chamber of Mines show that gold production (fine ounces) increased by 11·2 per cent over the output in 1961, while revenue from gold mining rose by R59·3 million, that is, by 10·5 per cent.

Four mines were listed as new producers: Western Areas mine and Western Deep Levels mine on the Far West Rand, and Bracken and Leslie gold mines situated on the Bethal gold field. These four mines account for increases in Escom's sales of 239 million units; and the expansion of the West Driefontein gold mine accounts for a further 86 million units.

Gold mines in the Klerksdorp area called for an additional 156 million units; while supplies to mines in the Orange Free State gold field increased by 94 million units.

The over-all figures, however, mask the decline in mining activity in the old Witwatersrand area, between Randfontein and Springs. During the year, Government Gold Mining Areas, Limited, Modderfontein East, Limited, and Springs Mines, Limited, ceased mining; and on a number of other mines operations were cut back. Power supplies to mines which, under present conditions, are approaching the end of profitable working, show an overall reduction by about 200 million units, when compared with the supplies taken in 1961. This reduction was offset in part by increases in the power requirements of mines that are extending their workings to the ultra deep levels; and the net reduction of about 155 million units in power consumption on the Witwatersrand is shown in the table below.

Uranium production declined during the year by approximately 8 per cent.

Total sales of electricity to Collieries that draw their power from Escom – including the collieries which supply coal to Escom's pit-head power stations – reflect an over-all expansion of 8·7 per cent.

The increase in mining supplies furnished from the Cape Northern Undertaking reflects the new supplies given to asbestos mines and manganese mines in the Kuruman district, and the iron ore mine of S.A. Iron, Steel and Industrial Corporation, Limited, ("Iscor") at Sishen.

A statistical summing-up of mining developments during the past three years is presented by the following table, which shows the breakdown of power supplies furnished 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:—

	Units sold – millions		
	1960	1961	1962
Witwatersrand.....	3,116	3,089	2,934
Klerksdorp.....	1,137	1,194	1,350
Far West Rand.....	1,368	1,566	1,812
Orange Free State.....	2,078	2,131	2,225
Bethal.....	99	147	246
Gold Mining (including Uranium).....	7,798	8,127	8,567
Coal Mines.....	243	265	288
Diamond, Platinum and other Mines.....	330	346	392
	8,371	8,738	9,247

**Industrial Supplies.** Although the year's increase of 7·4 per cent in Escom's sales classified as Industrial Supplies was lower than the 10-year average, an analysis of the Escom figures shows that business activity was fully maintained in general engineering, food production and the cement and building trades, with small increases in some sections.

Major developments were again in the steel and metal industries. Sales to consumers engaged in the production of iron and steel and base metals increased by about 110 million units, the larger increases being in the supplies to the Vanderbijl Works of South African Iron, and Steel Industrial Corporation, Limited, ("Isacor"), supplies to R.M.B. Alloys, Limited, at Driehoek and at Witbank and a new supply to Electrolytic Metals Corporation, Limited on the West Rand.

Increases were recorded also in the supplies to African Explosives and Chemical Industries, Limited, both at Modderfontein and in the Cape, the aggregate increase being 48 million units.

S.A. Pulp and Paper Industries, Limited, increased its purchases for the newsprint mill at Springs by 33 million units.

**Rural Electrification.** Increases in sales to consumers in rural areas are included in the totals, under Industrial and Domestic sales; and a detailed account of the progress in rural electrification is given on pages 17 to 22.



**Individual Undertakings.** The total units sold by individual Undertakings in 1962, with the corresponding figures for 1961, and the increase for the year were as follows:—

	<b>1962</b>	<b>1961</b>	<b>Increase</b>
Cape Western.....	945,016,912	860,037,699	9·9%
Cape Northern.....	224,938,860	191,307,887	17·6%
Border.....	188,602,113	178,813,327	5·5%
Natal Southern.....	1,589,504,713	1,497,502,802	6·1%
Natal Central.....	730,973,354	684,034,478	6·9%
Eastern Transvaal.....	1,012,152,795	901,470,383	12·3%
Rand and Orange Free State.....	13,429,848,082	12,699,995,246	5·7%
	<hr/>	<hr/>	
	<u>18,121,036,829</u>	<u>17,013,161,822</u>	<u>6·5%</u>

## NEW DEVELOPMENTS IN THE COMMISSION'S UNDERTAKINGS

**Electrification of Railways.** Work is proceeding to complete the electrification of the remaining section of the Natal main line, between Union Junction and Volksrust. Testing and proving of plant is scheduled to begin towards the end of 1963; and the change-over to electric working is expected early in 1964.

Two further major electrification projects are being carried out by the South African Railways: the electrification of the main line between Klerksdorp and Kimberley, and the electrification of the line from Witbank to Komatipoort.

Escom's planning for the supply to the Klerksdorp/Kimberley section calls for the construction of 210 miles of 132 kV transmission line from Vierfontein Power Station to Kimberley and the equipping of fourteen traction substations, seven of which will be situate within the Rand and Orange Free State Undertaking and seven in the Cape Northern Undertaking. In addition it is necessary to proceed with the construction of a 275 kV interconnector between Everest distribution station (on the Orange Free State gold field) and Kimberley. Target dates for commissioning the traction substations extend over the period June-October, 1964; and for the 275 kV transmission line, about the beginning of 1965.

The supply for the Witbank/Komatipoort electrification will be provided by the Eastern Transvaal Undertaking, and it is fortunate that the engineering requirements can be co-ordinated with the important new developments of the transmission and distribution system in the Eastern Transvaal, that is, the 132 kV line being constructed from Komati Power Station to Rockdale distribution station (at Middelburg), the existing 132 kV line Komati-Machadodorp, and the new 275 kV transmission line which is being built from Komati Power Station to a major Distribution Station near Nelspruit. This Distribution Station has been sited on the farm Marathon and will be known by that name.

The traction requirements call for the establishment of sixteen traction substations between Witbank and Komatipoort. The first two, at Olifantsrivier and Middelburg, will be supplied at 88 kV from the Rockdale 132/88 kV stepdown, and the remaining fourteen will be supplied at 132 kV by a 132 kV line which will be routed Rockdale-Machadodorp-Marathon-Komatipoort, a distance of about 196 miles. The target dates for commissioning this section of the Railways' electrification extend over the second half of 1965 and the first quarter of 1966.

**Supply of Electricity to Zululand.** Escom's application for extension of the area of the Natal Southern Undertaking to include portion of Zululand is reported on page 8.

This extension will provide for the growth of load of the Municipalities of Eshowe and Empangeni, replacing the small local power stations, and a partial supply for extensions of the large paper mill of South African Pulp and Paper Industries, Limited, at Mandeni. The supply will be furnished by a 132 kV line to be built from

Duffs Road substation to Mandeni, and thence by an 88 kV line which has been routed Mandeni-Eshowe-Empangeni: but construction of the 88 kV line will proceed in advance of the 132 kV line so that it may serve as an interconnector for stand-by purposes between the existing power plants at Mandeni, Eshowe and Empangeni in the interval before the 132 kV line and associated equipment are brought into service.

The supply of electricity in Zululand will be an important contribution towards the economic development of this "border" area.

**Eastern Transvaal: Lowveld and Phalaborwa areas.** Brief references have been made in earlier reports to Escom's plans for the supply of electricity in the Lowveld area.

Marathon Distribution Station has been sited to serve the areas around Nelspruit, White River and Barberton. A 66 kV line is being built from Marathon to Noordkaap, thence to Louws Creek and Malelane, at which point it will be tied into the 132 kV line from Marathon to Komatipoort. Supplies to two small gold mines, an asbestos mine and other consumers in the Noordkaap area are to be taken over from Eastern Transvaal Consolidated Mines, Limited, and a bulk supply is to be given to Barberton Municipality. Escom will also take over certain 22 kV and 11 kV circuits and equipment which will be incorporated in rural reticulation schemes in the Kaap River valley and in the vicinity of Nelspruit and White River.

Discussions have been held with the Municipalities of Nelspruit and White River; but no decision on the future supplies to these two Municipalities has yet been reached.

Another 66 kV line will be built northwards from Marathon to Kiepersol, and will become a tie-line and a means of providing additional supply into the 22 kV network which is being extended from Sabie Gorge hydro-electric station to Kiepersol.

The 275 kV transmission line is being extended north from Marathon to Acornhoek, where another major distribution station will be established. The prospects for a large rural scheme in the Blyde River Valley are considered to be good.

From Acornhoek a transmission line is being built at 132 kV to Phalaborwa. The initial consumer at Phalaborwa will be Fosfaat-ontginningskorporasie (Edms.) Beperk ("Foskor"), which has a licence to supply within certain farms: but it has been agreed that if Escom is able to make satisfactory arrangements for the supplies to other consumers in the area, the Foskor licence will be surrendered. The possibility of a large supply to Palabora Mining Company, Limited, is being discussed.

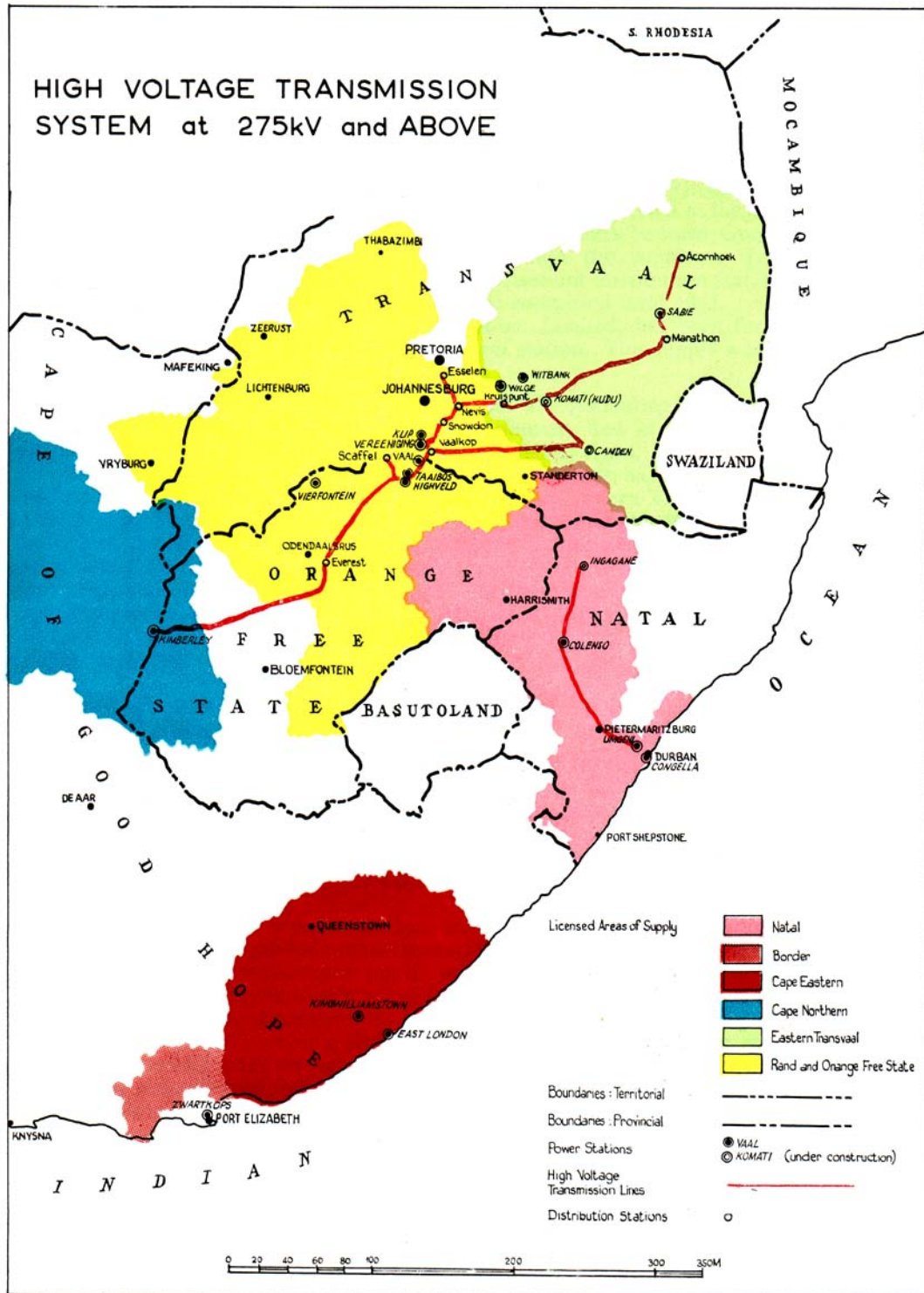
Construction is well advanced on the first stages of the 275 kV transmission system, that is, the line from Leeuwkloof *via* Marathon to Acornhoek (which will be operated initially at 132 kV) and the 132 kV extension to Phalaborwa, together with the distribution station and substations which are required for the first stage; and it is expected that supply will be available in the Lowveld area and at Phalaborwa in the second half of 1963.

**Production of Steel and Base Metals.** Attention has been directed in recent reports to the increase in electricity supplies to consumers engaged in the production of steel and ferro-alloys and recovery of base metals.

At the end of 1962 the loads which were being supplied by Escom to such consumers totalled about 220,000 kW: but the future loads notified by existing and new consumers engaged in these industries now stand at 488,000 kW, that is to say, the supplies of electricity required by these consumers will be more than double in the next four years.

Part of this increase has been notified by established concerns; so that the additional supplies will be furnished by re-inforcement of existing networks. But for the new projects it has been necessary to design and build new networks, and mention may be made of R.M.B. Alloys, Limited, which has notified a demand of 50,000 kVA for its ferro-chrome project at Middelburg, Transvaal; Transalloys, Limited, which has notified a load of 34,500 kVA for the first stage of its steelworks at Clewer, near Witbank; and Palmiet Chrome Corporation, Limited, which has notified a maximum

# HIGH VOLTAGE TRANSMISSION SYSTEM at 275kV and ABOVE



demand of 38,000 kW for its ferro-chrome works located on the property of West Rand Consolidated Mines, Limited, near Krugersdorp.

The supply to R.M.B. Alloys, Limited, will be furnished from Rockdale distribution station which will be supplied by a 132 kV line from Komati Power Station; and it is expected that the supply will be available about March, 1964.

The supply to Transalloys, Limited, will be provided by a 132 kV line teed off the transmission system connecting Wilge Power Station to Grootpan distribution station; but in order to meet this and other growing loads in the Witbank area, a new distribution station to be known as Kruispunt is being constructed at the point where the  $2 \times 275$  kV lines Komati-Nevis cross the 132 kV lines between Grootpan and Wildebees distribution stations. It is expected that the supply to Transalloys, Limited, will be available in March 1964: but Kruispunt distribution station and the third 275 kV line Komati-Kruispunt will not be completed until 1965.

The supply to Palmiet Chrome Corporation, Limited, has been furnished by means of a 132 kV line from Scaffell distribution station. This supply was started in January, 1963.



**Komati Power Station.** The first two 100,000 kW generating sets and boilers in Komati Power Station were commissioned in January and March, 1962; and the installation of the third set was completed at the end of April, 1963.

Save for the two sets at Highveld Power Station, Komati has been the only source of further power supplies for the three Undertakings, Eastern Transvaal, Rand and Orange Free State and Cape Northern Undertakings. The extension of this station by two more sets of 100,000 kW capacity and two further sets of 125,000 kW capacity with the associated boilers will provide for the expected increases in load in 1964 and 1965, and orders have now been placed for two further 125,000 kW generating sets and associated boilers, which will bring Komati Station to its designed capacity of 1,000,000 kW. These last two sets are to be installed by the winter of 1966; so that this large station will be completed in the remarkably short time of five years from starting up.

The revised estimate for Komati Power Station, based on contract price, is R82,000,000.

**Camden Power Station.** In order to make provision for the expansion and growth of load of these three Undertakings, it was necessary that steps be taken to design and build another new power station. Investigations into sources of water and coal for a power station of adequate capacity culminated in arrangements with the Department of Water Affairs and Federale Mynbou Beperk respectively to provide water and coal for a power station situate on the Camden coalfield about 10 miles south-east of Ermelo.

The capital costs of a power station, expressed per kW installed, decrease with increases in boiler and turbo-alternator unit sizes, as do the operating and maintenance costs, expressed in terms of output: but the optimum size of the unit must take account also of the size of the system with which it is to be connected and the annual rate of growth of that system. Investigations in the case of Camden Power Station showed that the practical and economic size of unit would be 200 MW instead of 125 MW which was chosen for the second half of Komati Power Station; and Camden Power Station has been planned for a final capacity of 1,600 MW, made up of  $8 \times 200$  MW sets and associated boiler plant. The steam conditions too have been raised from 1200 p.s.i. and 950°F at Komati to 1500 p.s.i. and 1000°F at Camden.

By the choice of the larger units, Escom expects to gain maximum advantage of the economies of greater size and to bring down the capital cost of this station to a figure in the region of R78.00 per kW installed.

When the station is developed to its ultimate capacity, it will require a water supply of about 30 million gallons per day. The initial supply will be obtained from Jericho dam on the Imbama river 27 miles away, and additional supplies will be obtained, when required, from dams on the Ngwempisi and Usutu rivers.

The thermal efficiency of Camden Power Station is expected to be 32 per cent (which may be compared with the figure of 20–21 per cent for the old Klip Power

Station): and Camden, with  $8 \times 1,800,000$  lb/hr boilers steaming, will burn about 5,500,000 tons of coal per annum.

Camden will be interconnected with Komati Power Station by a 275 kV transmission line: but the load dispatch as it now appears is that the bulk of Camden output will be transmitted by means of 400 kV transmission lines into the 275 kV network which distributes power to the Rand and Orange Free State Undertaking and the Cape Northern Undertaking.

**High Voltage Transmission System.** It will be noted from the foregoing resumé of the more important new developments that a high voltage transmission system is being constructed within the three Undertakings which draw their power from the northern complex of Pooled Power Stations. This system is represented by the transmission lines shown in red on the map which appears opposite this page.

The three major Power Stations, i.e. Komati (installed and on order 1,000 MW), Taaibos/Highveld (installed 960 MW), and the new Camden Station (ultimate capacity 1,600 MW) are or will be interconnected by transmission lines of 275 kV and 400 kV. Extensions of this high voltage transmission system make provision for feeding into major distribution stations, naming them from the North:—

*Eastern Transvaal Undertaking:*

Acornhoek; Marathon; Kudu (at Komati Power Station); and Kruispunt.

*Rand and Orange Free State Undertaking:*

Esselen; Nevis; Snowden; Highveld; Scaffell; and Everest, on the Orange Free State gold field.

*Cape Northern Undertaking:*

Kimberley Distribution Station, at the termination of the 275 kV line from Everest to Kimberley.

The other power stations which form part of the group are interconnected with one another or with this main system by transmission lines of 132 kV or lower voltages.

The map opposite page 14 shows also the 275 kV line which is being built between Ingagane Power Station and Georgedale distribution station in the Natal Undertakings.

## PLANT CAPACITY

The capacity of generating plant taken into commercial service in Escom's power stations during the year 1962, and the capacity of the additional plant under construction or on order at 31st December, 1962, are given in the following table:—

	Plant taken into service: 1962		Plant under construction or on order at 31st December, 1962.	
	Boilers lb/hr	Generators kW	Boilers lb/hr	Generators kW
<b>Cape Western Undertaking</b>				
Hex River Power Station.....			275,000	30,000
<b>Border Undertaking-</b>				
West Bank Power Station.....				15,000
<b>Natal Central Undertaking</b>				
Ingagane Power Station.....			1,800,000	200,000
<b>Eastern Transvaal Undertaking</b>				
Komati Power Station.....	900,000	100,000	6,075,000	675,000
<b>Rand and O.F.S. Undertaking</b>				
Highveld Power Station.....			1,100,000	120,000
Camden Power Station.....			3,600,000	400,000
	900,000	100,000	12,850,000	1,440,000

Of the plant listed above as being under construction at the end of the year, the following boilers and turbo-alternator sets were commissioned after the year-end or were expected to be available for the winter loads of 1963:—

	<b>Boilers lb/hr.</b>	<b>Generators kW.</b>
<b>Natal Central Undertaking</b>		
Ingagane Power Station .....	900,000	100,000
<b>Eastern Transvaal Undertaking</b>		
Komati Power Station .....	900,000	100,000
<b>Rand and Orange Free State Undertaking</b>		
Highveld Power Station .....	1,100,000	120,000
	<b>2,900,000</b>	<b>320,000</b>

Thus the capacity of new plant on order to meet future expansion and development was 1,120,000 kW; and, as reported above, the order for the final generating set and boiler for Komati Power Station has also been placed, making up a total at 30th April, 1963, of 1,245,000 kW.

## HYDRO-ELECTRIC POWER IN SOUTH AFRICA

The possibility of hydro-electric power development, as an adjunct to water conservation schemes, has elicited comment by several Consultants who, in recent years, have investigated large schemes for the conservation of water resources in South Africa.

Although the potential for hydro-electric generation is small in comparison with the large thermal power stations described in the foregoing paragraphs, none-the-less Escom believes that the hydro-electric potential should be exploited wherever this can be done on an economic basis. Preliminary studies are being made, and the possibilities of hydro-electric development will be watched.

**Orange River Project.** During the year discussions were held between senior officials of the Commission and the Department of Water Affairs; but, at the time of closing this Report, no decision beyond the commitment in principle, which was reported last year, has been taken in connection with the hydro-electric power developments envisaged in the Orange River Project.

Escom has, however, given an undertaking to the Department of Water Affairs and the Treasury that it will take over the power lines and equipment which are to be erected by the Department for the supply of electricity for construction purposes at the sites of the Ruigte Valley Dam and the Vanderkloof Dam.

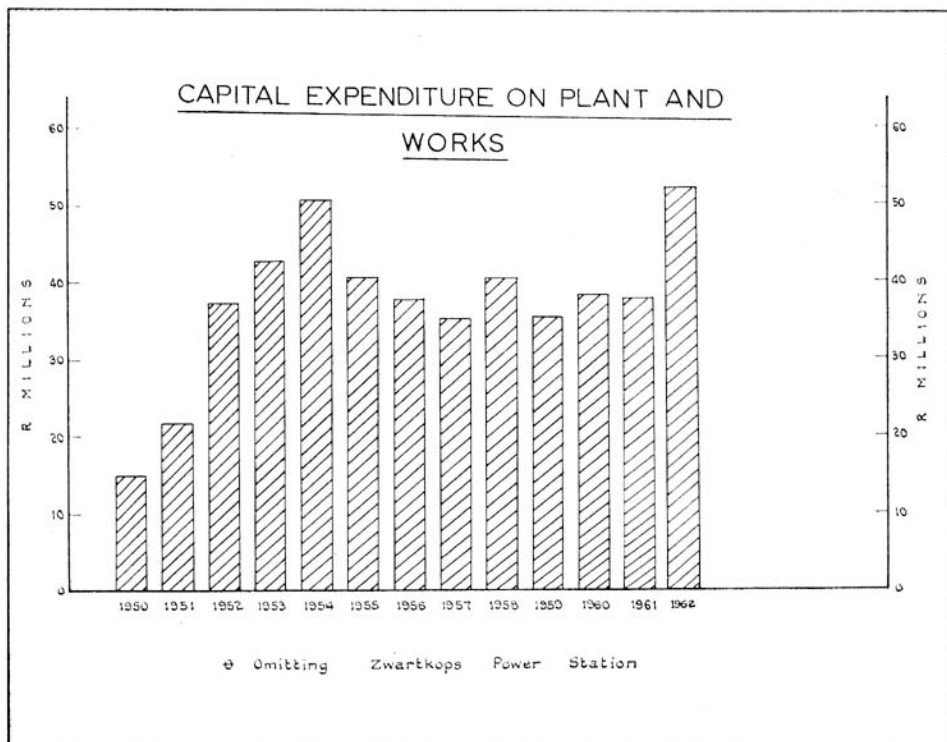
## CAPITAL EXPENDITURE

**Borrowing Powers.** Application was made on 2nd May, 1962, for approval, in terms of Section 10 of the Act, of borrowing powers for a further R94,300,000. This sum covered the estimated expenditures for extensions to Ingagane and Komati Power Stations and the first stage of the Camden Power Station, and for extensions of the transmission and distribution systems in all Undertakings. The application also covered additional expenditure estimated at R7,941,000 for rural electrification.

These further projects and borrowing powers therefor were approved on 29th May, 1962.

**Annual Capital Expenditure.** Expenditure on Capital Account during the year 1962 amounted to the record figure of R52,014,115.

The yearly expenditure on Capital Account over the years 1950-62, inclusive, is depicted in the following diagram:—





## PRICE OF ELECTRICITY

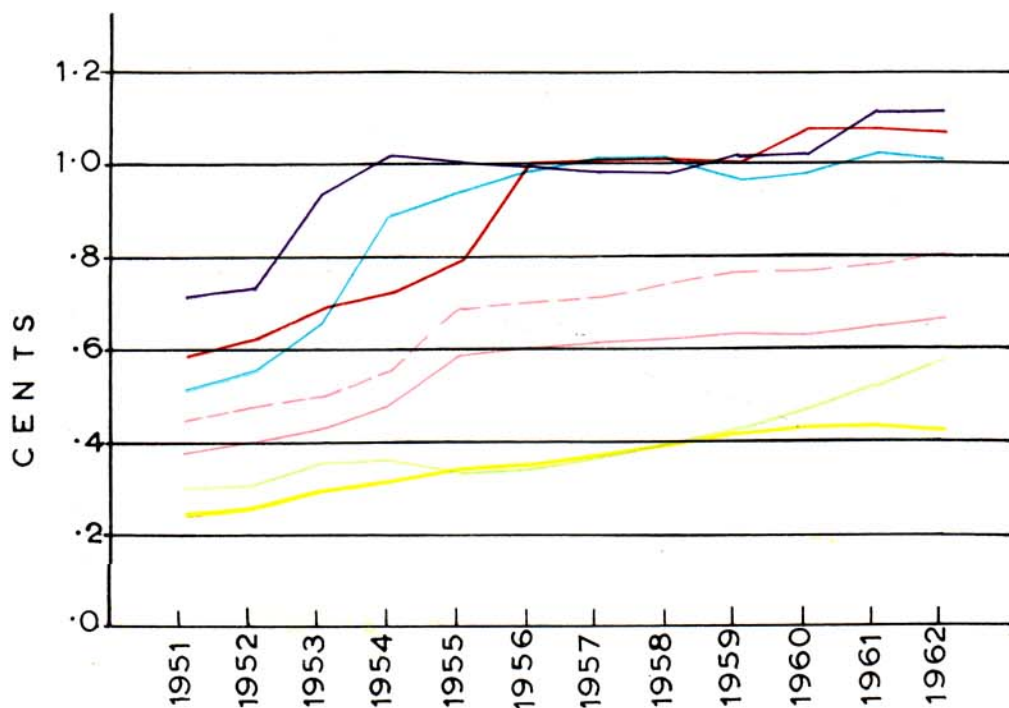
Comment was made in the last Report upon the price of electricity in Escom's Undertakings, the cost of Coal and the changes in Interest Rates. The diagrams depicting the change over the years 1951-61 have been brought up to date and are reproduced opposite this page and overleaf.

Diagram 1: Price per Unit Sold in the Commission's separate Undertakings, in Cents per kWh.

Diagram 2: Cost per Ton of Coal Burnt; and the rate of Interest on Loans raised over the period 1951-62.

# DIAGRAM 1

PRICE PER UNIT SOLD : CENTS

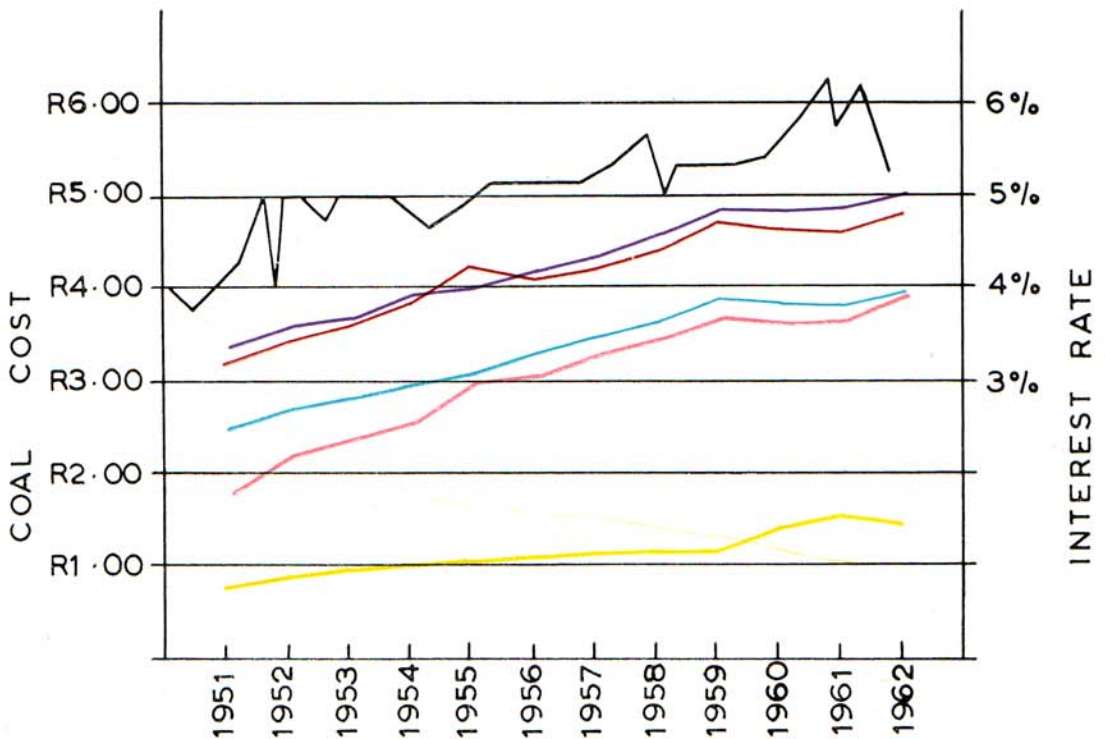


# DIAGRAM 2

COAL COST PER TON

INTEREST RATE

- Cape Western Undertaking
- Cape Northern Undertaking
- Border Undertaking
- Natal Undertakings (Pooled Stations)
- Eastern Transvaal Undertaking
- Rand & O.F.S. Undertaking
- Rate of Interest



## PROGRESS IN THE SUPPLY OF ELECTRICITY TO RURAL CONSUMERS DURING 1962

**General.** It is estimated that Escom's capital expenditure on rural schemes will amount to R10.2 million for the four year period ending 1963. This expenditure covers reticulation systems for farms, small holdings and peri-urban areas, but excludes expenditure on power stations and distribution systems.

As in the previous year, particular attention was paid to the supply of electricity to rural areas, and Managers of Escom's Undertakings did everything in their power to expedite rural schemes. In recent years the Rand and Orange Free State Undertaking experienced a shortage of skilled linesmen, but in 1962 the position improved somewhat and more construction gangs could be placed in the field.

The number of farms connected up annually is still rising, and 786 farms were connected up in 1962. In the previous year 734 were connected up.

In all Undertakings Managers are working on extensions of existing schemes and the investigation of new rural schemes. Much work was done on schemes which bore no fruit because the farmers found the terms too high and Escom had to abandon its plans.

After investigation into applications from the farming community, Escom considered that it would be possible to establish a new undertaking for the supply of electricity in the Sundays River and Gamtoos River Valleys near Port Elizabeth. The farms in these valleys are relatively small and the capital expenditure per farm will not be high. Terms were quoted to and accepted by the Kirkwood Municipality and 250 farmers in the Sundays River Valley. As reported on page 8 the approval of the Minister and the necessary licence from the Electricity Control Board were granted early in 1963, and a reticulation network will be established in the Sundays River valley as soon as possible. The power required for distribution in this valley will be purchased by Escom from the municipality of Port Elizabeth. Attention will be directed to the Gamtoos River Valley as soon as the proposed scheme for the Sundays River Valley has been established.

In view of the savings in personnel and in costs, small towns are frequently reticulated by Escom, and 11 kV power lines are used to transmit electricity to these towns. The advantage of these 11 kV power lines is that farmers along the routes of the lines can be connected up, and in this manner many farms have already received electricity.

The development of the existing Undertakings are reviewed in detail on the following pages.

**Cape Western Undertaking.** Plans have been drawn up for an extension of the area of supply of the Cape Western Undertaking to include an area near Citrusdal where a large farm scheme will be extended further.

During the past year 743 applications were received from farmers. This number includes 260 applications from farmers who already use electricity and who want a second or third point of supply on their properties. Terms were offered to 621 farmers, but 328 applicants did not accept the offers made to them. Replies have not yet been received from all the applicants.

Sufficient acceptances were received to keep construction gangs fully employed, and during 1962, 182 miles of farm lines were built and 177 farms connected up. Large supplies were made available to ten of these farms.

In the vicinity of Moorreesburg and Riebeeck West farm schemes were extended to serve an additional 36 farms, and 24 farmers north of Moorreesburg will be connected up early in 1963. It is expected that negotiations which are still in progress will be successful and that 18 domestic consumers in the village of Koringberg will be included in the abovementioned farm scheme.

A scheme planned for 20 farms along the Berg River near Riebeeck Kasteel failed to gain support. Apparently the farmers were unwilling to accept the terms until they knew whether the proposed Berg River irrigation scheme of the Department of Water Affairs would be established.

Negotiations with farmers near Hermon which have extended over more than ten years, have finally been successful. A farm scheme was established in this area for supplying 16 farms and 10 domestic consumers in the village of Hermon.

In the Citrusdal district a scheme for 21 farmers failed to gain acceptance, and at Piketberg the terms quoted to 20 farmers north of the town were considered too high. The two schemes are therefore in abeyance.

Offers were made to 16 owners near Bonnyvale, and the replies of the applicants are awaited. Offers will shortly also be made to 22 farmers in the Cold Bokkeveld, north of Ceres. The farmers require large supplies of electricity and have forecast that 2,000 h.p. will be used. Estimates have been drawn up, and the proposed scheme will, if it eventuates, serve a new area for which an enlargement of Escom's licensed area of supply will be necessary.

Negotiations are in progress with 60 owners in the Koo Valley near Montagu; and investigations are being made into a scheme for 62 farms between Caledon and Greyton. A large number of applications from single or small groups of farmers near existing schemes are also receiving attention.

In 20 towns in the Western Cape Province where Escom has established reticulation systems, more than 1,000 additional consumers were connected up during the year.

**Cape Northern Undertaking.** The distribution system in the Vaalharts Settlement has been extended and an additional 141 smallholdings were connected up. Nearly all the applicants in the area served by the main water canal are now connected to the networks. There are, however, many smallholdings which are not supplied with electricity. Although circuits have been established, the owners have not yet decided to use electricity on their farms.

A start was made in erecting a distribution system in the area served by the west water canal. Approval was granted for connecting up 150 smallholdings in 1963, and it is expected that the scheme will be completed between 1964 and 1965.

In the town of Hartswater in the settlement area, 23 additional consumers were connected up, in Jan Kemp Dorp 6 and at Magagong Station, 2.

The reticulation system in Taung which was started in 1960 was completed, the last five consumers having been connected up during the year under review.

Electricity was made available to the Railways Administration for lighting purposes at Ulco Station for four dwellings at the station and the station buildings. Circuits were built to three farms on the Vaal River, and supplies were given to these owners. Terms have been submitted to farmers along the Harts River, and the replies of these farmers are awaited.

Applications from the villages Windsorton and Sidney-on-Vaal were investigated: but the terms offered to these villages were thought to be too high, and the schemes are in abeyance for the time being.

**Border Undertaking.** An 11 kV power line was completed 12 months ago between Grahamstown and Alicedale to supply electricity to the Railways Administration at Alicedale. The Administration is not ready to take electricity, but two farms along the route of the line are being supplied.

In the area served by this Undertaking, a total of 30 farms and 9 other rural consumers were connected up during 1962. An 11 kV power line was erected between East London and Fort Grey to 6 farms, and a further six farms were connected to the scheme serving the Koonap Valley, north of Adelaide. One farmer took bulk supply for a large pumping plant.

A supply was made available to the Blythswood Bantu Training Institute north-west of Butterworth. Shortly after a bulk supply was given to the town of Idutywa, the Teko Training School for Bantu, which lies east of Butterworth, was also connected up. The Department of Bantu Administration and Development also asked for supplies to the farm Bekruipkop and a youth camp in the Mount Coke area: and electricity was made available at these two places in November.

In the towns of Keiskamahoek, Seymour and Kidds Beach 28 new consumers were connected up. Terms were submitted to the Village Council of Nqamakwe for a bulk supply, but were not accepted. Negotiations have been initiated with the village of Peddie, but it is too early to say whether the Municipality will accept Escom's offer.

A scheme was planned to supply nine farms along the Esk River: but the applicants did not accept the offer made to them.

An application from about 40 potential consumers in the Port Jackson area will be investigated in 1963. A proposal to extend the farm scheme at Berlin to an additional group of farms will also be considered in the coming year.

**Natal Southern Undertaking.** It appears that rural consumers are increasingly prepared to accept terms which were rejected as uneconomic some years ago. Possibly the need to combat drought conditions has induced farmers to revise earlier assessments, for many farmers have started to use electric water pumps.

During the year 62 farms and 57 other rural consumers were connected up. One of the schemes which was built serves 20 farms between Umzinto and Braemar. At Thornville 10 farms were connected, at Umlaas Road 8, at Mandeston 8 while 10 in the Oribi Kloof area are being supplied. The other farms are scattered over the Undertaking.

The feature observed in Natal Central, that farmers are gradually using more electricity for their farming activities, may be noted in Southern Natal also. In three instances, power lines had to be reinforced to make more electricity available, while one poultry farmer increased his demand to the extent that he became entitled to a supply on the large users contract.

In the border industrial area at Hammarsdale, electricity was furnished to factories producing sewing machines and canvas goods respectively: and plans have been drawn up to extend the circuits to houses and water and sewage works which will be erected shortly.

At Driefontein on the Natal North Coast a scheme was planned for 22 consumers, but the number of acceptances was insufficient to proceed with the scheme. Similarly a scheme for 21 consumers in the vicinity of Braemar was unsuccessful. A total of 86 applicants have declined Escom's terms, while 178 applicants have not yet sent in their replies. These offers relate to numerous small extensions which can be added to existing networks.

However, work is in hand on supplies to land owners who have accepted the terms offered, and 76 rural consumers who have concluded contracts are waiting to be connected up.

The extension of the distribution system to Zululand to provide bulk supplies to Eshowe and Empangeni will enable electricity to be made available to farmers in the vicinity of those towns. The first 11 kV power line will be erected in the near future from Empangeni to a Bantu School 10 miles away and in order that the supply may be given at an earlier date, Escom will buy electricity from the Empangeni Municipality temporarily.

**Natal Central Undertaking.** Of the 56 farm owners who were connected up during 1962 only 5 are using electricity for farming purposes. The tendency for the initial uses of electricity to be mainly for domestic purposes is usually followed by an increasing use of the available power for farming purposes. It was necessary, for example, to make available larger supplies to 11 farms which were connected up some years ago. Four farmers increased their demands to such an extent that supply as for a large user is now necessary.

The farms which were connected up during the year under review, are scattered over the Undertaking. They include 2 at Paul Roux, 3 at Bethlehem, 8 at Greytown, 2 at Weenen, 4 at Winterton, 2 at Dundee, etc. No large farm scheme was started but the abovementioned new connections were given by means of branch lines from existing networks. Electricity was made available to 22 other rural consumers.

Of the many applications dealt with during the year under review, a total of 140 farmers did not accept Escom's terms. In many cases connections would have required long power lines and the terms were increased on that account, but in other cases the terms were not unreasonable. A total of 64 applications are undecided.

A group of 26 farmers near Danielsrust have accepted terms, and will be connected up during 1963; and 87 future rural consumers who have signed agreements are waiting for Escom to erect the power lines to their farms. Excepting the group at Danielsrust the properties concerned are distributed over the whole Undertaking.

One scheme which failed to gain acceptance was planned for 34 farms at Muden.

An 11 kV power line is being erected between Lindley and Arlington to serve the latter town. Farms along the route of the power line will thus be brought within reach of the 11 kV power line.

Negotiations are at present in progress which may result in Escom taking over the supply of electricity to consumers in the village of Wartburg and existing consumers in the surrounding areas.

The Department of Water Affairs has started building the Midmar Dam near Howick, and Escom has made available a supply for construction purposes. Supply was also given to two saw mills, one at Mount Prospect and the other at Dargle.

**Eastern Transvaal Undertaking.** In the Groblersdal area existing farm schemes were enlarged to connect up additional farmers and other consumers. The 21 kV power line along the Olifants River was extended to the Jane Furse Hospital, the Mission Station and hospital at Glen Cowie and the Bantu Administration Offices at Nebo. These consumers are situated some 40 miles east of Marblehall in Secucuniland. Along the Olifants River 15 more farmers were connected up, 8 of which used electricity for big pumping plants and have taken bulk supply.

The Elands River farm scheme northwest of Marblehall was extended into the Toitskraal area where 47 new consumers were connected up. A total of 61 farms are already being supplied, and 40 more farms will be attended to in 1963.

A power line was erected between Groblersdal and the Loskop Dam holiday resort. The scheme was planned to provide a bulk supply at the dam and also to supply some 30 farmers along the route of the line: and at the year-end the holiday resort and 6 farms were connected up.

In 1962 more than a hundred miles of farm lines were erected for the existing consumers in the Groblersdal area; and electricity is now within reach of some 300 more farms and smallholdings, the owners of which have not yet seen their way clear to accept Escom's terms. The only area not yet traversed by lines is the area along the Blood River southeast of Groblersdal. An investigation will be made in 1963 to determine whether an economic scheme can be planned for this area.

In the Belfast district a farm line was erected to a pumping station of the Railways Administration, and this line will be extended to the nursery of the Department of Forestry. South of the town the existing farm scheme was extended to four additional farms. Terms were offered to ten farmers between Belfast and Wonderfontein, but were not accepted.

In the area east of Ermelo 20 additional farms were connected to the existing scheme which will be extended to a further 15 farms in 1963.

Around Nelspruit a rural scheme was established for three saw mills and 50 farms. Power is purchased by Escom from the Nelspruit Municipality and distributed to these farms. The scheme was completed during the year and it is expected that it will be further extended in the future.

At Sabie a scheme was planned for the supply of power to the fruit packing shed at Kiepersol, some 50 farms and three points in the Kruger National Park. A second scheme covers the erection of a 21 kV power line between the power station at Sabie and the village of Graskop where some 17 residents have accepted Escom's terms. The power lines and the reticulation system for Graskop will be erected in 1963.

A number of smaller schemes were completed during the year. In the district of Bronkhorstspuit four farms were connected up, near Bethal six farms, at Balmoral Station four dwellings, north of Leslie seven farms, etc. Altogether 143 farms and 50 other rural consumers were connected to existing or new rural schemes during 1962, in the area served by the Eastern Transvaal Undertaking.

A farm scheme planned for 16 farms near Carolina failed to gain support; and a scheme for 33 farms near Kendal did not come to fruition. Terms were offered to a group of 20 farmers near Bethal, and applications from farmers at Koringfontein, Hendrina and Morgenzon have still to be investigated.

The reticulation systems in the towns of Evander, Dullstroom, Hendrina, Kinross and Leslie were extended to connect up an additional 361 domestic and other consumers.

**Rand and Orange Free State Undertaking.** The rural scheme in the Muldersdrift/Boschkop area north of Roodepoort where more than 500 rural consumers are now being supplied was further extended to serve 129 additional consumers.

In the Brentwood Park scheme north of Benoni, an additional 193 consumers were connected up. The scheme for this area is now complete and serves 501 peri-urban consumers and agricultural smallholdings.

The rural scheme planned to supply 250 consumers in the Halfway House area between Johannesburg and Pretoria was completed during the year under review, and a total of 128 consumers were connected up at the year end. Further extensions were approved, and are under construction.

Work is continuing in several areas between Johannesburg and Vereeniging where new rural schemes are being established or existing schemes extended further. The more important areas are Eikenhof, Walkerville, De Deur, Jacksonsdrift and Baragwanath. A total of 44 additional consumers were connected up in 1962.

Good progress was made with the establishment of a farm scheme between Ventersdorp and Klerksdorp. The farms are situated along the Schoonspruit, and 15 owners are already supplied with electricity. An additional 95 farms will be connected to this scheme in 1963.

The Gravett farm scheme near Heidelberg was extended to 11 additional farms. A number of dairy farms served by this scheme use relatively large quantities of electricity.

Escom's terms were accepted by some 110 farms in the district of Viljoenskroon in 1960. At first difficulties were experienced in finding skilled linesmen to take charge of construction gangs, but work was started in 1962, and 32 farms have been connected up.

Work is in hand on a farm scheme between Welverdiend and Rysmierbult, where 11 farms have been supplied. Work was started also on a rural scheme in the area Tarlton-Magaliesburg-Hekpoort, where the first three consumers were connected at the end of the year. Construction has been commenced at Sundra, near Springs, and on the West Rand agricultural smallholdings near Randfontein. A start has been made in the construction of a scheme for consumers in the area west of Vanderbijl Park to the Barrage.

Negotiations with some 200 farms near Delmas proved difficult, as the tariffs were considered to be too high. However, a small group of farmers pressed for a limited scheme to be established, and some 20 farms will be connected up in the near future.

A rural scheme was planned for some 100 farms in the Grootvlei area between Heidelberg and Balfour. Only forty owners were prepared to accept the terms offered, and a restricted scheme will be started in the near future.



A group of farmers who have accepted Escom's terms will be connected to the Parys farm scheme in 1963. Support was also obtained from potential consumers in the Schoongesicht area near Henley-on-Klip, and an extension to 40 properties has been planned for this area.

Schemes which were planned for 180 farms between Kroonstad and Koppies and some 100 farms between Taaibos and Deneysville failed to gain support. Costs were high, and the tariffs offered were considered to be too expensive. Negotiations are in progress with farmers between Hennenman and Ventersburg, with owners on the Waterpan agricultural holdings at Randfontein, with farmers along the Crocodile River near Pelindaba and with a large number of potential consumers between Koster and Swartruggens.

Discussions have taken place between the Brits District Farmers Union and Pretoria Municipality on the one hand, and between the Farmers' Union and Escom in connection with the supply of electricity in the Brits area. Portion of the area is in the area of supply granted many years ago to Pretoria, and portion in Escom's area: and the Municipality has now agreed to surrender its right to supply with a view to Escom establishing a scheme to serve the whole area. Terms were offered in June, 1962; and Escom believes that the prospects for a large and important rural scheme are good.

During 1962 a total of 658 consumers in typical rural areas were connected up. This number includes 174 farms. In addition, the Undertaking connected up 452 new consumers who live in the townships and the peri-urban areas around Johannesburg.

## EXTENSION OF ESCOM'S TRANSMISSION SYSTEMS

The statistics of the route miles of transmission lines and cables in service and the capacity of transformers installed on the Commission's Undertakings are set out in the customary tables in the Annexures to the Report: but attention is drawn to the magnitude of the construction programme undertaken in recent years, and to the aspect that the Republic's resources of engineering and skilled personnel, trained in this work, are being, and will continue to be taxed to the full to meet this programme.

An over-all picture may be presented by considering the extensions of transmission systems as falling into three categories: (i) high voltage transmission lines of 132 kV, 275 kV and higher voltages; (ii) transmission lines of intermediate voltages, say, 88 kV to 33 kV; and (iii) distribution lines and cables of the lower voltages, ranging from 22 kV to 380 volts, which make up the reticulation networks.

Construction of high voltage transmission lines and associated equipment has been carried out for the most part, by Contractors who are specialists in these fields. South African associates of overseas firms have made an invaluable contribution in manpower and technical skills: nevertheless Escom personnel are responsible for planning, the placing of contracts, the procurement and survey of line routes and sub-station sites, and the co-ordination and supervision of the work.

Transmission lines in the intermediate category may be constructed under contract; but the bulk of this work is carried out by Escom's own engineers and construction personnel. In either event, planning, placement of contracts for materials and equipment and survey are carried out by Escom.

The third category covers the power lines, cables and equipment which are necessary for delivering electricity at the voltage required by the consumer, and includes the several thousand miles of 11 kV lines and low voltage lines which constitute Escom's rural networks. This work calls for direct and close working between the supplier and each individual consumer, both in the administrative and technical fields, so that, in the nature of things, the chief responsibility here must rest upon Escom.

Construction of transmission lines and cables, summarized in these rough categories, and the capacity of transformers installed on the Commission's Undertakings during the last three years is shown in the following table:—

**ROUTE MILES OF TRANSMISSION LINES AND CABLES AND CAPACITY OF TRANSFORMERS TAKEN INTO SERVICE DURING THE YEARS 1960/1963:—**

Transmission Lines and Cables						
Year	275 kV	132 kV	88/33 kV	22 kV and lower	Total (miles)	Transformers MVA
1960	—	56	217	815	1,088	322.3
1961	—	627	65	1132	1,824	2,742.6
1962	208	44	349	1072	1,673	

The extensions to, or re-inforcement of, the major transmission networks in Escom's separate Undertakings are indicated in the following lists of the more important transmission lines built during 1962, and lines under construction or projected at the end of the year:

**DEVELOPMENT OF TRANSMISSION SYSTEMS.**

The development of the main transmission systems in the various Undertakings is indicated by the following list of transmission lines built during 1962 and the lines under construction or projected at the end of the year.

**Completed in 1962**

		kV	Total Circuit miles
E. T. U.	NIL		
N. U.	(1) Tees to Umgeni and Duff's Road S.A. Railways Sub-Stations.....	132	10
	(2) Turn-in-lines to Ingagane Power Station.	88	5
B. U.	NIL		
C. N. U.	(1) Sishen Sub-Station — Asbes Sub-Station Riries Sub-Station — Hotazel Sub-Station.....	66	55
C. W. U.	(1) Windmill Sub-Station — Paarl Sub-Station (part Double Circuit).....	66	9
	(2) Tee line to Ceres, Sub-Station.....	66	15
	(3) Ashton Sub-Station — Bonnievale Sub-Station.....	66	10
R. & O.F.S. U.	(1) Komati Power Station — Nevis Distribution Station No. 2.....	275	64
	(2) Nevis Distribution Station — Snowdon Distribution Station Nos. 1 & 2.....	275	70
	(3) Snowdon Distribution Station — Highveld Power Station Nos. 1 & 2.....	275	74
	(4) Highveld Power Station — Scaffell Distribution Station Nos. 1 & 2.....	275	42

(5) Scaffell Distribution Station loop-ins and rearrangement.....	132	4
(6) Vierfontein Power Station — Grootkop Distribution Station No. 2 Turn-in.....	132	5
(7) Watershed Distribution Station — Sannieshof Sub-Station.....	88	40
(8) Sannieshof Sub-Station — Delareyville Sub-Station.....	88	28
(9) Delareyville Sub-Station — Vryburg Sub-Station.....	88	49
(10) Klip Power Station — E.R.P.M. Distribution Station.....	88	12
(11) Wolmaransstad Sub-Station — Bloemhof Sub-Station.....	88	43
(12) Other System Extensions.....	132	10
Other System Extensions.....	88	41
Other System Extensions.....	42	28

### Under Construction 1.1.63.

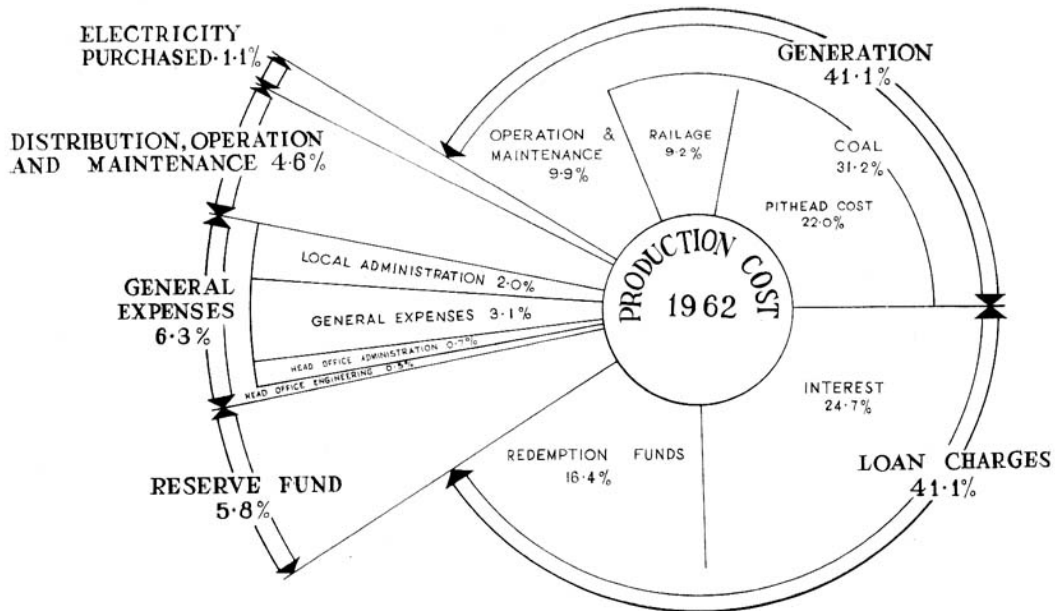
E. T. U.	(1) Leeuwkloof Tee point — Marathon Distribution Station.....	275	61
	(2) Marathon Distribution Station — Acornhoek Distribution Station.....	275	60
	(3) Acornhoek Distribution Station — Foskor Distribution Station.....	132	41
	(4) Marathon Distribution Station — Noordkaap Sub-Station — Chrysotile Sub-Station.....	66	50
	(5) Kudu Distribution Station — Rockdale Distribution Station.....	132	22
	(6) Komati Power Station — Kruispunt Distribution Station.....	275	30
	(7) Komati Power Station — Camden Power Station.....	275	56
N. U.	(1) Ingagane Power Station — Georgedale Distribution Station.....	275	320
	(2) Further S.A. Railways Tees & loops....	88	29
	(3) Cato Ridge Sub-Station — Northdene Tee off, Double Circuit.....	88	33
	(4) Turn-in lines to Georgedale Distribution Station.....	132	19
	(5) Volksrust Sub-Station — Platrand S.A.R. Sub-Station.....	88	29
B. U.	(1) Conversion King William's Town Sub-Station — Tyume Sub-Station.....	66	33
C. N. U.	(1) Everest Distribution Station — Kimberley Distribution Station.....	275	150
	(2) Kimberley Distribution Station — Shepherds Tree S.A.R. Sub-Station.....	132	105
	(3) Silverstreams Sub-Station — Asbes Sub-Station.....	66	67
	(4) Turn-in lines to Midplots Sub-Station..	66	16

C. W. U.	(1) Ysterplaat Sub-Station — Muldersvlei Sub-Station.....	132	20
	(2) Muldersvlei Sub-Station — Windmill Sub-Station.....	132	18
	(3) Muldersvlei Sub-Station — Firgrove Sub-Station, Double circuit.....	132	32
	(4) Windmill Sub-Station — Hex River Power Station.....	132	36
	(5) Koperfontein Sub-Station — Fisheries Sub-Station.....	66	45
R. & O.F.S. U.	(1) Snowdon Distribution Station loop-ins and rearrangement.....	88	70
	(2) Scafell Distribution Station — Technimetals Sub-Station.....	132	53
	(3) Union Distribution Station loop-ins....	88	7½
	(4) Esselen Distribution Station — Klevebank Distribution Station.....	88	9
	(5) Villiers Sub-Station — Klipspringer Sub-Station.....	88	18
	(6) Snowdon Distribution Station — S.A.R. Sub-Stations — Standerton Sub-Station	88	183
	(7) Alma Distribution Station — Everest Distribution Station.....	132	12
	(8) Scafell Distribution Station — Vanderbijl West Sub-Station.....	132	35
	(9) Struben Distribution Station — Step-down Distribution Station.....	132	14
	(10) Vierfontein Power Station — Shepherds Tree S.A.R. Sub-Station.....	132	105
<b>Projected 1.1.63.</b>			
E. T. U.	(1) Wilge Power Station — Transalloys Distribution Station.....	132	12
	(2) Komati Power Station — Leeuwkloof Tee point.....	275	48
	(3) Rockdale Distribution Station — Middelburg Sub-Station — Olifantsrivier Sub-Station.....	88	34
	(4) Rockdale Distribution Station — Machadodorp Distribution Station.....	132	55
	(5) Machadodorp Distribution Station — Marathon Distribution Station.....	132	59
	(6) Marathon Distribution Station — Komatipoort Sub-Station.....	132	82
	(7) Marathon Distribution Station — Kiepersol Sub-Station.....	66	33
	(8) Chrysotile Sub-Station — Malelane Sub-Station.....	66	7

N. U.	(1) Newcastle Sub-Station — Volksrust Sub-Station, 2nd line.....	88	35
	(2) Duffs Road Sub-Station — Mandini Sub-Station.....	132	54
	(3) Mandini Sub-Station — Eshowe Sub-Station — Empangeni Sub-Station.....	88	52
	(4) Umgeni Power Station — Duffs Road Tee off, Double Circuit.....	132	11
B. U.	NIL		
C. N. U.	(1) Kimberley Distribution Station — Ulco Sub-Station — Silverstreams Sub-Station — Sishen Sub-Station.....	132	140
	(2) Silverstreams Sub-Station — Brits Mine Sub-Station.....	132	8
	(3) Silverstreams Sub-Station — Postmasburg Area.....	66	30
C.W.U.	(1) De Hoek Sub-Station — Citrusdale Sub-Station.....	66	32
	(2) Ceres Sub-Station — Gydo Pass area...	66	12
R. & O.F.S. U.	(1) Camden Power Station — Vaalkop Distribution Station.....	400	270

# COSTS AND TARIFFS

The more important elements in Escom's cost structure are shown in the following diagram of Production Costs for the year 1962:—



The only change in tariffs made during the financial year 1962 was the increase from 5 per cent to 10 per cent in the surcharge on standard tariffs in the Natal Central Undertaking, which was introduced with effect from March, 1962.

However, the following applications for amendment of Escom's tariffs were made during the year:—

**Cape Western Undertaking.** Application was made to the Electricity Control Board on 8th March, 1962, for amendment of the Schedule of Standard Prices for the Cape Western Undertaking to adjust standard prices to the changes in the cost structure which had taken place since the last revision, and to eliminate the surcharge of 10 per cent which was introduced in 1960. The application was granted by the Board on the 22nd October, 1962, for introduction from 1st January, 1963.

**Border Undertaking.** Application was made to the Board on 5th September, 1962, for amendment of the Schedule of Standard Prices for the Border Undertaking, (i) to introduce a service charge in the tariffs for small power users and lighting and domestic consumers, (ii) to substitute a demand charge for small power users based upon monthly ampere-demand readings in place of the charge on h.p. installed, and (iii) to substitute the charge of .84c per unit for the previous charge derived from the rate expressed in pence.

This application was approved on 19th February, 1963; and these charges, including the new ampere-demand tariff, will be introduced in 1963.

## STATISTICAL SUMMARY

The figures of revenue, production costs, output and sales which are customarily set out in the Statistical Summary are shown in the table which appears on the following page. This table has been extended to show the figures during the last five years, as well as the increase in 1962 over the year 1961:—



## FINANCIAL

**Loan Capital.** During 1962 two local loans totalling R40,000,000 were raised as follows:—

<b>Date Issued</b>	<b>Amount</b>	<b>Interest</b>	<b>Issue Price</b>	<b>Redeemable</b>
20th March.....	R18,000,000	6 $\frac{1}{8}$ %	R99·50%	28/2/82—87
9th October.....	R22,000,000	5 $\frac{1}{4}$ %	R100·00%	31/10/82—87
	<u>R40,000,000</u>			

These loans were fully subscribed, but at the year end the amount received on account of the loan issued on the 9th October was R21,811,765. The balance of R188,235 payable not later than the 31st January, 1963 in terms of the prospectus, has since been received. At the year end the loans raised locally as Local Registered Stock totalled R527,000,000 of which R6,000,000 had been repaid.

Of the loan of \$14,000,000 (R10,000,000) granted by the International Bank for Reconstruction and Development in 1961 and which is to be taken up not later than the 30th June, 1963, an amount of R5,925,916 had been received up to the 31st December, 1962.

During the year R5,237,008 was repaid against other overseas loans.

These amounts increased the Commission's loans outstanding at the date of the Balance Sheet to R560,056,483.

## STATISTICAL SUMMARY

Revenue, costs, output and sales, and other figures relating to the operation of the Commission's Undertakings during the years 1958 to 1962 are as follows:—

	1958	1959	1960	1961	1962	Increase 1962 over 1961
REVENUE .. .. .	R64,498,272	R73,007,662	R81,835,764	R88,018,366	R94,002,952	6·799%
COSTS .. .. .	R63,907,884	R71,967,070	R80,735,496	R86,061,388	R93,422,190	8·553%
Difference between Revenue & Costs ..	R590,388	R1,040,592	R1,100,268	R1,956,978	R580,762	—R1,376,216
Average Price per Unit Sold .. .. .	·4734c	·4951c	·5079c	·5155c	·5164c	·168%
Average Cost per Unit Sold .. .. .	·4698c	·4888c	·5016c	·5059c	·5155c	1·916%
Cost of Coal Consumed (including Railage)	R19,039,402	R20,969,868	R25,372,518	R27,712,566	R29,230,355	5·477%
Railage on Coal Consumed .. .. .	R6,364,550	R6,698,232	R8,912,074	R8,849,261	R8,626,661	—2·515%
Coal Consumed (in tons of 2,000 lbs) ..	11,887,426	12,730,278	13,792,816	14,544,837	15,383,313	5·765%
Units Generated .. .. .	15,582,562,551	16,926,480,087	18,543,341,972	19,575,396,581	20,805,518,186	6·284%
Units Sent Out .. .. .	14,515,812,628	15,777,115,134	17,361,049,153	18,284,050,367	19,403,958,379	6·125%
Units Purchased .. .. .	164,110,757	93,614,989	15,320,932	8,399,659	12,559,278	49·521%
Units Sold .. .. .	13,602,188,526	14,724,457,291	16,094,129,276	17,013,161,822	18,121,036,829	6·512%

**Redemption Fund.** The amount in the Redemption Fund at the 31st December, 1962, totalled R154,374,047 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 sales of assets and profits on realisation of investments.

**Reserve Fund.** The amount in the Reserve Fund at the 31st December, 1962, was R35,782,754.

**Capital Expenditure.** Expenditure on Capital Account during the year amounted to R52,014,115 which increased the total capital expenditure at the 31st December, 1962, to R581,579,266.

Expenditure on Capital Account will amount to approximately R784,000,000 on completion of all the works to which the Commission is committed and on projected works.

**Investments.** The book value of securities, representing investment in stocks of Electricity Supply Commission, Republic of South Africa and Municipalities held by the Commission on behalf of the redemption and reserve funds at 31st December, 1962, was R184,626,437 the nominal value being R185,947,893. The market value of these investments at that date was R189,285,337.

**Assets and Liabilities.** The Commission's total assets at the 31st December, 1962, amounted to R800,783,837 and its total liabilities to R594,342,245, the difference being R206,441,592 which is represented by the amounts in the redemption and reserve funds, loans repaid, and balance on revenue accounts.

## OBITUARY

The Commission records, with deep regret, the death of the late Dr. J. T. Hattingh on 24th January, 1963, and the death, on 19th February, 1963, of the late Mr. A. M. Jacobs.

Dr. J. T. Hattingh joined the Engineering Staff of Escom in June, 1923; and over the long period of 39 years to his retirement on 30th June, 1962, from the position of Chairman and Consulting Engineer, Dr. Hattingh's great gifts as a scholar and engineer, and his wide knowledge of practical engineering made a notable contribution to the technical achievement and standing of Escom. He was appointed a Member of the Commission in February, 1949, and became Chairman and Consulting Engineer in February, 1952.

Mr. A. M. Jacobs too joined the Commission and served on the Engineering Staff from its inception. He was appointed a Member of the Commission in January, 1926, and was Chairman of Escom from February, 1949, until his retirement in January, 1952.

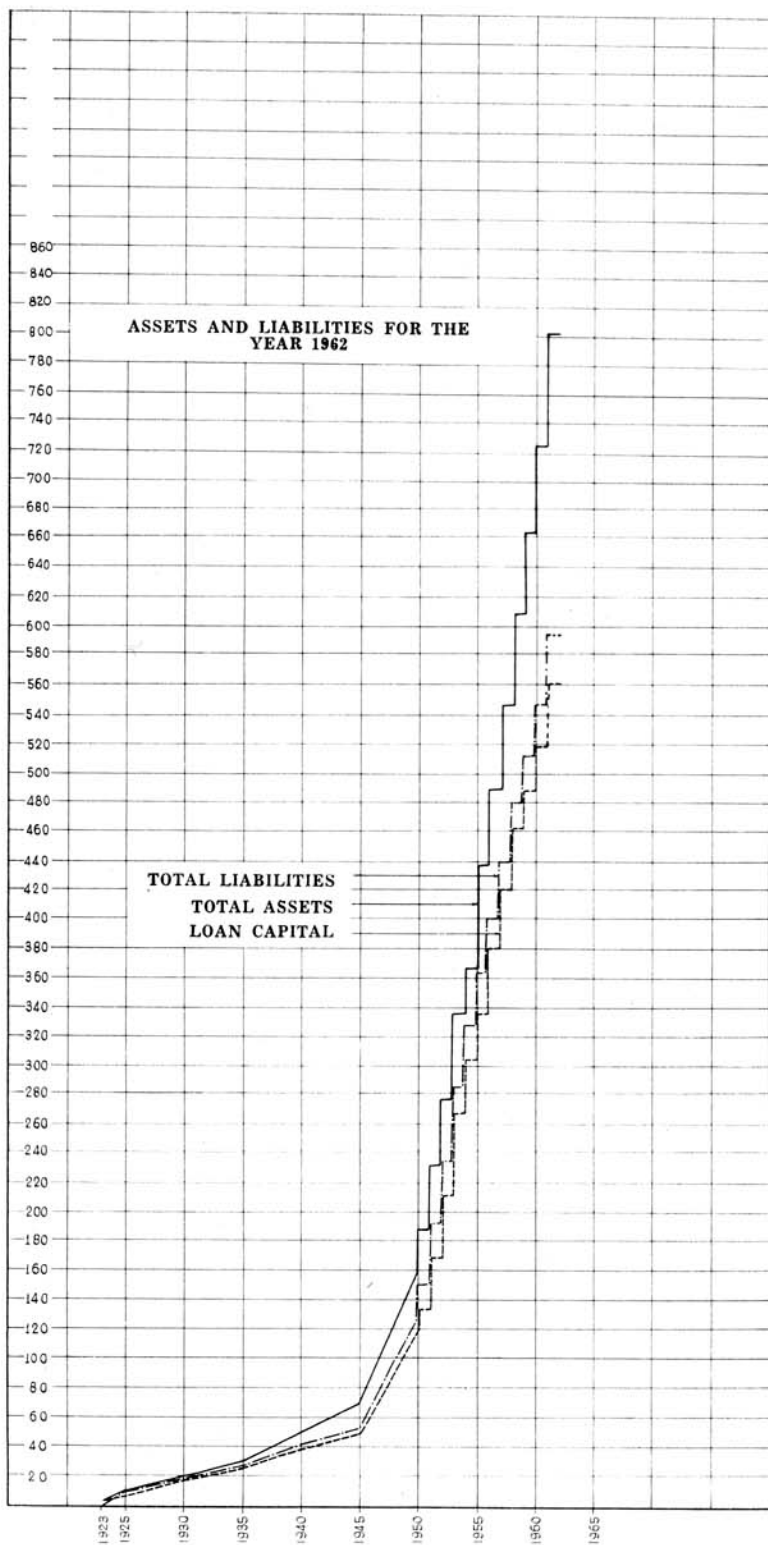
## STAFF

**Home Ownership Scheme.** The balance at 31st December, 1962, 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 R2,743,844.

**Personnel.** The staff employed by the Commission at the 31st December, 1962, numbered 16,467 employees made up as follows:

	1962	1961	Increase	
Whites.....	5,866	5,626	240	4.3%
Coloured and Bantu.....	10,601	9,815	786	8.0%
	<u>16,467</u>	<u>15,441</u>	<u>1,026</u>	<u>6.6%</u>

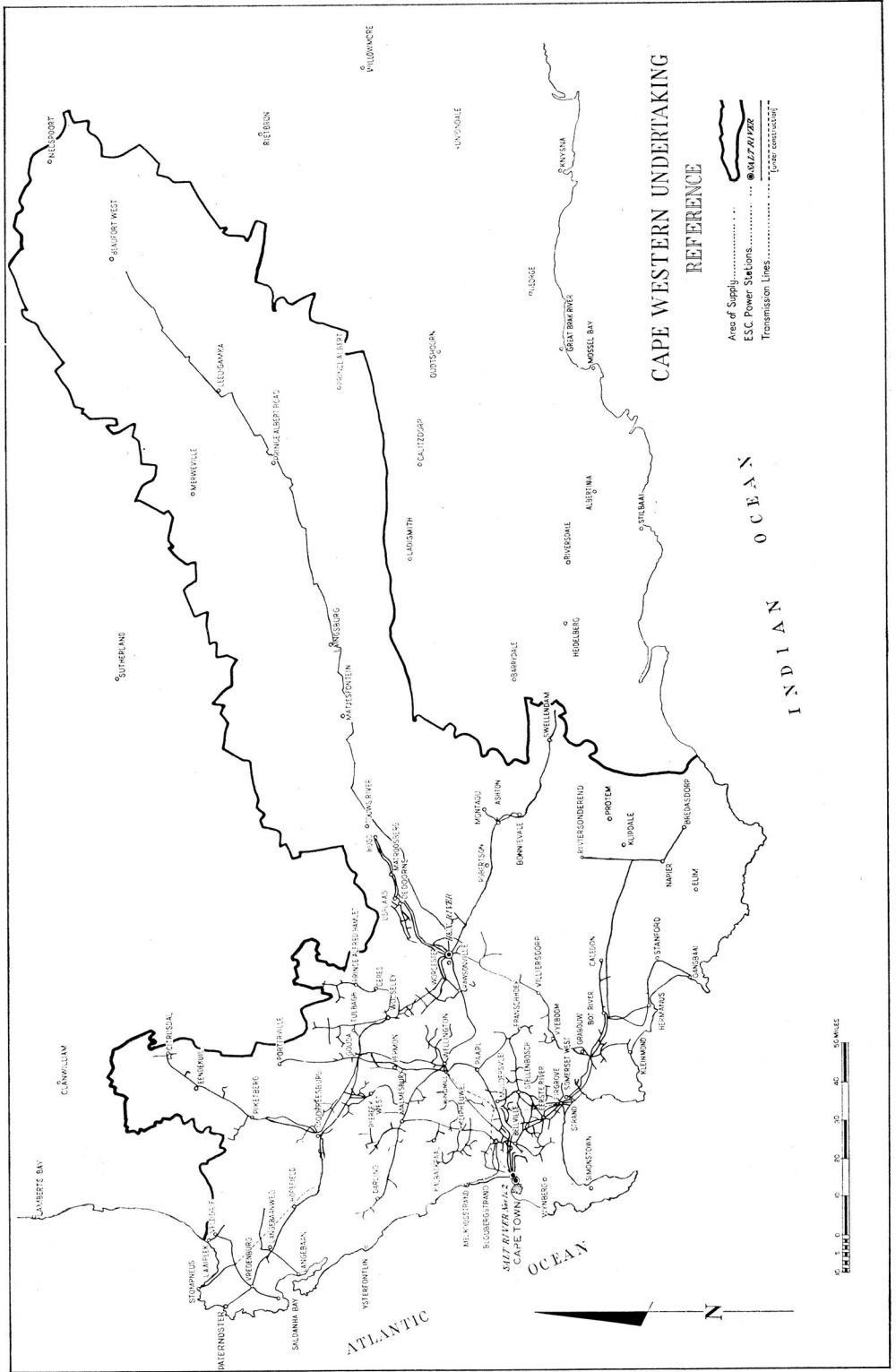
The Commission desires to express to all employees its appreciation of their loyal and conscientious service.



## 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 Power Stations was raised by approximately 10 per cent, the greater part of the increase being provided by Hex River Power Station to meet the increased demand of the Railways for the traction system between Touws River and Beaufort West.

Salt River No. 2 Power Station supplied most of the units, since it continues to be operated as the base load station, whilst regulation was done from Hex River Power Station. Salt River No. 1 Station was only used when necessary.

The  $\frac{1}{2}$ -hour maximum demand for the year was 200·2 MW, an increase of 33·7 MW above the maximum for 1961.

Units sold in 1962 increased by 9·9 per cent, in spite of the termination of the partial supply to the City Council of Cape Town at the end of 1961. If the partial supply to Cape Town is excluded, units sold in 1962 show an increase of 17·3 per cent over the corresponding sales for 1961, due mainly to the electrification of the Touws River — Beaufort West railway.

The reduction in Bulk Supplies shown in the tables of Sales is accounted for in the termination of the supply to Cape Town. The total units sold to other Municipalities which purchase bulk supplies from Escom show an over-all increase in their business of 3·6 per cent.

**Hex River Power Station: Extensions.** The cladding of the boiler and turbine house for the further extensions to Hex River Power Station was completed in June; but erection of the additional boiler (No. 6) and turbo alternator set (No. 5) is behind programmed dates and this plant is not expected to be ready for commissioning before August and September, 1963.

**Coal.** There was a further slight drop in the calorific value of coal supplied to the power stations, but supplies were adequate.

**Major Transmission System.** Erection of the towers of the Muldersvlei-Firgrove 132 kV double circuit line was completed during February, and thereafter work was started on the Ysterplaat-Muldersvlei 132 kV line. By the end of the year under review, 90% of the towers on this line had been erected. Laying of the 132 kV cables from Salt River Power Station to Ysterplaat by Contractors commenced during the year, and was all but complete by the end of the year. This work will be completed early in 1963 when the 75 MVA step-up transformer for Salt River arrives. The plinths, cable trenches, relay house and oil pressure vessels for the unit were erected during the year.

The Ysterplaat switchyard site was levelled and fenced and all steelwork erected ready for the overhead line and cables. At Muldersvlei substation the steelwork was erected and the installation of equipment proceeded at intervals during the year, so that by the end of the year the substation was 75% complete. Concentrated work at Windmill substation during the first quarter of the year enabled this substation to be commissioned at 66 kV in April; thereafter a considerable portion of the old Wellington substation was dismantled.

Survey work on the 132 kV system to Windmill and through du Toit's Kloof to Hex River Power Station was completed, enabling specifications to be issued for the proposed Windmill-Hex 132 kV line.

On the Hex-Beaufort West 132 kV system the carrier current and supervisory equipment was installed, tested and commissioned by October.

In the Somerset West area a new 66/6·6 kV substation at Lynedoch replaced the old Koelenhof substation; a new 66/6·6 kV substation at Sir Lowry's Pass replaced the old one, and a double circuit 66 kV line was extended to this substation. The addition of two 66/6·6 kV 2,000 kVA transformers and indoor switchgear to Firgrove substation, to replace the 33 kV sub-station, was also completed, enabling several miles of redundant 33 kV overhead line to be recovered.

At Louren's River substation new 10 MVA double-ratio transformers were installed and new indoor switchboards for 6·6 kV and 11 kV were commissioned.

With the arrival of the two new 5 MVA 66/11 kV transformers, the new Elgin substation was commissioned on the 66 kV Bot River line, and the 33 kV substation was dismantled.

To meet the increased demand in the Ceres area, a wooden H-pole 66 kV line was constructed through Mitchell's Pass, as a tee-off from the Hex-Wolseley line. A new terminal substation adjacent to the existing 11 kV substation at Ceres was constructed and commissioned with temporary transformers.

To improve voltage stability in the Swellendam area, a wooden H-pole 66 kV line was constructed from Ashton to Bonnievale, where a new 66/11 kV substation was erected and commissioned during the year.

It was found necessary to take urgent steps to improve voltage conditions in the Fisheries' area. By the end of 1962 a line route had been surveyed and material placed on order for a thirty-mile 66 kV line from Koperfontein to Fisheries' substation. In the meanwhile, sites were purchased for 33/11 kV substations at Velddrif and Stompneus, and additional ground at Fisheries to enable a 66/33 kV stepdown substation to be erected. By the end of the year 33 kV lines had been constructed from Fisheries to both Velddrif and Stompneus, and the substations erected at these places. It was thus possible to extend the 33 kV system into the load centres and effect a small improvement. It is hoped that by the end of March, 1963, the 66 kV line to Fisheries will be commissioned, thus improving conditions still further.

At Oakdale substation new 12·5 MVA O.L.T.C. 33/11 kV transformers were installed, releasing 5 MVA units for temporary use at Bellville South substation. The latter was 80% complete by the end of the year, and the temporary 33 kV line from the Airport line had been constructed. 11 kV indoor switchgear is expected in March, 1963, and this substation should be commissioned during April to provide additional power for this growing industrial area. Survey of the double circuit 66 kV route was completed during the year.

Work in the Strand traction substation was commenced late in the year and this new substation is now 30% complete. It is not anticipated that South African Railways will require supply before June, 1963.

**Urban Distribution Systems.** The demand for electricity in the urban areas of Goodwood, Parow and Bellville increased by 10·5 per cent during the year to a total of 41·6 MVA.

Towards the end of the year the transformers at Oakdale substation were replaced by two units of 12·5 MVA, giving a combined step-down transformer capacity of 55 MVA. A new step-down substation in Bellville South was designed to take care of the increased load in that area, and this substation is to be commissioned early in 1963. The capacity of transformers connected to the urban 11 kV network was increased by 2,690 kVA to a total of 76,095 kVA.

A total of 777 new consumers were connected during the year, of which 6 were large users with total maximum demands of 3,570 kVA.

Sale of units in the urban distribution systems increased from 145·5 million units in 1961 to 158·4 million units in 1962.

**Development of Rural Supplies.** A report upon the development of rural supplies is given on page 17.

**Financial.** An explanation of the Commission's application for amendment of the Schedule of Standard Prices is given on page 27.

The revenue for 1962 was R10,789,856 and working costs were R10,574,966 giving a surplus of R214,890 for the year.

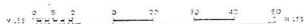
During the year the cost of coal increased from 1·2905 cents to 1·3355 cents per 61,200 B.T.U.'s., and the prescribed increases in the unit rates charged to large and small consumers were made.



CAPE NORTHERN UNDERTAKING

REFERENCE

- Area of Study.....
- ESC Power Station.....
- Transmission Lines.....
- Transmission Lines under construction.....



## CAPE NORTHERN UNDERTAKING

CONSUMERS		SALES		Revenue from Sales	Average Price per Unit Sold	
Class	Number	Units	% Increase		1962	1961
Bulk ... ..	8	75,397,105	7·485	R. 637,747	c. 0·8459	c. 0·8898
Mining ... ..	37	98,294,862	32·806	1,048,963	1·0672	1·0330
Industrial ... ..	122	45,692,427	7·601	406,010	0·8886	0·9921
Domestic & Lighting... ..	1,398	5,554,466	18·618	146,876	2·6443	2·6484
Total .. .. .	1,565	224,938,860	17·580	2,239,596	0·9956	1·0110

	1962	1961	Accumulated to 31.12.62
	R.	R.	R.
Total Revenue ... .. .	2,242,160	1,937,443	
Working Costs ... .. .	2,184,649	1,802,905	
Surplus ... .. .	57,511	134,538	361,394
Capital Expenditure ... .. .	951,417	989,436	9,550,150
<b>CENTRAL POWER STATION—</b>			
Units Sent Out ... .. .	41,259,177	50,087,415	
Maximum half-hour } Demand kW S.O. } ... .. .	24,412	19,044	
Station Peak kW ... .. .	40,200	21,100	
Load Factor % ... .. .	19·3	30·0	
Thermal Efficiency % S.O. ... .. .	10·8	11·1	
<b>FUEL:</b>			
Coal consumed—tons ... .. .	57,168	67,842	
Average per unit sent out—lb... .. .	2·771	2·710	
Calorific Value B.Th.U./lb. ... .. .	11,390	11,350	
Total Cost ... .. .	R222,872	R254,414	
Cost per ton ... .. .	R3·90	R3·75	

## CAPE NORTHERN UNDERTAKING

**Sales.** During the year under review sales increased by 17·6 per cent from 191·3 to 224·9 million units.

The Kimberley City Council's increase of 4·25 per cent was less than usual, partly on account of the mild winter.

De Beers Consolidated Mines consumption increased by 13·6%, due in part to the installation of new electric compressors and also the pumping associated with dewatering De Beers Mine in preparation for re-opening early in 1963.

Although there was some recovery in the cement industry during the year, the demand for lime from this area has not yet regained the level attained before the "stretch-out" of uranium production.

The small diamond mines in the Smith's Mine and Bells bank areas again showed a very substantial increase of 37·6 per cent, and similar development is expected during 1963 and 1964.

Iron ore, manganese and additional asbestos mines were steadily connected during the year between Postmasburg and Hotazel, and consumption in this new area rose to almost 3 million units per month at the end of the period under review.

The following table shows the breakdown of energy which was used for mining, quarrying and cement manufacture in 1962 which supplies amounted to 61·1 per cent of the total sales

	Units: (millions)	Per cent of total units sold
Diamond Mining.....	63·85	28·3
Lime & Cement Manufacture.....	54·87	24·4
Iron Ore and Manganese.....	9·50	4·2
Blue Asbestos Mining.....	7·58	3·4
Gypsum Quarrying.....	1·76	0·8
	137·56	61·1 per cent

Postmasburg Municipality, which was connected in December 1961 showed a large increase in consumption to a total of 1·164 million units for the year.

Kuruman Municipality was connected during July and consumption of electricity increased rapidly to the end of the year. A demand of 636 kVA was recorded for December.

The number of plottolders supplied in the Vaalharts Irrigation Scheme has increased by 139 to 684, and the consumption increased by 47·5 per cent to 1·78 million units.

The Taung native reserve area, where S.A. Native Trust employees, European traders and a mission hospital are supplied, showed an increase of 22·4 per cent. Large scale developments have been planned and work on new Bantu Schools and hostels has commenced.

**Interconnection with the Pooled Power Stations.** During the year 194·47 million units were supplied from the Grootkop Distribution Station, and 186·28 million units received at the Kimberley Distribution Station.

82 per cent of the units sent out from the Kimberley Distribution Station were supplied from the Rand and O.F.S. network, compared with 74·5 per cent in 1961.

The maximum demand on the Cape Northern network was 46·2 MW.

**Development of the Transmission and Distribution Systems.** A 66 kV wooden pole line, 56 miles in length, from Sishen via Asbes and Riries to Hotazel, was erected and commissioned during the year.

From the three new 66 kV substations associated with the above line some 35 miles of 11 kV line were erected to supply Kuruman Municipality and asbestos and manganese mines in the Kuruman area.

The 66 kV lines were completed well in advance of the 66 kV substations and it was found possible to advance the connection date of three of the larger mining consumers by transmitting power initially at 11 kV over completed sections of 66 kV line.

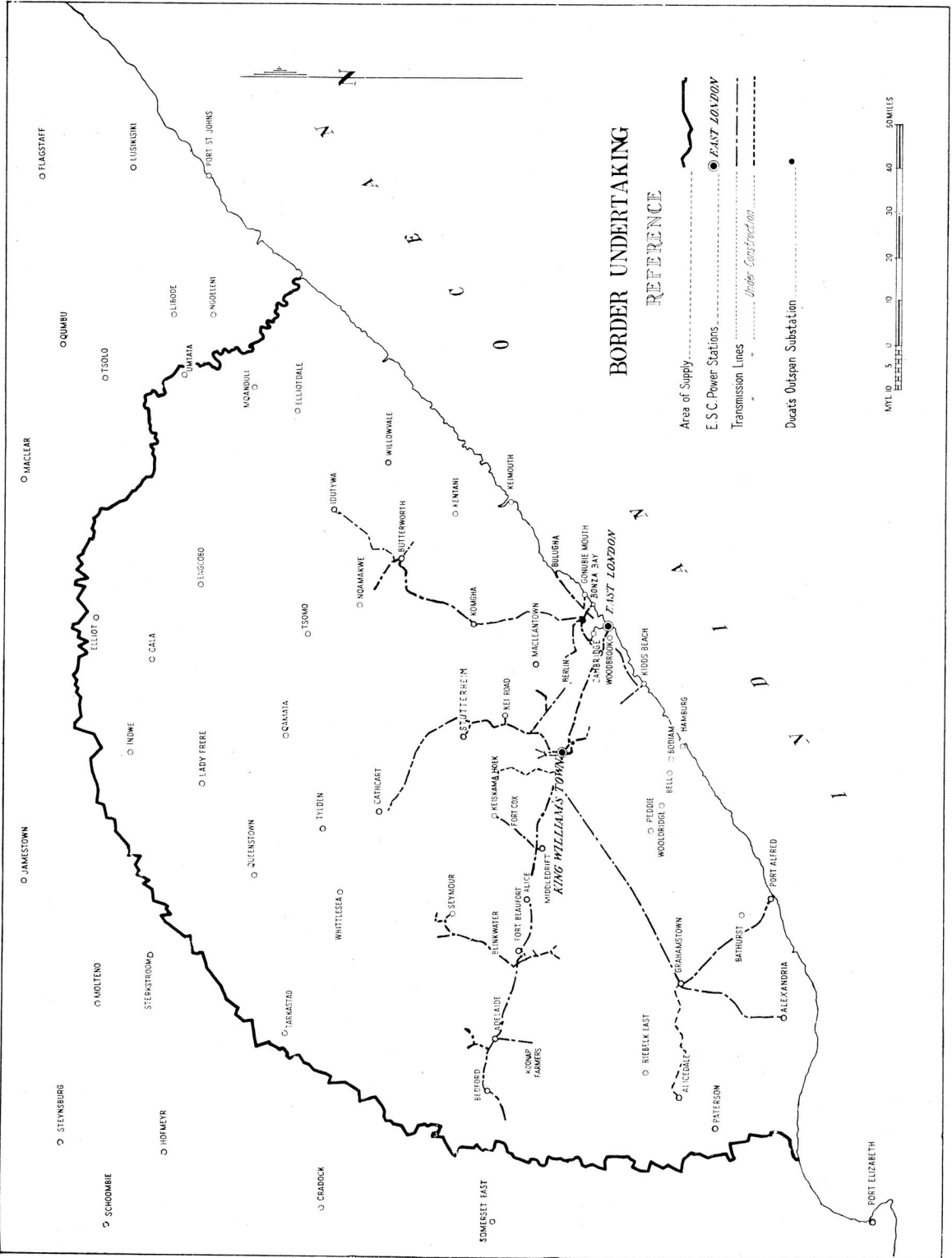
The first of two 60 MVA, 132/66/11 kV transformers was brought into service at the Kimberley Distribution Station during August and the second unit was commissioned during October. This enabled the two 20 MVA 132/66 kV transformers and the two 6 MVA 66/11 kV transformers to be released for use at Ulco and Asbes substations respectively.

Herlear substation, which is the new point of supply to the Kimberley City Council, was brought into full use on 31st August, when all 11 kV supplies from the Central Power Station were finally terminated.

The two 20 MVA transformers were commissioned at Ulco substation thus making a duplicate supply available to the cement factory.

Two 15 MVA, 132/66/11 kV transformers were commissioned at Sishen during February and the 66/11 kV substations at Asbes, Riries and Hotazel were commissioned during the course of the year.

Major construction work to be undertaken during 1963 and 1964 includes the conversion of the existing Grootkop — Kimberley interconnector from 132 kV to 165 kV operation; the erection of a 275 kV interconnector from Everest Distribution Station to Kimberley; the erection of a 132 kV power line alongside the Kimberley — Klerksdorp railway line to supply six railway traction substations; the erection of a 66 kV line along the ridge of the asbestos mountains between Kuruman and Silver-



**BORDER UNDERTAKING**  
**REFERENCE**

- Area of Supply
- E.S.C. Power Stations
- Transmission Lines
- Under Construction
- Duets Outspan Substation



streams; and the erection of a second 132 kV line from Kimberley via Ulco to Silverstreams.

**Rural Development.** A report on rural development is made on page 18.

**Financial.** Notwithstanding the rebate of 5 percent on gazetted tariffs which applied throughout the year, a surplus of R57,511 was realized on the year's working. The accumulated surplus stood at R361,394 at the end of 1962.

## BORDER UNDERTAKING

**Output and Sales.** The units sold by the Undertaking totalled 188,602,133 kWh. This was an increase of 5.47 per cent over the figure for the previous year, and indicated a higher rate of development than has been experienced during the preceding two years.

East London Municipality increased its consumption by 4.4 per cent to 150,911,000 units; but the maximum demand was 30,060 kVA, an increase of only 300 kVA on the previous year.

The system maximum demand increased from 36,950 kW in 1961 to 37,540 kW in 1962. 141 new consumers were connected during the year, bringing the total number at the end of the year to 3,177.

**West Bank Power Stations.** The erection of the third 15 MW turbo-alternator in West Bank Two Station was commenced during the year, and this unit should be commissioned during May, 1963.

One failure of a superheater tube due to "carry-over" occurred during the year and a further modification to the two boilers affected was being carried out in an effort to overcome this problem.

Boiler 5 and turbo-alternator 7 in West Bank One Station, both of which failed during 1961, were still out of commission; but the replacement parts should come to hand early in 1963.

Coal deliveries were generally satisfactory except for one period when stocks dropped to a low figure for a short period.

The efficiency of the combined stations dropped slightly from 21.0 per cent in 1961 to 20.9 per cent in 1962.

**King William's Town Power Station.** The steam plant in this station was not used during the year; but was maintained so as to be available for emergency use.

The 1,000 kW diesel set was run regularly on trial and was used on four occasions for short periods to provide emergency supply.

**Development of the Undertaking.** The new 66/22/11 kV transformers for Ducats Substation came to hand early in the year and the Transkei system was converted to 22 kV operation in February. This system was extended during the year to supply the Blythwood Bantu Educational Institution and Teko Bantu Trade School 12 and 7 miles respectively from Butterworth, and also to Idutywa, where bulk supply was taken by the Municipality.

Two minor rural schemes to supply in all twelve farmers, were completed in the Fort Grey area adjacent to East London and in the Upper Koonap Valley near Adelaide.

An extension of the Mount Coke line to supply the Department of Bantu Administration's Bekruipkop Farm and Youth Camp was nearing completion.

Work was commenced on the reinforcement of the King William's Town/Adelaide system to meet increasing loads, and construction of an 11 kV line from the new Tyume substation to Middledrift was well advanced. Preliminary work in connection with supply to two South African Broadcasting Corporation V.H.F. F.M. Stations on Mount Kempt, 25 miles from King William's Town, and Governors Kop near Grahamstown, was in hand.

**Financial.** There was no change in the tariffs in force on the Undertaking; but installation of the necessary metering equipment to provide for the introduction of ampere demand metering for small power consumers was well in hand, and it is hoped to change to the new tariff early in 1963.

Revenue Account showed a loss of R17,093 for the year, the total Revenue being R2,021,705, an increase of 4.53 per cent on the revenue for 1961.

The accumulated deficit was therefore R159,651.



# BORDER UNDERTAKING

CONSUMERS		SALES			Average Price per Unit Sold	
		Number	Units	% Increase	1962	1961
Bulk .. .. .	13	167,860,292	4.910	R. 0.9547	C. 0.9686	
Industrial .. .. .	295	8,432,299	16.191	1.8831	1.9312	
Domestic and Lighting .. .. .	2,869	12,309,522	6.554	258,299	2.0984	
Total .. .. .	3,177	188,602,113	5.474	2,019,647	1.0709	
				1961	Accumulated to 31.12.62	
Total Revenue .. .. .		R. 2,021,705		R. 1,934,014	R.	
Working Costs .. .. .		2,038,799		1,925,499		
Surplus .. .. .		17,094		8,515	159,652	
Deficit .. .. .					11,295,717	
Capital Expenditure .. .. .		644,051		305,684		

	East London West Bank No. 1 and No. 2		King William's Town		King William's Town	
	1962	1961	1962	1961	1962	1961
Units Sent Out .. .. .	193,395,150	184,217,340	—	76,170	4,720	6,125
Maximum half-hour Demand kW S.O. .. .. .	37,540	36,950	—	2,700	1,000	980
Station Peak kW .. .. .	40,200	39,700	—	—	1,000	—
Load Factor % .. .. .	58.8	56.9	—	—	—	—
Thermal Efficiency % S.O. .. .. .	20.9	21.0	—	8.9	—	—

FUEL:		East London West Bank No. 1 and No. 2		King William's Town	
Coal Consumed—tons .. .. .	136,899	129,365	—	121	—
Average per Unit Sent Out—lb. .. .. .	1.416	1.404	—	3.177	—
Calorific Value B.Th.U./lb .. .. .	11,540	11,850	—	12,040	—
Total Cost .. .. .	R653,198	R593,342	—	R554	—
Cost per Ton .. .. .	R4.77	R4.59	—	R4.58	—
Fuel Oil consumed—lb. .. .. .	—	—	—	—	3,279
Fuel Oil per unit S.O.—lb. .. .. .	—	—	—	—	0.695
					3,951
					0.641



# NATAL SOUTHERN UNDERTAKING

CONSUMERS		SALES			Revenue from Sales		Average Price per Unit Sold	
		Number	Units	% Increase	1962	1961	1962	1961
Class								
Traction	...	1	124,530,047	5.284	R. 926,392	R. 0.7439	0.6198	
Bulk	...	4	1,222,000,122	6.865	7,680,578	0.6285	0.6216	
Industrial	...	613	210,996,701	4.767	1,455,941	0.6900	0.6513	
Domestic and Lighting	...	6,521	31,977,843	—6.850	559,060	1.7483	1.7265	
Total	...	7,139	1,589,504,713	6.144	10,621,971	0.6683	0.6508	
Congella Power Station Nos. 1 and 2					1961		Accumulated to 31.12.62	
Total Revenue	...	...	R. 10,628,419	...	R. 9,751,938	...	R. —	
Working Costs	...	...	10,719,568	...	9,617,460	...	—	
Surplus	...	...	—	...	134,478	...	92,549	
Deficit	...	...	91,149	...	—	...	—	
Capital Expenditure	...	...	1,382,292	...	3,524,578	...	54,254,647	
Umgengi Power Station					1961		1961	
Units Sent Out	...	1,097,561,300	831,518,200	...	69,732	...	39,936	
Maximum half-hour Demand kW	...	220,000	168,000	...	3,312	...	1,860	
Station Peak kW	...	242,000	179,500	...	3,420	...	2,000	
Load Factor %	...	55.1	56.5	...	—	...	—	
Thermal Efficiency %	...	19.7	23.5	...	—	...	—	
Port Shepstone Power Station					1961		1961	
Coal Consumed — tons	...	509,555	519,941	...	—	...	—	
Average per unit sent out — lb.	...	1,451	1,199	...	—	...	—	
Calorific Value B.Th.U./lb.	...	11,300	11,600	...	—	...	—	
Total Cost	...	R1,693,809	R2,084,811	...	—	...	—	
Cost per ton	...	R3.91	R4.28	...	—	...	—	
Fuel Oil Consumed — lb.	...	—	—	...	—	...	—	
Fuel Oil per unit S.O. lb.	...	—	—	...	—	...	—	

**FUEL:**

Coal Consumed — tons ...  
 Average per unit sent out — lb. ...  
 Calorific Value B.Th.U./lb. ...  
 Total Cost ...  
 Cost per ton ...  
 Fuel Oil Consumed — lb. ...  
 Fuel Oil per unit S.O. lb. ...

## NATAL SOUTHERN UNDERTAKING

**Operation of the Pooled Power Stations.** In terms of the Natal Licences, Congella and Umgeni Power Stations, together with Colenso Power Station of the Natal Central Undertaking, were operated as pooled stations.

The simultaneous maximum demand on the stations rose to 414,700 kW, while the output increased by 5·88 per cent.

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

	1962	1961	Increase
Natal Southern Undertaking.....	1,608,297,210	1,498,930,610	7·30%
Natal Central Undertaking.....	773,921,390	751,050,300	3·05%
	<u>2,382,218,600</u>	<u>2,249,980,910</u>	<u>5·88%</u>

**Sales of Electricity.** Total sales by the Natal Southern Undertaking were 1,589·5 million units. There were increases of 5·28 per cent in units sold to the South African Railways for traction purposes, and 4·77 per cent in sales to industrial consumers; and an over-all increase of 6·14 per cent, in comparison with 1961.

The supply to Durban Corporation rose to 1,210 million units, the increase over 1961 being 6·7 per cent.

**Distribution System.** Two new traction substations, at Umgeni railway station and Duff's Road, were commissioned during the year; and the suburban railway services to KwaMashu Bantu Township commenced in December.

Considerable progress was made with the construction of Geogedale Distribution Station and Control Centre; and it is hoped that the 132 kV and 88 kV busbars will be ready for commissioning in September, 1963. Construction of the Ingagane/Geogedale 275 kV lines along the West route was commenced by the contractors in 1962; and a start was made on the work of turning-in the Umgeni/Mason's Mill 132 kV lines and extending the Feralloys 132 kV tee lines into Geogedale Station.

During June, an increased supply was made available to the South African Railways for non-traction purposes at a new substation at Bayhead in Durban.

In order to cope with the rapid growth of industries in the Hammarsdale industrial area, a temporary 88/11 kV substation was connected up. The construction of a permanent substation with a firm capacity of 7·5 MVA is scheduled to commence towards the end of 1963.

Thirteen new large power consumers were connected to the Natal Southern Undertaking distribution system during the year; and the supply to one large user was terminated.

Considerable progress was made with the survey work for the Zululand 88 kV lines; and construction of this project is scheduled to start about mid-1963.

**Rural Development.** A report on rural development in this Undertaking is given on page 19.

**Financial.** Revenue for the year amounted to R10,628,419, which was an increase of nearly 9 per cent; but costs rose by 11·46 per cent to R10,719,568, and there was a deficit on the year's working of R91,149. The accumulated surplus at 31st December, 1962, was thus reduced to R92,549.

## NATAL CENTRAL UNDERTAKING

**Operation of the Pooled Power Stations.** In accordance with the Licence, Colenso Power Station was operated with Congella and Umgeni Power Stations of the Natal Southern Undertaking, as pooled power stations. The statistics of load and output from the pooled stations, and the units taken by each Undertaking are given on page 44.

Due to the additional plant installed at Umgeni Power Station, loading was eased on Colenso Power Station during the year, and the output fell from 757 million units to 688 million units.

## NATAL CENTRAL UNDERTAKING

CONSUMERS		SALES		Revenue from Sales	Average Price Per Unit Sold	
Class	Number	Units	% Increase		1962	1961
Traction ... ..	1	299,659,363	5.448	R. 2,249,546	c. 0.7507	c. 0.7474
Bulk ... ..	17	294,510,343	6.364	2,247,706	0.7632	0.7342
Mining ... ..	17	57,018,918	15.140	456,570	0.8007	0.7827
Industrial ... ..	844	61,330,442	16.571	585,433	0.9546	0.8730
Domestic and Lighting ...	4,707	18,454,288	—11.427	363,321	1.9688	1.8781
Total .. ..	5,586	730,973,354	6.862	5,902,576	0.8075	0.7887

	1962	1961	Accumulated to 31.12.62
	R.	R.	R.
Total Revenue... ..	5,921,394	5,412,289	
Working Costs ... ..	5,870,019	5,569,994	
Surplus ... ..	51,375		
Deficit ... ..		157,705	408,775
Capital Expenditure ... ..	9,970,242	4,974,872	41,298,961

	COLENSO POWER STATION Nos. 1 and 2	
	1962	1961
Units Sent Out ... ..	688,131,390	757,540,300
Maximum half-hour Demand kW S.O. ... ..	118,430	131,890
Station Peak kW ... ..	138,000	149,000
Load Factor % ... ..	66.3	65.6
Thermal Efficiency % Sent Out ... ..	18.1	18.4
<b>FUEL:</b>		
Coal consumed — tons ... ..	575,670	630,407
Average per unit sent out/lb. ... ..	1.673	1.664
Calorific Value B.Th.U/lb. ... ..	11,290	11,150
Total Cost ... ..	R1,935,004	R1,961,578
Cost per ton... ..	R3.36	R3.11

**Sales of Electricity.** Sales of the Natal Central Undertaking amounted to 730.9 million units, which was an increase of 6.86 per cent.

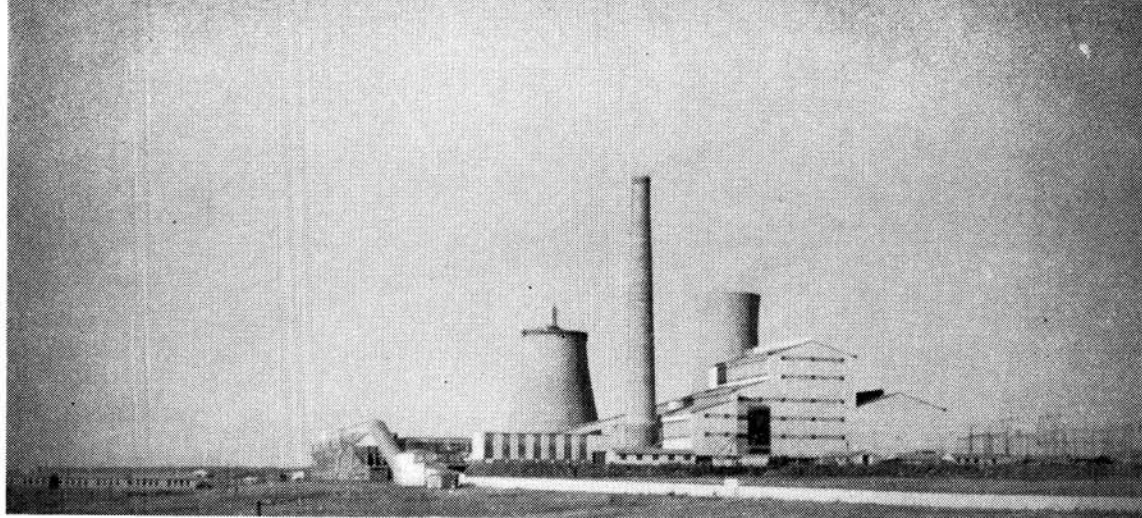
The reduction in sales under the heading Domestic is due to an alteration in the method of classifying consumers. A consumer who has a domestic and a power installation at one point is now classified as a small industrial consumer.

**Ingagane Power Station.** The construction of Ingagane Power Station continued throughout the year; and the first 100,000 kW set and boiler were started up in March, 1963.

**Distribution System.** At Mason's Mill, two new 60 MVA 132/88 kV transformers were commissioned, the first during May and the second in November, replacing the original 45 MVA unit which was transferred to Colenso.

The new 88/11 kV substation at Volksrust was commissioned in June, 1962; and extensions are being made to cater for the new traction supplies on the Volksrust/Platrand section of the Volksrust/Union Junction electrification.

The replacement of the 88 kV switchgear at Pietermaritzburg was commenced during the year and is to be completed in 1963.



**Power is now being supplied from the first 100,000 kW set in the Ingagane station.**

A profile survey for a new cross-country 88 kV line between Newcastle and Volksrust was nearly completed at the end of the year.

Twelve new supplies to large consumers were given from the Natal Central Undertaking during the year; and three supplies were terminated.

**Rural Development.** A report on rural development in this Undertaking is given on page 19.

**Financial.** In view of the large accumulated deficit and the continued upward trend in costs, it was necessary to adjust the charges on the Natal Central Undertaking by increasing the surcharge on standard prices from 5 per cent to 10 per cent, with effect from March, 1962. Revenue was thus increased to R5,921,395, and a small surplus of R51,376 was realized for the year.

At the 31st December, 1962, the accumulated deficit stood at R408,774.

### **EASTERN TRANSVAAL UNDERTAKING**

**Area of Supply.** The enlargement of the licensed area of supply of the Undertaking is reported on page 8 and an account of the new developments of the transmission and distribution system to provide supplies in the new areas is given in the main body of the Report, *vide* pages 11\*, 12† and 12 and 13‡.

\* Komatipoort electrification

† Lowveld to Phalaborwa

‡ Supplies to iron & steel industries

**Sales of Electricity.** Total sales, which rose to 1,012 million units in 1962, show an increase of 12·28 per cent over the corresponding figure for 1961.

The large increase in Mining Supplies reflects the development and bringing to production of two new gold mines in the Bethal gold field. Further increases in these supplies have been notified for the years 1963-5.

The increase by 37 per cent in domestic and lighting supplies reflects continued extension of the Undertaking's rural networks.

During 1962 69 miles of 21 kV lines and 142 miles of 11 kV lines were constructed in rural areas, and 195 new consumers were supplied, including 35 who were classified as large users.

The Undertaking now operates reticulations in 15 urban areas. During 1962 397 new consumers were connected, increasing the total number of urban consumers to 2,601 at the 31st December, 1962.

**Witbank Power Station.** There was no significant change in the operating conditions and output of Witbank Power Station.

**Komati Power Station.** Komati Power Station made an important contribution

# EASTERN TRANSVAAL UNDERTAKING

CONSUMERS		SALES				Average Price per Unit Sold				
		Class	Number	Units	% Increase			Revenue from Sales	1962	1961
Traction	...	1	74,968,062	-10.662	R. 453,983	c. 6056	c. 5720			
Bulk	...	10	60,174,450	6.884	311,204	5172	5318			
Mining	...	46	428,779,767	40.829	2,329,379	5433	5977			
Industrial	...	570	434,711,453	-2.729	1,836,610	4225	4150			
Domestic and Lighting	...	2,948	13,519,063	36.843	255,683	18913	19393			
Total	...	3,575	1,012,152,795	12.278	5,186,859	5125	5153			
			1962		1961	Accumulated to 31.12.62				
Total Revenue	...	...	R. 5,275,453	...	R. 4,654,089	R.				
Working Costs	...	...	5,203,482	...	4,451,340	331,871				
Surplus	...	...	71,971	...	202,749	67,626,247				
Capital Expenditure	...	...	19,166,428	...	12,314,870					

	Witbank Power Station		Sabie Power Station		Komati Power Station	
	1962	1961	1962	1961	1962	1961
Units sent out	719,842,804	731,074,501	2,759,700	1,762,100	961,971,886	2,941,120
Maximum Hour Demand kw S.O.	118,266	124,755	800	480	188,282	—
	(hour)	(hour)	(half hour)	(half hour)		
Load Factor %	69.5	66.9	36.1	41.9	62.1	—
Thermal Efficiency % S.O.	16.1	16.2	—	—	28.2	—
FUEL:						
Coal consumed — tons	692,960	701,268	—	—	571,773	3,133
Average per unit sent out — lb.	1.925	1.918	—	—	1.189	—
Calorific Value B.Th.U./lb.	11,000	10,960	—	—	10,170	—
Total Cost	R792,788	R735,543	—	—	R739,628	R3,722
Cost per ton	R1.14	R1.05	—	—	R1.29	R1.19
RAINFALL:						
Inches	—	—	47.82	54.2	—	—
Millimetres	—	—	1,187.1	1,377	—	—



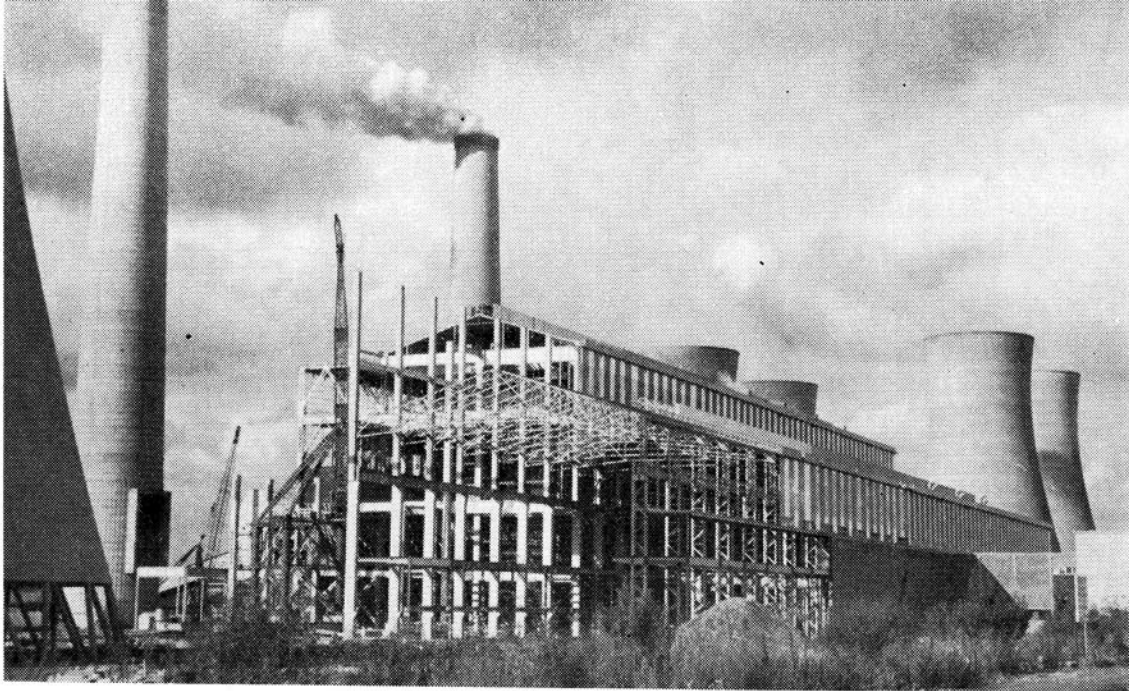
*EASTERN TRANSVAAL UNDERTAKING*

REFERENCE

- Area of Supply
- E.S.C. Power Stations ● WILGE ● CAMDEN
- Transmission lines
- Transmission lines under construction







**Komati made an important contribution to the output of the pooled stations of the Eastern Transvaal and Rand and O.F.S. Undertakings.**

of 962 million units to the output of the pooled power stations, at a cost slightly below the average pooled cost.

A report on the extensions to this Station is given on page 13.

**Transmission and Distribution Systems.** A great deal of work was done during the year on the extensions for the new supplies which are to be given during 1963 and 1964. Extensions of the transmission and distribution system in connection with supplies which are reflected in the operating statistics were as follows:—

Two 88 kV oil circuit breakers were installed in Winkelhaak substation, and the substations at Bracken and Leslie were completed in all respects.

A new supply was given to Premier Diamond Mine Company Limited, for its new pumping station on the Wilge River; and a further new supply was given to Brakfontein Navigation Steam Colliery, which is situated between Kendal and Leslie. A duplicate 21 kV line was erected to safeguard the supply to Blinkpan Colliery which supplies the coal requirements of Komati Power Station. Duplicate supply was also provided to the Greenside Colliery.

A third line to Ferrometals, Limited, was constructed in order to provide the additional load notified by the consumer. The line was completed early in 1963.

A 21 kV line was built between Sabie Gorge Power Station and Graskop, a distance of 9.9 miles over mountainous terrain. The reticulation within the Sabie area will be carried out by Escom, and supply is expected to be available early in 1963.

**Rural Electrification.** A report on rural electrification in this Undertaking is given on page 20.

**Financial.** The total revenue for the year increased to R5,275,453, and a surplus of R71,971 was shown on the year's working.

The accumulated surplus at 31st December, 1962, was R331,871.

## RAND AND ORANGE FREE STATE UNDERTAKING

CONSUMERS		SALES			Average Price per Unit Sold	
		Number	Units	% Increase	Revenue from Sales	1962
ELECTRICITY:					R.	c.
Traction	..	2	478,955,653	0·329	2,415,346	·5070
Bulk	..	97	1,535,322,734	9·698	7,178,253	·4723
Mining	..	109	8,559,298,385	4·409	34,322,582	·4011
Industrial	..	924	2,672,751,373	9·316	10,659,221	·3988
Domestic and Lighting	..	7,301	67,737,181	20·166	681,558	1·0062
		8,433	13,314,065,326	5·867	55,266,960	·4210
AIR and STEAM:						
Bulk	..	1	3,363,713	16·592		
Mining	..	11	103,367,342	-7·730		
Industrial	..	22	9,051,701	1·984		
		34	115,782,756	-6·467	1,587,299	1·3256
Total	..	8,467	13,429,848,082	5·747	56,854,259	·4233
					1961	Accumulated to 31/12/62
Total Revenue	..	..	..	R.	R.	R.
Working Costs	..	..	..	57,123,965	54,825,985	
Surplus	..	..	..	56,830,707	53,332,476	
Capital Expenditure	..	..	..	293,258	1,293,509	3,054,080
	..	..	..	16,518,167	10,393,417	327,564,432

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

	Brakpan Power Station		Highveld Power Station		Klip Power Station	
	1962	1961	1962	1961	1962	1961
Electricity Units Sent Out	60,361,295	68,286,940	2,372,962,035	2,336,086,952	2,383,570,070	2,480,048,757
Maximum hour	36,940	38,868	339,507	338,611	366,367	391,854
Demand kW S.O. } ...	18.7	20.1	79.8	78.8	74.3	72.2
Load Factor % ...	11.9	12.6	28.3	28.4	20.1	20.3
Thermal Efficiency % S.O. ...						
<b>FUEL:</b>						
Coal consumed — tons	86,767	94,747	1,623,629	1,603,654	2,064,694	2,044,566
Average per unit sent out—lb.	2.875	2.775	1.368	1.373	1.732	1.649
Calorific Value B.Th.U./lb.	9,990	9,780	8,810	8,740	9,790	10,190
Total Cost	R160,193	R170,069	R2,478,831	R2,558,359	R4,394,812	R4,384,065
Cost per ton	R1.82	R1.77	R1.53	R1.60	R2.13	R2.14
<b>Electricity Units Sent Out...</b>						
Maximum hour	40,874,980	44,922,733	3,012,142,930	2,926,253,217		
Demand kW S.O. } ...	29,494	37,935	447,120	440,316		
Load Factor % ...	15.8	13.5	76.9	75.9		
Thermal Efficiency % S.O. ...	9.1	9.7	26.0	26.6		
<b>FUEL:</b>						
Coal consumed — tons	77,496	80,950	2,256,688	2,107,975		
Average per unit sent out lb.	3.792	3.604	1.498	1.441		
Calorific Value B.Th.U./lb.	9,910	9,770	8,750	8,900		
Total Cost	R318,267	R336,221	R3,963,880	R4,170,735		
Cost per ton	R2.08	R1.90	R1.75	R1.98		

**RAND AND ORANGE FREE STATE UNDERTAKING—(Cont.)**

	Vaal Power Station		Vereeniging Power Station	
	1962	1961	1962	1961
Electricity Units Sent Out	2,005,982,308	2,010,671,661	824,494,378	822,744,486
Maximum hour Demand kW S.O.	294,337	286,709	137,083	138,183
Load Factor %	77.8	80.1	68.7	68.0
Thermal Efficiency % S.O.	21.2	21.4	15.4	15.5
<b>FUEL:</b>				
Coal consumed — tons	1,929,498	1,878,785	1,051,146	1,009,788
Average per unit sent out lb.	1.924	1.869	2.550	2.455
Calorific Value B.Th.U./lb.	8,370	8,520	8,680	8,980
Total Cost	R1,838,447	R1,744,063	R1,072,680	R965,970
Cost per ton	R0.95	R0.93	R1.02	R0.96

	Vierfontein Power Station		Wilge Power Station	
	1962	1961	1962	1961
Electricity Units Sent Out	1,898,800,114	1,701,917,721	1,426,143,890	1,670,185,225
Maximum hour Demand kW S.O.	315,306	312,054	220,183	222,778
Load Factor %	68.7	62.3	73.9	85.6
Thermal Efficiency % S.O.	23.1	22.8	26.0	26.0
<b>FUEL:</b>				
Coal consumed — tons	1,527,224	1,398,265	966,807	1,129,021
Average per unit sent out — lb.	1.609	1.643	1.356	1.352
Calorific Value B.Th.U./lb.	9,190	9,110	9,690	9,690
Total Cost	R2,226,579	R2,176,834	R937,773	R1,065,987
Cost per ton	R1.46	R1.56	R0.97	R0.94

RAND AND ORANGE FREE STATE UNDERTAKING—(Continued)

	Brakpan Power Station		Rosherville Power Station	
	1962	1961	1962	1961
Compressed air units sent out .. .. .	—	—	51,642,900	70,267,800
Steam Units Sent Out .. .. .	714,750	948,838	—	—
FUEL:				
Coal consumed—tons .. .. .	1,206	1,473	75,890	96,382
Average per unit sent out—lb. .. .. .	3·375	3·105	2·931	2·743
Calorific Value B.Th.U./lb. .. .. .	9,990	9,780	9,910	9,770

	Canada Dam Compressor Station		Robinson Compressor Station	
	1962	1961	1962	1961
Compressed Air Units sent out .. .. .	26,740,200	21,438,500	44,387,300	32,209,100
Electric Input—kWh exc. Trans. Losses .. .. .	32,969,208	26,501,451	55,910,812	49,542,918
Air Units sent out/kWh per cent .. .. .	81·11	80·90	79·39	79·14

## RAND AND ORANGE FREE STATE UNDERTAKING

**Sales of Electricity.** The total sales by the Undertaking (electricity, compressed air and steam) during the year amounted to 13,429 million units. The annual increase was 5·7 per cent, which was slightly higher than the growth of 5·4 per cent in the previous year.

Traction supplies were unchanged; but sales in bulk to Local Authorities which draw their requirements from Escom showed an increase of 9·7 per cent, compared with the increase of about 6 per cent in 1961.

As reported last year, bulk supply was given to the Municipality of Thaba 'Nchu in January, 1962. In addition new supplies were given during the year to the Municipalities of Greylingstad, Bloemhof, Sannieshof, Delareyville and Vryburg; and a bulk supply was given to the Peri-Urban Areas Health Board for the reticulation in Lenasia Township.

Total sales to mining consumers rose to 8,662 million units, which was an increase of 4·2 per cent over the corresponding figure for 1961. Comment on the mining load, and comparative figures showing the units supplied to the various mining areas, are given on page 9.

Supplies which are grouped together under the heading "Industrial" reflect the steady growth of South African industries. The annual increase in sales in 1962 was 9·3 per cent, which is of the same order as the figure of 9·7 per cent recorded in 1961. The nature of industries supplied by the Undertaking and the sales during the past two years are indicated in the following table:—

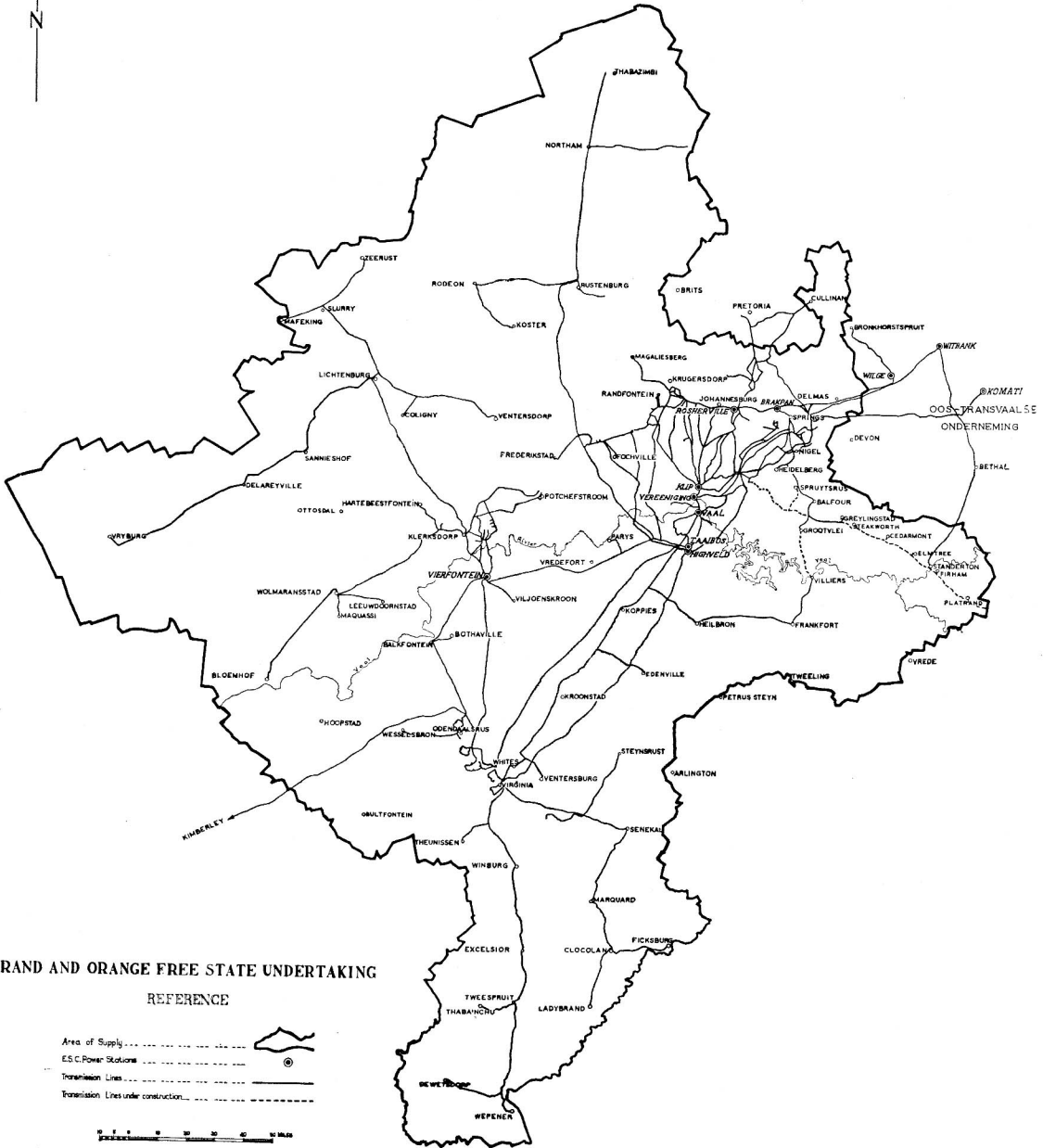
	Sales: millions kWh	
	1962	1961
Building and Cement (including quarrying).....	246·6	251·8
Chemical and pharmaceutical.....	474·2	419·0
Foodstuffs, consumer goods and commercial.....	433·8	396·7
General Engineering.....	162·3	147·1
Paper production.....	193·0	159·0
Steel and base metals.....	1,129·5	1,043·7

**Operation of the Pooled Power Stations.** The electric power stations of the Rand and Orange Free State Undertaking and Eastern Transvaal Undertaking are operated in terms of the licences as a single system of pooled stations.

The total output from the pooled stations amounted to 15,707 million units, which was an increase of 6·2 per cent over the output for 1961. The maximum simultaneous demand on the system was 2,289,408 kW recorded in August, 1962: while the load factor (calculated on the average demands for twelve months) showed a further small rise to about 82 per cent.

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

	Maximum demand in the year	Total Units (millions kWh)
Rand and Orange Free State Undertaking.....	2,101,522 kW	14,511·5
Eastern Transvaal Undertaking.....	151,190 kW	994·8
Cape Northern Undertaking.....	37,746 kW	201·2



**RAND AND ORANGE FREE STATE UNDERTAKING**  
REFERENCE

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



The cost of generation per unit sent out from the pooled power stations during the year was 2999c. This figure reflects a small decrease in cost, due mainly to a reduction in coal costs from R1·51 to R1·46 per ton of coal burnt.

**Transmission and Distribution System.** The commissioning of the two 275 kV lines from Komati Power Station to Nevis Distribution Station was referred to in the Report last year. The further lines between Nevis and Highveld Power Station were commissioned in June and August, 1962; and the two 275 kV lines from Highveld to Scaffell Distribution Station were completed in October, 1962.

At the end of the year work was in progress at the several Distribution Stations which will be fed from the new 275 kV transmission lines namely Nevis, Esselen, Snowdon, Scaffell and Everest; and it is expected that these extensions will be effected during 1963.

**Financial.** There was no change in tariffs during the year, so that the small changes in the revenue per unit reflect differences in load factor and in the adjustment of the unit rates due to coal costs, which, as reported above, declined from R1·51 to R1·46 per ton of coal burnt.

Total revenue from the sale of electricity, air and steam rose to R56,854,259 and a surplus of R293,258 is shown on the year's accounts.

## MUNICIPAL ELECTRICITY SUPPLY SCHEMES 1962

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

#### Extensions

Louis Trichardt  
Rustenburg  
Schweizer-Reneke  
Ventersdorp

### CAPE:

Kirkwood  
Klawer

Burgersdorp  
Carnarvon  
Hopetown  
Jansenville  
Prieska

### NATAL:

Pietermaritzburg  
Vryheid

### ORANGE FREE STATE:

Hertzogville

### SOUTH WEST AFRICA:

Grootfontein

Up to the 31st December 1962, a total of 1792 reports on municipal supply schemes had been submitted by the Commission. Of these 290 were in respect of new schemes, 874 were in respect of extension schemes and 628 were reports on tenders.



## ANNEXURES

The Commission submits for the year 1962 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, 1962.

Statement No. 2—Summary of principal plant and equipment in course of installation or on order as at 31st December, 1962.

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

Statement No. 4—Units sold and number of consumers, 1962.

Statement No. 5—Power Station Statistics, 1962.

Statement No. 6—Power purchased, 1962.

Statement No. 7—Water consumed by power stations, 1962.

Statement No. 8—Showing the price or rent of land or rights or interests in or over land or other property acquired or hired by the Commission during the year 1962.

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

### ANNEXURE C — NATIONAL STATISTICS

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

Yours faithfully,



Chairman.

## **THE REPORT OF THE AUDITORS**

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

Johannesburg,  
30th April, 1963.

GENTLEMEN,

We have completed the audit of the books and accounts of the Commission for the year ended 31st December, 1962.

### **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, 1962, we have taken into account the market value of the investments at that date. The value of the Fund at 31st December, 1962, 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. 42 and 43 commenced at 1st April, 1962, and 1st October, 1962, respectively, and application has been made to have 1st April, 1963, fixed as the date from which redemption of Loan No. 44 should commence. 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, 1962.

### **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.

In the case of Loan No. 28 from the International Bank for Reconstruction and Development, which has to be repaid by half-yearly instalments over a period of 8½ years, contributions are charged to Revenue Accounts of Undertakings on a 25 years sinking fund basis, the shortfall being met from 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 Commission entered into a loan agreement dated 1st December, 1961, to borrow from the International Bank for Reconstruction and Development the sum of \$14,000,000. The loan bears interest at 5¾% per annum and is repayable in half-yearly instalments from 1st December, 1963, to 1st December, 1971. At 31st December,

1962, amounts totalling \$8,299,142 (R5,925,916) had been drawn under the agreement but, as the works financed out of this loan had not been placed in commercial operation before that date, no provision was made, during the year, for repayment of the loan.

### VERIFICATION OF LANDED PROPERTIES, RIGHTS AND INVESTMENTS

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

### HEAD OFFICE ADMINISTRATION, ENGINEERING AND GENERAL EXPENSES

The net expenditure under this heading, after crediting Fees for reporting on Power Schemes of Local Authorities and amounts chargeable to Revenue Accounts under other headings, has been allocated to:—

(a) Capital and Reserve Fund Expenditure

(b) Revenue Accounts of all Undertakings in commercial operation.

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

### REVENUE ACCOUNTS

The following is a summary of the operations of the Commission's Undertakings for 1961 and 1962:—

	<i>Surplus + Deficit -</i>		<i>Amounts set aside to Reserve Fund</i>	
	1961	1962	1961	1962
Cape Western..... +	R340,894	+ R214,890	R408,000	R495,000
Cape Northern..... +	134,538	+ 57,511	105,000	180,000
Border..... +	8,515	- 17,094	90,000	90,000
Natal Southern..... +	134,478	- 91,149	400,000	501,000
Natal Central..... -	157,705	+ 51,375	270,000	270,000
Eastern Transvaal... +	202,749	+ 71,971	220,000	363,000
Rand and O.F.S.... +	1,293,509	+ 293,258	3,370,000	3,486,000
	<u>+ R1,956,978</u>	<u>+ R580,762</u>	<u>R4,863,000</u>	<u>R5,385,000</u>
Brought forward from previous year.....		<u>2,896,484</u>		
Net Accumulated Sur- plus at end of year as detailed in Balance Sheet.....		<u>R3,477,246</u>		

The surplus of R214,890 at Cape Western Undertaking has eliminated the accumulated deficit and left a surplus to be carried forward of R205,779. A new tariff came into operation in this Undertaking during January, 1963.

The Cape Northern Undertaking now has an accumulated surplus of R361,394 while a deficit of R17,094 at Border Undertaking has increased the accumulated deficit at that undertaking to R159,652.

At Natal Southern Undertaking a deficit for the year has reduced the accumulated surplus to R92,549, and at Natal Central Undertaking a surplus for the year has reduced the accumulated deficit to R408,775. We understand that new tariffs for these undertakings are being prepared.

Operations at Eastern Transvaal and Rand and O.F.S. Undertakings have resulted in reduced surpluses for the year, and the accumulated surpluses are now R331,871 and R3,054,080.

### GENERAL

As the result of our audit of the books and accounts of the Commission for the year 1962 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,

HALSEY, BUTTON & PERRY,  
ALEX, AIKEN & CARTER.

*Registered Accountants and Auditors.*

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**ACCOUNTS**

STATISTICAL AND OTHER STATEMENTS  
NATIONAL STATISTICS

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# Electricity Supply Commission

SCHEDULE No. 1

## Schedule of Capital Expenditure at 31st December, 1962

Expenditure in connection with Electricity Undertakings	Total at 31st December, 1961	Year Ended 31st December, 1962	Total at 31st December, 1962
<b>Cape Western Undertaking</b>			
Land and Rights.....	R 664,841	R 42,955	R 707,796
Buildings and Civil Works.....	13,717,953	65,942	13,783,895
Machinery and Plant.....	47,537,162	3,263,346	50,800,508
	<b>R 61,919,956</b>	<b>R 3,372,243</b>	<b>R 65,292,199</b>
<b>Cape Northern Undertaking</b>			
Land and Rights.....	R 58,544	R 24,555	R 83,099
Buildings and Civil Works.....	497,527	15,936	513,463
Machinery and Plant.....	8,042,662	910,926	8,953,588
	<b>R 8,598,733</b>	<b>R 951,417</b>	<b>R 9,550,150</b>
<b>Border Undertaking</b>			
Land and Rights.....	R 41,147	R 795	R 41,942
Buildings and Civil Works.....	1,905,541	84,824	1,990,365
Machinery and Plant.....	8,704,978	558,432	9,263,410
	<b>R 10,651,666</b>	<b>R 644,051</b>	<b>R 11,295,717</b>
<b>Natal Southern Undertaking</b>			
Land and Rights.....	R 432,105	R 34,930	R 467,035
Buildings and Civil Works.....	10,992,853	382,161	11,375,014
Machinery and Plant.....	41,447,397	965,201	42,412,598
	<b>R 52,872,355</b>	<b>R 1,382,292</b>	<b>R 54,254,647</b>
<b>Natal Central Undertaking</b>			
Land and Rights.....	R 389,201	R 71,747	R 460,948
Buildings and Civil Works.....	9,064,317	2,037,134	11,101,451
Machinery and Plant.....	21,875,201	7,861,361	29,736,562
	<b>R 31,328,719</b>	<b>R 9,970,242</b>	<b>R 41,298,961</b>

Johannesburg,  
29th March, 1963.

Expenditure in connection with Electricity Undertakings	Total at 31st December, 1961	Year Ended 31st December, 1962	Total at 31st December, 1962
<b>Eastern Transvaal Undertaking</b>			
Land and Rights.....	R 658,481	R 199,359	R 857,840
Buildings and Civil Works.....	14,997,393	4,011,073	19,008,466
Machinery and Plant.....	32,803,945	14,955,996	47,759,941
	<b>R 48,459,819</b>	<b>R 19,166,428</b>	<b>R 67,626,247</b>
<b>Rand and Orange Free State Undertaking</b>			
Land and Rights.....	R 2,665,319	R 333,573	R 2,998,892
Buildings and Civil Works.....	61,030,102	1,298,356	62,328,458
Machinery and Plant.....	247,350,844	14,886,238	262,237,082
	<b>R 311,046,265</b>	<b>R 16,518,167</b>	<b>R 327,564,432</b>
<b>Head Office</b>			
Land.....	R 523,442	—	R 523,442
Buildings and Equipment.....	4,164,196	R 9,275	4,173,471
	<b>R 4,687,638</b>	<b>R 9,275</b>	<b>R 4,696,913</b>
<b>Summary</b>			
Land and Rights.....	R 5,433,080	R 707,914	R 6,140,994
Buildings and Civil Works.....	116,369,882	7,904,701	124,274,583
Machinery and Plant.....	407,762,189	43,401,500	451,163,689
	<b>R 529,565,151</b>	<b>R 52,014,115</b>	<b>R 581,579,266</b>

J. VAN NIEKERK, *Chief Accountant.*

# Electricity Supply Commission

Schedule of Investments of the

## INVESTMENTS.

LOCAL REGISTERED STOCKS.	Nominal Value	Book Value
<b>Electricity Supply Commission—</b>		
3½ per cent. 1954/64.....	R3,211,826	R3,149,523
3½ per cent. 1959/64.....	803,216	781,312
3 per cent. 1956/66.....	874,658	804,490
3 per cent. 1957/67.....	786,244	734,763
3 per cent. 1959/64.....	1,662,510	1,579,147
3 per cent. 1960/65.....	1,503,760	1,434,818
3 per cent. 1961/66.....	1,238,398	1,162,148
3 per cent. 1965/70.....	1,144,000	1,096,474
3 per cent. 1967/73.....	1,317,188	1,244,998
3 per cent. 1968/74.....	2,329,620	2,261,761
3 per cent. 1968/73.....	13,326,640	13,220,903
3 per cent. 1969/74.....	678,800	637,925
3 per cent. 1969/74.....	137,860	128,065
3 per cent. 1965/67.....	361,568	333,558
3 per cent. 1964/67.....	2,195,620	2,081,052
3 per cent. 1964/68.....	471,200	435,512
4 per cent. 1964/67.....	1,344,660	1,297,856
5 per cent. 1964/67.....	1,890,401	1,847,126
5 per cent. 1966/68.....	985,636	967,896
5 per cent. 1967/69.....	1,088,524	1,068,095
5 per cent. 1968/70.....	895,568	864,299
5 per cent. 1967/70.....	5,479,650	5,358,579
5 per cent. 1971/74.....	1,688,386	1,662,293
5 per cent. 1971/75.....	3,341,778	3,291,703
4 per cent. 1975/80.....	9,590,600	9,551,164
4 per cent. 1975/80.....	8,132,500	8,077,394
5 per cent. 1976/81.....	4,826,200	4,740,460
5 per cent. 1977/82.....	873,700	859,633
5 per cent. 1976/82.....	3,836,690	3,781,066
5 per cent. 1977/83.....	9,866,020	9,779,340
5 per cent. 1978/83.....	3,621,431	3,575,778
5 per cent. 1979/84.....	4,994,018	4,960,926
5 per cent. 1979/84.....	6,892,400	6,736,491
5 per cent. 1979/85.....	5,848,700	5,744,707
5 per cent. 1980/85.....	7,008,000	6,885,151
5 per cent. 1980/86.....	4,857,100	4,723,642
5 per cent. 1981/86.....	7,100,000	7,037,500
6 per cent. 1981/86.....	6,128,300	6,060,573
6 per cent. 1982/87.....	5,643,475	5,551,214
5 per cent. 1982/87.....	6,300,000	6,221,250
<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
5 per cent. 1979.....	300,000	299,625
Carried forward.....	R146,568,845	R143,954,311

Johannesburg,  
29th March, 1963

SCHEDULE No. 2

Redemption Fund at 31st December, 1962

	Nominal Value	Book Value
<i>Brought forward:</i>	R146,568,845	R143,954,311
<b>Municipal — Johannesburg</b>		
3½ per cent. 1956/66.....	3,200	3,200
3½ 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
3½ 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
<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
	<u>R149,977,445</u>	<u>R147,201,234</u>
<b>Interest Accrued.....</b>		1,491,149
		<u>R148,692,383</u>
<b>Market Value.....</b>	<u>R151,552,831</u>	
<b>ALLOCATION OF INVESTMENTS TO UNDERTAKINGS</b>		
	<i>Nominal Value</i>	<i>Book Value including Interest accrued</i>
Cape Western Undertaking.....	R17,084,408	R16,947,828
Cape Northern Undertaking.....	1,364,669	1,354,753
Border Undertaking.....	2,154,124	2,137,281
Natal Southern Undertaking.....	13,438,471	13,300,002
Natal Central Undertaking.....	12,186,100	12,070,621
Eastern Transvaal Undertaking.....	5,738,581	5,682,280
Rand and Orange Free State Undertaking.....	88,913,060	88,087,961
Undertaking which has been sold.....	6,500,000	6,525,603
Head Office.....	2,598,032	2,586,054
	<u>R149,977,445</u>	<u>R148,692,383</u>

J. VAN NIEKERK, Chief Accountant.



# Electricity Supply Commission

SCHEDULE No. 3

Loans at 31st December, 1962

## 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.....	R 13,500,000	
6	R5,000,000 3½ per cent. 1959/64.....	5,000,000	
7	R4,000,000 3½ per cent. 1956/66.....	4,000,000	
8	R4,000,000 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 3½ per cent. 1969/74.....	6,000,000	
17	R6,000,000 3½ per cent. 1969/74.....	6,000,000	
18	R10,500,000 3½ per cent. 1965/67.....	10,500,000	
19	R6,000,000 3½ per cent. 1964/67.....	6,000,000	
21	R10,000,000 3½ per cent. 1964/68.....	10,000,000	
22	R9,000,000 4½ per cent. 1964/67.....	9,000,000	
23	R10,000,000 5 per cent. 1964/67.....	10,000,000	
25	R7,000,000 5 per cent. 1966/68.....	7,000,000	
26	R8,000,000 5 per cent. 1967/69.....	8,000,000	
27	R8,500,000 5 per cent. 1968/70.....	8,500,000	
29	R16,000,000 5 per cent. 1967/70.....	16,000,000	
31	R16,000,000 5 per cent. 1971/74.....	16,000,000	
32	R20,000,000 5 per cent. 1971/75.....	20,000,000	
33	R16,000,000 4½ per cent. 1975/80.....	16,000,000	
34	R16,000,000 4½ per cent. 1975/80.....	16,000,000	
35	R16,500,000 5½ per cent. 1976/81.....	16,500,000	
36	R20,000,000 5½ per cent. 1977/82.....	20,000,000	
37	R22,000,000 5½ per cent. 1976/82.....	22,000,000	
38	R24,000,000 5½ per cent. 1977/83.....	24,000,000	
39	R24,000,000 5½ per cent. 1978/83.....	24,000,000	
40	R22,000,000 5½ per cent. 1979/84.....	22,000,000	
42	R20,000,000 5½ per cent. 1979/84.....	20,000,000	
43	R16,000,000 5½ per cent. 1979/85.....	16,000,000	
44	R16,000,000 5½ per cent. 1980/85.....	16,000,000	
45	R17,000,000 5½ per cent. 1980/86.....	17,000,000	
46	R16,000,000 5½ 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.....		
	(Payable in full not later than the 31st January, 1963, in terms of the Prospectus)		
	Fully Paid.....	R21,725,600	
	Partly Paid.....	86,165	21,811,765
	<u>R527,000,000</u>	<u>R520,811,765</u>	<u>R6,000,000</u>

Loan No.	Outstanding	Repaid
	R527,000,000	R6,000,000
	<i>Brought forward</i>	
	R520,811,765	
<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.....	11,896,410 9,568,433
28	R5,754,393 \$30,000,000 4½ per cent. Repayable by half-yearly instalments 1955/63..... R21,453,912 Less repaid out of local loans..... 15,699,519	2,989,960 2,764,433
48	R10,000,000 \$14,000,000 5½ per cent. Repayable by half-yearly instalments 1963/71: to be taken up during the period ending 30th June, 1963. Amount received to 31st December, 1962.....	5,925,916
<b>EXPORT-IMPORT BANK OF WASHINGTON</b>		
24	R14,016,587 \$19,600,000 4 per cent. Repayable by half-yearly instalments 1956/70.....	8,497,711 5,518,876
<b>COMMONWEALTH DEVELOPMENT FINANCE COMPANY LIMITED</b>		
30	R4,000,000 5 per cent. Repayable by half-yearly instalments 1954/68.....	1,660,000 2,340,000
<b>SWISS LOAN</b>		
41	R8,274,721 Swiss Franks 50,000,000 5 per cent. Repayable by annual instalments 1965/74...	8,274,721
	<u>R590,510,544</u>	<u>R560,056,483</u>
	<i>Sundry Loans.....</i>	732,754
		<u>R26,924,496</u>

# Electricity Supply

Redemption Fund Account for the

# Commission

Year Ended 31st December, 1962

ACCOUNT No. 1

1961			
R135,400,461	Balance as per Balance Sheet		R154,374,047
15,855,669	Cape Western Undertaking.....	R18,164,076	
1,281,242	Cape Northern Undertaking.....	1,610,677	
1,764,775	Border Undertaking.....	2,132,519	
11,947,320	Natal Southern Undertaking.....	13,840,353	
12,638,294	Natal Central Undertaking.....	13,700,126	
5,173,309	Eastern Transvaal Undertaking.....	6,266,509	
77,664,689	Rand and Orange Free State Undertaking.....	89,473,093	
2,575,163	Head Office.....	2,686,694	
6,500,000	Original Cost of an Undertaking which has been sold.....	6,500,000	
<u>R135,400,461</u>			<u>R154,374,047</u>

1961			
Balance Brought Forward.....	R135,400,461		R118,436,528
Cape Western Undertaking.....	R 15,855,669		13,911,184
Cape Northern Undertaking.....	1,281,242		995,363
Border Undertaking.....	1,764,775		1,408,956
Natal Southern Undertaking.....	11,947,320		10,332,155
Natal Central Undertaking.....	12,638,294		11,507,823
Eastern Transvaal Undertaking.....	5,173,309		4,618,333
Rand and Orange Free State Undertaking.....	77,664,689		66,699,685
Head Office.....	2,575,163		2,463,029
Assets Sold.....	6,500,000		6,500,000
Amounts Contributed During the Year as per Revenue Accounts.....	12,325,451		11,279,620
Cape Western Undertaking.....	R1,475,799		1,200,444
Cape Northern Undertaking.....	241,304		203,291
Border Undertaking.....	271,405		268,374
Natal Southern Undertaking.....	1,237,179		1,061,429
Natal Central Undertaking.....	479,117		613,064
Eastern Transvaal Undertaking.....	866,204		371,280
Rand and Orange Free State Undertaking.....	7,754,443		7,561,738
Other Contributions.....	59,747		54,415
Proceeds of Sales of Fixed Property.....	105,627		48,614
Profit on Redemption of Investment.....	—		1,423
Interest Earned on Investments.....	6,482,761		5,579,861
	<u>R154,374,047</u>		<u>R135,400,461</u>

Johannesburg,  
29th March, 1963.

J. VAN NIEKERK, *Chief Accountant.*

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 30th April, 1963.

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

# Electricity Supply Commission

ACCOUNT No. 2

## Reserve Fund Account for the

## Year Ended 31st December, 1962

1961	1962	1961
R693,373	R1,192,977	
<b>Expenditure During the Year on Replacements and Betterment</b>		
82,614	R212,094	
100	667	
28,645	14,020	
143,540	159,804	
80,411	329,631	
16,067	14,480	
341,996	462,281	
29,903,360	35,782,754	
<b>Balance as per Balance Sheet</b>		
3,144,451	3,601,164	
498,845	708,126	
420,865	521,059	
1,894,039	2,341,793	
2,582,169	2,659,796	
1,248,181	1,670,700	
20,114,810	24,280,116	
<u>R30,596,733</u>	<u>R36,975,731</u>	

1961	1962	1961
R29,903,360	R24,409,215	
<b>Balance Brought Forward</b>		
R3,144,451	2,676,691	
498,845	372,806	
420,865	340,596	
1,894,039	1,552,736	
2,582,169	2,272,080	
1,248,181	991,284	
20,114,810	16,203,022	
5,385,000	4,863,000	
<b>Amounts set aside during the year as per Revenue Accounts</b>		
495,000	408,000	
180,000	105,000	
90,000	90,000	
501,000	400,000	
270,000	270,000	
363,000	220,000	
3,486,000	3,370,000	
1,687,371	1,324,518	
<b>Interest Earned on Investments</b>		
<u>R36,975,731</u>	<u>R30,596,733</u>	

# Electricity Supply Commission

ACCOUNT No. 3

Cape Western Undertaking

## Revenue Account for the Year Ended 31st December, 1962

1961		R3,855,134
R3,442,157	<b>Generation</b> .....	
	<b>Operation</b>	
2,597,227	Fuel.....	R2,986,770
56,885	Water and Stores.....	70,100
320,772	Salaries and Wages.....	333,704
18,305	Other Expenses.....	9,392
	<b>Maintenance</b>	
51,663	Stores.....	58,954
352,520	Salaries and Wages.....	357,745
44,785	Other Expenses.....	38,469
611,370	<b>Distribution</b> .....	728,571
	<b>Operation and Maintenance</b>	
40,680	Stores.....	74,237
480,682	Salaries and Wages.....	527,427
90,008	Other Expenses.....	126,907
948,525	<b>General Expenses</b> .....	987,649
	<b>Local Administration and Technical Management</b> .....	
362,959	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	309,792
439,919	Head Office Administration Expenses.....	521,448
82,472	Head Office Engineering Expenses.....	88,939
63,175		67,470
4,159,662	<b>Capital Charges</b> .....	5,003,612
	<b>Interest</b> .....	
2,377,109	Redemption Fund.....	2,865,839
1,200,444	Instalments and Provision for Repayment of Overseas and Sundry Loans.....	1,475,799
174,109	Reserve Fund.....	166,974
408,000		495,000
9,161,714	<b>Balance carried down</b> .....	10,574,966
340,894		214,890
<u>R9,502,608</u>		<u>R10,789,856</u>
R350,005	<b>Balance brought forward</b> .....	R9,111
	<b>Balance as per Balance Sheet</b> .....	205,779
<u>R350,005</u>		<u>R214,890</u>

1961		R9,468,788
	<b>Sales of Electricity</b> .....	R10,753,885
	<b>Traction Supplies</b> .....	
R3,544,960	Bulk Supplies.....	2,169,098
2,098,784	Industrial Supplies.....	2,412,203
2,890,723	Domestic and Lighting Supplies.....	2,816,645
2,219,418		2,070,842
	<b>Other Revenue</b> .....	35,971
		33,820
R10,789,856		R9,502,608
	<b>Balance brought down</b> .....	R214,890
	<b>Balance as per Balance Sheet</b> .....	R340,894
<u>R214,890</u>		<u>9,111</u>
		R350,005

Johannesburg,  
29th March, 1963.

J. VAN NIEKERK, *Chief Accountant.*

Referred to in our report of 30 April, 1963.

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

# Electricity Supply Commission

Cape Northern

Undertaking

Revenue Account for the Year

Ended 31st December, 1962

ACCOUNT No. 4

1961		R371,461
R399,624	<b>Generation</b> .....	
	Operation —	
254,414	Fuel.....	R222,872
29,369	Water and Stores.....	28,094
59,279	Salaries and Wages.....	59,089
13,426	Other Expenses.....	16,698
	Maintenance —	
4,653	Stores.....	3,668
33,394	Salaries and Wages.....	35,422
5,089	Other Expenses.....	5,618
539,005	<b>Electricity Purchased</b> .....	720,168
484,960	Proportion of Pooled Costs of Rand and Orange Free State and Eastern Transvaal Undertakings	642,221
54,045	Electricity supplied by Rand and Orange Free State Undertaking.....	77,947
55,529	<b>Distribution</b> .....	83,014
	Operation and Maintenance	
8,314	Stores.....	14,910
29,907	Salaries and Wages.....	41,297
17,308	Other Expenses.....	26,807
106,767	<b>General Expenses</b> .....	115,769
46,644	Local Administration and Technical Manage- ment.....	48,370
40,034	General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contribu- tions, etc.).....	45,825
11,375	Head Office Administration Expenses.....	12,267
8,714	Head Office Engineering Expenses.....	9,307
701,980	<b>Capital Charges</b> .....	894,237
392,150	Interest.....	471,995
203,291	Redemption Fund.....	241,304
1,539	Instalments and Provision for Repayment of Overseas Loans.....	938
105,000	Reserve Fund.....	180,000
1,802,905	Balance carried down.....	2,184,649
134,538		57,511
<u>R1,937,443</u>		<u>R2,242,160</u>
R303,883	Balance as per Balance Sheet.....	R361,394
<u>R303,883</u>		<u>R361,394</u>

1961		R2,239,596	R1,934,052
	<b>Sales of Electricity</b> .....		
	Bulk Supplies.....	R 637,747	624,186
	Mining Supplies.....	1,048,963	764,571
	Industrial Supplies.....	406,010	421,279
	Domestic Supplies.....	146,876	124,016
	<b>Other Revenue</b> .....	2,564	3,391
		<u>R2,242,160</u>	<u>R1,937,443</u>
	Balance brought forward.....	R303,883	R169,345
	Balance brought down.....	57,511	134,538
		<u>R361,394</u>	<u>R303,883</u>

Johannesburg,  
29th March, 1963.

J. VAN NIEKERK, *Chief Accountant.*

Referred to in our report of 30th April, 1963.

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

# Electricity Supply Commission

ACCOUNT No. 5

Border                      Undertaking

## Revenue Account for the Year Ended 31st December, 1962

	1961		R908,267
R833,573	<b>Generation</b> .....		
	<b>Operation</b>		
	Fuel.....	R653,301	
594,003	Water and Stores.....	9,950	
8,660	Salaries and Wages.....	111,914	
108,390	Other Expenses.....	9,074	
3,878	<b>Maintenance</b>		
26,135	Stores.....	27,016	
79,964	Salaries and Wages.....	85,006	
12,543	Other Expenses.....	12,006	
135	<b>Electricity Purchased</b> .....		14
86,649	<b>Distribution</b> .....		92,724
	<b>Operation and Maintenance</b>		
	Stores.....	10,613	
12,783	Salaries and Wages.....	64,105	
57,711	Other Expenses.....	18,006	
16,155			
140,852	<b>General Expenses</b> .....		150,179
	Local Administration and Technical Management.....	59,630	
52,250	General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	74,369	
68,513	Head Office Administration Expenses.....	9,200	
11,375	Head Office Engineering Expenses.....	6,980	
8,714			
864,290	<b>Capital Charges</b> .....		887,615
	Interest.....	520,837	
497,396	Redemption Fund.....	271,405	
268,374	Instalments and Provision for Repayment of Overseas and Sundry Loans.....	5,373	
8,520	Reserve Fund.....	90,000	
90,000			
1,925,499	Balance carried down.....		R2,038,799
8,515			
R1,934,014			
R151,073	Balance brought down.....		R17,094
	Balance brought forward.....		142,558
R151,073			R159,652

			1961
	<b>Sales of Electricity</b> .....		R1,932,258
	Bulk Supplies.....	R1,602,563	1,549,803
	Industrial Supplies.....	158,785	140,155
	Domestic and Lighting Supplies.....	258,299	242,300
	<b>Other Revenue</b> .....		1,756
			2,058
	Balance carried down.....		2,021,705
			17,094
			R2,038,799
	Balance brought down.....		R8,515
	Balance as per Balance Sheet.....		142,558
			R159,652
			R151,073

Johannesburg,  
29th March, 1963.

J. VAN NIEKERK, *Chief Accountant.*

Referred to in our report of 30th April, 1963.

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

# Electricity Supply Commission

Natal Southern

Revenue Account for the Year

ACCOUNT No. 6

Undertaking

Ended 31st December, 1962

<p>1961 R8,404,673</p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> <p>8,401,358</p> <p style="text-align: right;">593</p> <p style="text-align: right;">130</p> <p style="text-align: right;">1,540</p> <p style="text-align: right;">52</p> <p style="text-align: right;">Cr. 61</p> <p style="text-align: right;">983</p> <p style="text-align: right;">78</p> </div> <p>69,175</p> <p>379,408</p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> <p>57,651</p> <p>185,913</p> <p>147,807</p> <hr style="border: 0; border-top: 1px solid black; margin: 2px 0;"/> <p>391,371</p> <p>11,963</p> </div> <p>213,757</p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> <p>236,878</p> <p style="text-align: right;">195,435</p> <p style="text-align: right;">82,472</p> <p style="text-align: right;">63,175</p> <hr style="border: 0; border-top: 1px solid black; margin: 2px 0;"/> <p>577,960</p> <p>364,203</p> </div> <p>550,447</p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> <p>2,005,071</p> <p>1,061,429</p> <p style="text-align: right;">906</p> <p style="text-align: right;">195,235</p> <p style="text-align: right;">400,000</p> <hr style="border: 0; border-top: 1px solid black; margin: 2px 0;"/> <p>3,662,641</p> <p>3,112,194</p> </div> <p>9,617,460</p> <p>134,478</p> <p><u>R9,751,938</u></p> <p>R183,698</p> <p><u>R183,698</u></p>	<p><b>Generation</b>.....</p> <p>Proportion of Pooled Costs (statement attached)</p> <p>Other Operation and Maintenance Costs</p> <p>Operation —</p> <p style="padding-left: 20px;">Fuel..... 969</p> <p style="padding-left: 20px;">Stores..... 34</p> <p style="padding-left: 20px;">Salaries and Wages..... 1,576</p> <p style="padding-left: 20px;">Other Expenses..... 43</p> <p>Maintenance —</p> <p style="padding-left: 20px;">Stores..... 96</p> <p style="padding-left: 20px;">Salaries and Wages..... 1,013</p> <p style="padding-left: 20px;">Other Expenses..... 88</p> <p><b>Electricity Purchased</b>.....</p> <p><b>Distribution</b>.....</p> <p>Operation and Maintenance —</p> <p style="padding-left: 20px;">Stores..... 63,351</p> <p style="padding-left: 20px;">Salaries and Wages..... 206,624</p> <p style="padding-left: 20px;">Other Expenses..... 223,011</p> <p style="padding-left: 40px;">Less Charged to Pooled Costs (Interconnector).....</p> <p><b>General Expenses</b>.....</p> <p>Local Administration and Technical Management..... 241,570</p> <p>General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)..... 230,225</p> <p>Head Office Administration Expenses..... 88,939</p> <p>Head Office Engineering Expenses..... 67,470</p> <p style="padding-left: 40px;">Less Charged to Pooled Costs.....</p> <p><b>Capital Charges</b>.....</p> <p>Interest..... 2,414,968</p> <p>Redemption Fund..... 1,237,179</p> <p>Sinking Fund..... —</p> <p>Instalments and Provision for Repayment of Overseas Loans..... 198,169</p> <p>Reserve Fund..... 501,000</p> <p style="padding-left: 40px;">Less Charged to Pooled Costs.....</p> <p>Balance carried down.....</p> <p>Balance brought down.....</p> <p>Balance as per Balance Sheet.....</p>	<p>R9,268,733</p> <p>R9,264,914</p> <p>92,010</p> <p>473,282</p> <p>492,986</p> <p>19,704</p> <p>229,774</p> <p>241,570</p> <p>628,204</p> <p>398,430</p> <p>655,769</p> <p>2,414,968</p> <p>1,237,179</p> <p>—</p> <p>198,169</p> <p>501,000</p> <p>4,351,316</p> <p>3,695,547</p> <p><u>R10,719,568</u></p> <p>R91,149</p> <p>92,549</p> <p><u>R183,698</u></p>
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<p><b>Sales of Electricity</b>.....</p> <p>Traction Supplies..... R926,392</p> <p>Bulk Supplies..... 7,680,578</p> <p>Industrial Supplies..... 1,455,941</p> <p>Domestic and Lighting Supplies..... 559,060</p> <p><b>Other Revenue</b>.....</p> <p>Other Revenue..... 14,613</p> <p>Less Credited to Pooled Costs..... 8,165</p> <p>Balance carried down.....</p>	<p>R10,621,971</p> <p>6,448</p> <p>10,628,419</p> <p>91,149</p>	<p>1961 R9,745,666</p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> <p>733,119</p> <p>7,108,088</p> <p>1,311,743</p> <p>592,716</p> </div> <p>6,272</p> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;"> <p>20,073</p> <p>13,801</p> </div> <p><u>R9,751,938</u></p> <p>R49,220</p> <p>134,478</p> <p><u>R183,698</u></p>
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Johannesburg,  
29th March, 1963.

J. VAN NIEKERK. *Chief Accountant.*

Referred to in our Report of 30th April, 1963.

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

# Electricity Supply Commission

ACCOUNT No. 7

Natal Central Undertaking

## Revenue Account for the Year Ended 31st December, 1962

	1961		R4,382,626
R4,117,455		<b>Generation</b> .....	
		Proportion of Pooled Costs (statement attached)	
345,513		<b>Distribution</b> .....	332,864
		Operation and Maintenance —	
46,134		Stores.....	R52,355
252,076		Salaries and Wages.....	240,477
57,443		Other Expenses.....	55,805
355,653			348,637
10,140		Less charged to Pooled Costs (Interconnector)..	15,773
			349,765
300,938		<b>General Expenses</b> .....	
		Local Administration and Technical Management.....	161,046
157,918		General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Claims, Insurance, Pension Fund Contributions, etc.)	286,119
229,881		Head Office Administration Expenses.....	79,739
82,472		Head Office Engineering Expenses.....	60,490
63,175			587,394
533,446		Less Charged to Pooled Costs.....	237,629
232,508			
		<b>Capital Charges</b> .....	804,764
		Interest.....	1,152,568
1,094,394		Redemption Fund.....	479,117
613,064		Instalments and Provision for Repayment of Overseas Loans.....	69,787
68,574		Reserve Fund.....	270,000
270,000			1,971,472
2,046,032		Less Charged to Pooled Costs.....	1,166,708
1,239,944			5,870,019
		Balance carried down.....	51,375
R5,569,994			R5,921,394
R302,445		Balance brought forward.....	R460,150
157,705		Balance brought down.....	R460,150
R460,150			R460,150

	1961		R5,902,576
		<b>Sales of Electricity</b> .....	R5,395,035
		Traction Supplies.....	R2,249,546
		Bulk Supplies.....	2,247,706
		Mining Supplies.....	456,570
		Industrial Supplies.....	585,433
		Domestic and Lighting Supplies.....	363,321
		<b>Other Revenue</b> .....	18,818
		Other Revenue.....	36,187
		Less Credited to Pooled Costs.....	17,369
		Balance carried down.....	157,705
			R5,921,394
		Balance brought down.....	R51,375
		Balance as per Balance Sheet.....	408,775
			R460,150
			R460,150



# Electricity Supply Commission

Natal Southern and Natal

Central Undertakings

## Statement of Pooled Costs and Allocation

for the Year Ended 31st December, 1962

1961				1961
R7,584,192	<b>Generation</b> .....	R8,139,283	<b>Allocation</b> .....	R13,647,540
	<b>Operation</b> —			R12,518,813
5,988,636	Fuel.....	R6,468,471	Natal Southern Undertaking.....	8,401,358
150,919	Water and Stores.....	208,778	Natal Central Undertaking.....	4,117,455
561,237	Salaries and Wages.....	596,643		
94,284	Other Expenses.....	67,753		
234,436	<b>Maintenance</b> —			
514,060	Stores.....	233,904		
40,620	Salaries and Wages.....	525,466		
	Other Expenses.....	38,268		
22,103	<b>Interconnector</b> .....	35,477		
	<b>Operation and Maintenance</b> —			
1,045	Stores.....	2,201		
15,359	Salaries and Wages.....	15,128		
5,699	Other Expenses.....	18,148		
596,711	<b>General Expenses</b> .....	636,059		
163,533	Local Administration and Technical Management.....	170,374		
219,730	General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.).....	249,948		
213,448	Head Office Administration and Engineering Expenses.....	215,737		
4,352,138	<b>Capital Charges</b> .....	4,862,255		
2,267,842	Interest.....	2,603,293		
1,296,387	Redemption Fund.....	1,397,407		
263,809	Instalments and Provision for Repayment of Overseas Loans.....	267,955		
524,100	Reserve Fund.....	593,600		
12,555,144		13,673,074		
36,331	Less Sundry Revenue.....	25,534		
<u>R12,518,813</u>		<u>R13,647,540</u>		<u>R13,647,540</u>
				<u>R12,518,813</u>

Johannesburg,  
29th March, 1963.

J. VAN NIEKERK, *Chief Accountant.*

Referred to in our Report of 30th April, 1963.

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



# Electricity Supply Commission

ACCOUNT No. 9

Rand and Orange Free

State Undertaking

## Revenue Account for the Year

## Ended 31st December, 1962

1961	1961	1961
R42,538,446	R44,761,447	R44,761,447
41,934,797	R44,220,941	
185,088	159,419	
32,501	28,817	
138,406	122,876	
504	1,840	
52,887	40,527	
192,449	183,745	
1,814	3,282	
2,132,404	2,253,782	
454,956	511,939	
1,765,034	1,739,171	
33,222	151,235	
2,253,212	2,402,345	
66,763	70,616	
54,045	77,947	
788,791	901,589	
838,893	850,715	
1,365,437	1,550,397	
216,135	233,082	
165,561	176,818	
2,586,026	2,811,012	
1,797,235	1,909,423	
8,072,835	8,913,889	
13,433,214	13,990,091	
7,561,738	7,754,443	
2,568,521	2,586,487	
3,370,000	3,486,000	
26,933,473	27,817,021	
18,860,638	18,903,132	
53,532,476	56,830,707	
1,293,509	293,258	
R54,825,985	R57,123,965	
R2,760,822	R3,054,080	
R2,760,822	R3,054,080	

1961	1961	1961
R55,266,960	R52,947,707	R52,947,707
R2,415,346	2,420,161	2,420,161
7,178,253	6,609,849	6,609,849
34,332,582	33,392,848	33,392,848
10,659,221	9,989,220	9,989,220
681,558	535,629	535,629
1,587,299	1,640,982	1,640,982
56,854,259	54,588,689	54,588,689
217,976	197,578	197,578
51,730	39,718	39,718
252,714	236,492	236,492
200,984	196,774	196,774
R57,123,965	R54,825,985	R54,825,985
R2,760,822	R1,467,313	R1,467,313
293,258	1,293,509	1,293,509
R3,054,080	R2,760,822	R2,760,822

Johannesburg,  
29th March, 1963.

J. VAN NIEKERK, *Chief Accountant.*

Referred to in our Report of 30th April, 1963.

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

# Electricity Supply Commission

Rand and Orange Free State and Eastern Transvaal Undertakings

## Statement of Pooled Costs and Allocation for the Year Ended 31st December, 1962

	1961		1961
R24,068,041	R24,068,041	Generation .....	R25,340,507
		Operation —	
18,280,286		Fuel.....	R18,947,222
344,929		Water and Stores.....	333,419
2,224,171		Salaries and Wages.....	2,386,068
66,071		Other Expenses.....	186,356
		Maintenance —	
1,093,780		Stores.....	1,190,209
1,968,200		Salaries and Wages.....	2,150,387
90,604		Other Expenses.....	146,846
			<hr/>
4,498		Electricity Purchased.....	5,501
66,763		Interconnector.....	70,616
		Operation and Maintenance —	
13,805		Stores.....	15,140
51,352		Salaries and Wages.....	50,046
1,606		Other Expenses.....	5,430
			<hr/>
2,020,537		General Expenses.....	2,186,117
641,768		Local Administration and Technical Management.....	682,388
1,021,967		General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	1,120,344
356,802		Head Office Administration and Engineering Expenses.....	383,385
			<hr/>
19,270,847		Capital Charges.....	20,626,254
9,496,536		Interest.....	10,335,518
5,097,312		Redemption Fund.....	5,443,121
2,405,207		Instalments and Provision for Repayment of Overseas Loans.....	2,421,843
2,271,792		Reserve Fund.....	2,425,772
			<hr/>
45,430,686		Less Sundry Revenue.....	48,228,995
204,992			235,813
			<hr/>
R45,225,694			R47,993,182
		Allocation .....	R47,993,182
		Rand and Orange Free State Undertaking.....	44,220,941
		Eastern Transvaal Undertaking.....	3,130,020
		Cape Northern Undertaking.....	642,221
			<hr/>
			R45,225,694

# Electricity Supply Commission

## ANNEXURE B

POWER STATIONS: PRINCIPAL EQUIPMENT INSTALLED AS AT 31st DECEMBER, 1962.

Undertaking and Area (Square Miles)	Electric Power-Station	Type	Station Capacity MW	BOILERS		MAIN GENERATORS		HOUSE SETS	
				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 (Stand-by)	Steam	3.5	1	10.0	2	1.5		
		Oil	1.0	3	12.0	1	0.5		
	West Bank No. 1	Steam	32.0	6	21.5	1	1.5		
		Steam	30.0	4	55.0	2	4.0		
	West Bank No. 2	Steam	30.0	3	170.0	3	7.5		
Cape Northern 26,700	Central, Kimberley	Steam	30.0	8	30.0	1	3.0		
		Steam	30.0	4	75.0	3	5.0		
Cape Western 22,400	Salt River No. 1	Steam	90.3	{ 2	60.0	{ 3	10.0	} 1	0.3
		Steam	120.0	{ 6	100.0	{ 3	20.0		
	Steam	90.0	6	260.0	4	30.0			
	Steam	90.0	4	200.0	3	20.0			
	Hex River	Steam	90.0	1	275.0	1	30.0		
Eastern Transvaal 35,200	Komati	Steam	200.0	2	900.0	2	100.0		
		Hydro	1.35	—	—	3	0.45		
	Sabie Gorge Witbank	Steam	128.0	20	70.0	6	20.0	1	8.0
		Steam	165.0	2	80.0	2	20.0		
Natal Central 21,400	Colenso Nos. 1 and 2	Steam	165.0	8	60.0	5	12.0		
		Steam	165.0	4	80.0	3	25.0		
		Steam	165.0	5	180.0	1	30.0		
		Steam	165.0	2	200.0	1	30.0		

Natal Southern	Congella Nos. 1 and 2	Steam	206·0	6	60·0	3	12·0 20·0 30·0 40·0	
5,000	Port Shepstone	Oil	3·4	—	—	2	0·7 1·0	
	Umgeni	Steam	240·0	8	180·0 260·0	4	30·0 60·0	
	Brakpan	Steam	48·0	8	28·0 45·0 70·0	1	3·0 12·5 20·0	
	Highveld	Steam	360·0	6	550·0	6	60·0	
	Klip	Steam	424·0	25	180·0	12	33·0	4
	Rosherville	Steam	38·4	16	38·0 48·0	4	9·6	
	Taatbos	Steam	480·0	8	580·0	8	60·0	
	Vaal	Steam	318·0	18	190·0	9	33·0	3
	Vereeniging	Steam	150·0	20	45·0 60·0 180·0	3	20·0 30·0	
	Vierfontein	Steam	360·0	19	210·0	12	30·0	
	Wilge	Steam	240·0	4	125·0 400·0 580·0	2	30·0 60·0	
				1		3		7·0

## SUMMARY:

Total Number of Boilers	.. .. .	278
Total Boiler House Rating	.. .. .	41,726,000 lb./hr.
Total Number of Main Generators	.. .. .	136 Capacity 3,701·65 MW
Total Number of House Sets	.. .. .	9 Capacity 57·30 MW
Total Plant Capacity (Electricity)	.. .. .	3,758·95 MW

Major Items of Plant Commissioned 1962.

Komati ... .. 1 100 MW Generator &amp; 1 900,000 lb./hr. Boiler

## Statement No. 1—(continued)

## COMPRESSED AIR POWER STATIONS: RAND UNDERTAKING

Name of Station	Number of Sets	Type	Compressor Output, h.p.		Drive
			Each	Total	
<i>Electric Driven</i>					
Canada Dam	1	Turbo	3,000	17,400	Electric Motor
Compressor Station	3	Turbo	4,800		
Robinson Compressor Station ..	3	Turbo	2,000	11,150	"
	1	Turbo	2,150		
	1	Turbo	3,000		
<i>Steam Driven</i>					
Brakpan Power Station .. ..	2	Recip.	800	4,250	Recip. Steam Engines
	1	Turbo	2,650		
Rosherville Power Station ..	1	Turbo	4,400	40,300	"
	2	Turbo	6,000		
	2	Turbo	7,100		
	1	Turbo	9,700		
Total Compressed Air Sets .. ..	18		73,100 = 54.53 MW		

## CAPACITY OF TRANSFORMERS IN SERVICE AT 31st DECEMBER, 1962

Undertaking	Number	MVA
Border .. .. .	575	98.5
Cape Northern .. .. .	1,192	417.6
Cape Western .. .. .	3,884	1,089.6
Eastern Transvaal .. .. .	2,077	1,438.1
Natal Central .. .. .	1,770	694.8
Natal Southern .. .. .	1,427	840.2
Rand .. .. .	5,164	14,361.2
At Compressor Stations, Rand .. .. .	40	324.6
<b>TOTALS .. .. .</b>	<b>16,129</b>	<b>19,264.6</b>

10 KVA and under .. .. .	5,998	Transformers
Over 10 and under 100 .. .. .	4,896	"
100 and over but under 200 .. .. .	965	"
200 and over but under 500 .. .. .	811	"
500 and over but under 1,000 .. .. .	703	"
1,000 and over but under 10,000 .. .. .	2,316	"
10,000 and over but under 20,000 .. .. .	224	"
20,000 and over .. .. .	216	"
	<u>16,129</u>	"

**TRANSMISSION LINES AND CABLES (EXCLUDING SERVICE CONNECTIONS ON RETICULATION SYSTEMS) AT 31st DECEMBER, 1962.**

(a) TRANSMISSION LINES

Undertaking	275kV	132kV	88kV	66kV	42kV	33kV	22kV	21kV	11kV	6·6kV	3·3kV	2·0kV 2·1kV 2·2kV	525V	380/220V	Totals
Border...	—	—	—	107·10	—	67·70	92·81	—	441·99	—	3·71	—	—	85·62	798·93
Cape Northern ...	—	289·94	—	221·80	—	—	—	—	553·49	—	—	—	—	17·57	1,082·80
Cape Western ...	—	428·96	—	585·95	—	144·91	—	—	1,490·67	287·74	—	—	—	966·71	3,904·94
Eastern Transvaal ...	—	244·90	338·43	—	—	—	—	728·69	657·29	32·98	8·40	42·60	—	129·75	2,183·04
Natal Central ...	—	74·69	585·84	—	—	253·74	33·85	—	997·36	221·40	0·15	0·95	—	182·18	2,350·16
Natal Southern ...	—	102·80	179·71	—	—	96·80	—	—	666·17	39·36	—	—	—	250·18	1,335·02
Rand & O.F.S. ...	405·17	1,266·53	2,302·32	—	1,251·74	—	—	126·69	733·00	186·05	—	5·62	—	391·96	6,669·08
Totals ...	405·17	2,407·82	3,406·30	914·85	1,251·74	563·15	126·66	855·38	5,539·97	767·53	12·26	49·17	—	2,023·97	18,323·97

(b) UNDERGROUND CABLES

Border...	—	—	—	—	—	—	0·32	—	22·82	—	2·34	—	—	—	25·48
Cape Western ...	—	—	—	23·32	—	69·23	—	19·24	102·03	4·20	2·13	—	—	75·09	276·00
Eastern Transvaal ...	—	—	—	—	—	—	—	—	7·37	1·17	1·04	0·08	—	51·97	80·87
Natal Central ...	—	—	—	—	—	—	—	—	3·38	4·52	—	0·01	—	5·15	13·06
Natal Southern ...	—	—	—	—	—	4·46	—	—	38·39	0·26	—	—	—	19·18	62·29
Rand & O.F.S. ...	—	—	—	—	4·15	—	—	80·87	45·10	149·33	1·87	16·53	1·84	53·06	352·75
Totals ...	—	—	—	23·32	4·15	73·69	0·32	100·11	219·09	159·48	7·38	16·62	1·84	204·45	810·45

Transmission Lines and Cables: Circuit Miles (excluding service connections on Reticulation Systems) at 31st December 1962.



## PRINCIPAL EQUIPMENT ON ORDER AS AT 31st DECEMBER, 1962

Undertaking	Electric Power Stations	BOILERS		GENERATORS		TRANSFORMERS	
		No.	Continuous Maximum Rating Each Thousand lb./hr.	No.	Normal Rating Each MW	No.	Total Capacity MVA
Border ... ..	West Bank No. 2.	—	—	1	15·0	3	22·0
Cape Eastern ... ..	—	—	—	—	—	109	5·3
Cape Northern ... ..	Central, Kimberley	—	—	—	—	2	77·0
Cape Western ... ..	Hex River	1	275	1	30·0	142	9·4
Eastern Transvaal ... ..	{ Camden Komati	2	1,800	2	200·0	329	1,264·8
...		3	900	3	100·0		
...		4	1,125	4	125·0		
Natal Central ... ..	Ingagane	2	900	2	100·0	62	337·6
Natal Southern ... ..	Umgeni	—	—	—	—	9	445·6
Rand ... ..	Highveld	2	550	2	60·0	57	2,314·0

## SUMMARY:

Number of Boilers	... .. 14	... ..	... ..	... ..	... ..	C.M.R. 13,975,000 lb./hr.
Number of Generators	... .. 15	... ..	... ..	... ..	... ..	Total Rating 1,565·0 MW
Transformers	... .. 713	... ..	... ..	... ..	... ..	Rating 4,475·7 MVA

## STATEMENT No. 3

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

Million Units

Year	Border	Cape Northern	Cape Western	Eastern Transvaal	Klip	Natal Central	Natal Southern	Rand & O.F.S.	Sabie	Vaal	Totals
1925			0.3	160.0		0.7			0.08		0.08
1926			5.8	439.1		104.2			0.7		161.7
1927			31.0	464.3		114.2	15.6		1.9		551.0
1928			47.9	543.1		123.9	78.9		2.8		627.9
1929			49.8	619.0		117.1	99.2		3.2		797.0
1930			52.1	603.4		101.1	103.9		4.6		889.6
1931			64.3	610.3		100.3	109.8		6.6		867.1
1932			100.7	639.4		109.2	118.5		6.1		890.7
1934			73.6	648.2		124.9	131.1		7.3		974.1
1935			80.0	727.9		154.3	149.9		7.2		985.2
1936			85.8	696.4	557.0	171.5	170.5		6.9		1,119.2
1937			94.0	684.5	1,349.9	210.6	189.4		7.2		1,688.0
1938			98.8	768.1	1,666.9	234.9	209.5		7.2		2,535.6
1939			106.5	767.7	2,193.2	266.2	233.7		7.2		2,985.5
1940			119.8	853.3	2,566.5	281.1	242.7		6.7		3,573.7
1941			136.2	862.6	2,675.9	302.4	270.3		6.6		4,070.2
1942			151.8	873.4	2,707.8	307.7	273.7		6.6		4,254.0
1943			145.7	849.1	2,669.1	312.4	293.4		6.3		4,320.8
1944			158.7	889.2	2,703.6	336.0	321.6		6.7	377.9	4,275.6
1945			165.9	830.7	2,643.0	333.2	348.8		6.6		4,415.8
1946			184.6	896.9	2,614.3	347.0	369.7		7.4	582.5	5,002.4
1947	56.2		198.6	887.7	2,547.2	346.0	402.6		7.6	668.6	5,114.5
1948	69.2		222.4	633.2	1,207.4	367.9	448.7		7.3	435.1	5,576.9
1949	68.7		249.5	358.2		371.8	513.0		7.0		6,222.2
1950	79.9	53.9	271.9	378.5		406.5	561.8		6.3		6,910.6
1951	88.1	58.5	303.5	386.8		433.4	617.0		6.1		7,456.5
1952	97.7	61.3	341.2	425.0		454.0	655.6		6.1		8,080.6
1953	107.8	67.1	375.5	409.9		492.3	713.2		6.4		8,732.2
1954	118.2	70.7	436.2	270.5		532.5	777.7		5.6		9,676.6
1955	130.8	73.2	527.1	394.6		546.4	870.0		5.7		10,964.0
1956	139.1	78.7	585.1	505.9		595.4	957.7		6.0		12,019.5
1957	143.1	86.1	698.6	536.6		621.7	1,018.7		5.9		12,763.1
1958	152.9	115.2	826.0	584.1		616.1	1,104.1		3.0		13,602.2
1959	165.0	171.4	861.8	633.3		629.4	1,228.6				14,724.5
1960	172.3	185.2	871.6	762.0		649.3	1,409.0				16,094.1
1961	178.8	191.3	860.0	901.5		684.0	1,497.5				17,013.2
1962	188.6	224.9	945.0	1,012.2		731.0	1,589.5				18,121.0

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, 1962 (Electricity, Air and Steam)

STATEMENT No. 4

Energy Used:—

ELECTRICITY = 99·361% of total

Undertaking	TRACTION			BULK			MINING	
	Units	Per cent. Traction	No. Cons.	Units	Per cent. Bulk	No. Cons.	Units	Per cent. Mining
Border . . . .				167,860,292	4·701	13		
Cape Northern . .				75,397,105	2·112	8	98,294,862	1·075
Cape Western . .	318,239,623	24·549	2	215,137,836	6·026	30		
Eastern Transvaal	74,968,062	5·783	1	60,174,450	1·685	10	428,779,767	4·689
Natal Central . .	299,659,363	23·116	1	294,510,343	8·249	17	57,018,918	0·624
Natal Southern	124,530,047	9·606	1	1,222,000,122	34·226	4		
Rand & O.F.S. . .	478,955,653	36·946	2	1,535,322,734	43·001	97	8,559,298,385	93·612
Total Electricity	1,296,352,748	100·000	7	3,570,402,882	100·000	179	9,143,391,932	100·000
Per cent. of Total	7·200			19·830			50·782	

No. Cons.	INDUSTRIAL			DOMESTIC AND STREET LIGHTING			TOTAL UNITS SOLD		Total Number Consumers
	Units	Per cent. Industrial	No. Cons.	Units	Per cent. Domestic and Lighting	No. Cons.	Units	Per cent. Total Units Sold	
	8,432,299	0·229	295	12,309,522	4·058	2,869	188,602,113	1·048	3,177
37	45,692,427	1·238	122	5,554,466	1·831	1,398	224,938,860	1·249	1,565
	257,872,797	6·985	3,042	153,766,656	50·695	30,712	945,016,912	5·249	33,786
46	434,711,453	11·775	570	13,519,063	4·457	2,948	1,012,152,795	5·621	3,575
17	61,330,442	1·661	844	18,454,288	6·084	4,707	730,973,354	4·060	5,586
	210,996,701	5·715	613	31,977,843	10·543	6,521	1,589,504,713	8·828	7,139
109	2,672,751,373	72·397	924	67,737,181	22·332	7,301	13,314,065,326	73·945	8,433
209	3,691,787,492	100·000	6,410	303,319,019	100·000	56,456	18,005,254,073	100·000	63,261
	20·504			1·684			100·000		

AIR AND STEAM = 0·639% of total

Rand and O.F.S.: Air . . . .				3,363,713		1	102,652,592	
Steam . . . .							714,750	
Total Air and Steam . . . .				3,363,713		1	103,367,342	
Per cent of Total				2·905			89·277	

10 1	9,051,701		22				115,068,006		33 1
							714,750		
11	9,051,701		22				115,782,756		34
	7·818						100·000		

ELECTRICITY, AIR &amp; STEAM = 100%

Grand Total all Sales . . . .	1,296,352,748		7	3,573,766,595		180	9,246,759,274	
Per cent. of Grand Total	7·154			19·721			51·028	

220	3,700,839,193		6,432	303,319,019		56,456	18,121,036,829		63,295
	20·423			1·674			100·000		

Energy Used by Provinces:—

ELECTRICITY, AIR AND STEAM:

Cape . . . . .	318,239,623	24·549	2	467,427,644	13·079	51	97,748,262	1·057
Natal . . . . .	405,465,417	31·277	1	1,483,695,270	41·516	15	57,018,918	0·617
O.F.S. . . . .	66,825,722	5·155	2	228,990,521	6·408	40	2,287,416,460	24·737
Transvaal . . . .	505,821,986	39·019	2	1,393,653,160	38·997	74	6,804,575,634	73·589
Total . . . . .	1,296,352,748	100·000	7	3,573,766,595	100·000	180	9,246,759,274	100·000

36	311,863,551	8·427	3,450	171,419,101	56·514	34,907	1,366,698,181	7·542	38,446
17	268,862,440	7·265	1,212	43,032,504	14·187	8,785	2,258,074,549	12·461	10,030
16	101,240,512	2·735	152	3,296,586	1·087	951	2,687,769,801	14·832	1,161
151	3,018,872,690	81·573	1,618	85,570,828	28·212	11,808	11,808,494,298	65·165	13,658
220	3,700,839,193	100·000	6,432	303,319,019	100·000	56,456	18,121,036,829	100·000	63,295

## (1) ELECTRICITY GENERATION:

## 1.1 STEAM ELECTRIC

## POWER STATION OPERATING

Power Station	Units Generated	Units Sent Out	MAXIMUM DEMANDS		Station Load Factor % Sent Out
			½ Hour (or Hour) Sent Out kW	2 Min. Peak kW	
<b>Border Undertaking:</b>					
King William's Town... ..	—	—	—	—	—
West Bank No. 1 and 2 ... ..	204,378,030	193,395,150	37,540	40,200	58·8
<b>Cape Northern Undertaking</b>					
Central, Kimberley ... ..	50,846,100	41,259,177	24,412	—	19·3
<b>Cape Western Undertaking</b>					
Hex River ... ..	308,881,100	291,777,450	67,300	—	49·2
*Salt River No. 1 ... ..	34,800,533	30,890,470	38,874	43,000	9·1
*Salt River No. 2 ... ..	735,819,120	702,079,040	121,349	129,000	65·7
<b>Eastern Transvaal Undertaking</b>					
Komati... ..	1,051,767,562	961,971,886	188,282	—	62·1
Witbank ... ..	774,986,649	719,842,804	118,266	—	69·5
<b>Natal Central Undertaking</b>					
Colenso No. 1 and 2... ..	734,052,120	688,131,390	118,430	138,000	66·3
<b>Natal Southern Undertaking:</b>					
Congella No. 1 and 2... ..	645,450,000	596,525,910	128,095	148,000	53·2
Umgeni... ..	1,164,979,300	1,097,561,300	220,000	242,000	57·0
<b>Rand and O.F.S. Undertaking:</b>					
Brakpan ... ..	66,904,604	60,361,295	36,940	—	18·7
Highveld ... ..	2,527,369,821	2,372,962,035	339,507	—	79·8
Klip ... ..	2,556,448,612	2,383,570,070	366,367	—	74·3
Rosherville ... ..	44,430,814	40,874,980	29,494	—	15·8
Taaibos... ..	3,253,188,429	3,012,142,930	447,120	—	76·9
Vaal ... ..	2,134,795,906	2,005,982,308	294,337	—	77·8
Vereeniging ... ..	886,169,998	824,494,378	137,083	—	68·7
Vierfontein ... ..	2,035,483,717	1,898,800,114	315,306	—	68·7
Wilge ... ..	1,539,265,377	1,426,143,890	220,183	—	73·9
<b>GRAND TOTAL ... ..</b>	<b>20,750,017,792</b>	<b>19,348,766,577</b>			

Total R. and O.F.S. Undertaking (incl. Witbank and Komati).

16,870,811,489

15,707,146,690

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

## 1.2 HYDRO ELECTRIC

Power Station	Units Generated	Units Sent out	Maximum Demands kW		Station Load Factor % Sent out	Rain	
			Half Hr. Sent out	Two Mins. Generated		Inches	mm.
Sabie ... ..	2,906,500	2,759,700	800	875	39·38	47·82	1187·1

## STATEMENT No. 5

## STATISTICS: YEAR 1962

Coal Burnt Tons (2,000 lb.)	LB OF COAL		Calorific Value of Coal B.Th.U. as Recd. (Weighted Average)	B.Th.U. PER UNIT		OVERALL THERMAL EFFICIENCY %	
	Per Unit Generated	Per Unit Sent Out		Generated	Sent Out	Generated	Sent Out
—	—	—	—	—	—	—	—
136,899	1·340	1·416	11,540	15,460	16,340	22·1	20·9
57,168	2·249	2·771	11,390	25,600	31,550	13·3	10·8
180,430	1·168	1·237	11,500	13,430	14,230	25·4	24·0
25,277	1·741	1·962	11,520	20,060	22,610	17·0	15·1
391,407	1·054	1·104	11,520	12,140	12,720	28·1	26·8
571,773	1·087	1·189	10,170	11,050	12,090	30·9	28·2
692,960	1·788	1·925	11,000	19,670	21,180	17·3	16·1
575,670	1·568	1·673	11,290	17,700	18,890	19·3	18·1
432,881	1·341	1·451	11,300	15,150	16,400	22·5	20·8
657,803	1·129	1·199	11,690	13,200	14,020	25·8	24·3
86,767	2·594	2·875	9,990	25,910	28,720	13·2	11·9
1,623,629	1·285	1·368	8,810	11,320	12,050	30·1	28·3
2,064,694	1·615	1·732	9,790	15,810	16,960	21·6	20·1
77,496	3·488	3·792	9,910	34,570	37,580	9·9	9·1
2,256,688	1·387	1·498	8,750	12,140	13,110	28·1	26·0
1,929,498	1·808	1·924	8,370	15,130	16,100	22·6	21·2
1,051,146	2·372	2·550	8,680	20,590	22,130	16·6	15·4
1,527,224	1·501	1·609	9,190	13,790	14,790	24·7	23·1
966,807	1·256	1·356	9,690	12,170	13,140	28·0	26·0
<b>15,306,217</b>							
<b>12,848,682</b>							

## POWER STATION OPERATING STATISTICS: YEAR 1962

## 1.3 DIESEL ELECTRIC:

Power Station	Units Generated		Units Sent Out		Maximum Demands kW		Fuel Consumed		Lub. Oil gal.
	Generated	Sent Out	Half Hour	2 Mins.	Total lb.	Per kWh Sent Out			
King William's Town	4,720	4,720	1,000	1,000	3,279	0.695			
Port Shepstone	70,684	69,732	3,312	3,420	42,219	0.605			
Totals	75,404	74,452			45,498				

## (2) COMPRESSED AIR GENERATION:

Station	Type*	Units Generated	Air Units Sent Out		Coal Burned		Electric Input		Max. Sustained Load Over One Hour kW	Load Factor %
			Units	%	Total Tons	lb. Coal/Units Sent Out	Total kWh Excluding Losses	Units Sent Out/kWh		
Central Rand Compressed Air System:—										
Rosherville	Steam	51,781,200	51,642,900	42.1	75,890	2.931	—	—	40,660	34.5
Robinson	Electric	44,387,300	44,387,300	36.2	—	—	55,910,812	—	(March)	
Canada Dam	Electric	26,740,200	26,740,200	21.7	—	—	32,969,208	—		
Air Pipe-Line Totals		122,908,700	122,770,400	100.0	75,890	—	88,880,020	—		

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

## (3) STEAM GENERATION:

Station	Units Generated		Coal Burned		Max. Sustained Load over 1 Hour kW		Load Factor %
	Generated	Sent Out	Coal Burned Tons of 2,000 lb.	lb. Coal Per Unit Sent Out	Max. Sustained Load over 1 Hour kW	Load Factor %	
Brakpan	737,290	714,750	1,206	3.375	2,002	4.1	
GENERATION SUMMARY:							
Electricity Total Units	Steam	20,750,017,792	Units Generated	19,348,766,577	Coal Burnt	15,306,217	
	Hydro	2,906,500		2,759,700			
	Diesel	75,404		74,452			
Air Units at Steam Driven Stations		20,752,999,696		19,351,600,729		15,306,217	
Steam Units (Brakpan)		51,781,200		51,642,900		75,890	
		737,290		714,750		1,206	
GRAND TOTAL 1962		20,805,518,186		19,403,958,379		15,383,313	
Total for 1961		19,575,396,581		18,284,050,367		14,544,837	
Change on 1961 (Units or Tons)		1,230,121,605		1,119,908,012		838,476	
%		+6.125		+6.125		+5.765	

## POWER PURCHASED, YEAR 1962

Undertaking	Purchased from	Maximum Demands	Units
Border Undertaking	Cape of Good Hope – Textiles Corporation (Pty.) Ltd. ... ..	—	600
Eastern Transvaal	Nelspruit ... ..	—	984,465
Natal Southern	Durban, City of — Canelands ... ..	2,862 kVA	11,223,213
Rand & O.F.S. Undertaking	Pretoria Municipality ... ..	33,600 kW	351,000
Total Units Purchased			12,559,278
Total Units Sold 1962			18,121,036,829
Purchased as % of Sales			0·069

Note.—The transfer of power from one Undertaking to another is not shown above, as such is not “power purchased,” but “interchanged power.”  
See Sales Statistics.

## WATER (OTHER THAN SEA WATER) CONSUMED BY POWER STATIONS FOR THE YEAR 1962

(Millions of Gallons)

Undertaking	Potable Water	Crude River Water	Water from Other Sources including Boreholes, Dams and Sewage
Border... ..	24	—	—
Cape Northern ... ..	89	—	—
Cape Western ... ..	275	—	—
Natal Southern ... ..	913	—	—
Natal Central ... ..	39	522	—
Rand (Including Komati and Witbank Power Stations) ... ..	338	17,113	214

NOTE.—No deduction has been made for water disposed of as blow-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 1962.

(See previous Annual Reports for Rights or Interests in or over land acquired prior to 1962).

**Cape Western Undertaking**

Immovable property acquired for considerations amounting to ..	R1,460·54
Servitudes acquired—capitalised payments amounting to ... ..	R4,389·27

**Cape Northern Undertaking**

Immovable property acquired for considerations amounting to ...	R6,000·00
Servitudes acquired—capitalised payments amounting to ... ..	R1,276·16

**Natal Central Undertaking**

Immovable property acquired for considerations amounting to ...	R2,435·07
Servitudes acquired — capitalised payments amounting to ... ..	R24,450·83

**Natal Southern Undertaking**

Immovable property acquired for considerations amounting to ...	R3,860·00
Servitudes acquired — capitalised payments amounting to ... ..	R3,281·55

**Eastern Transvaal Undertaking**

Immovable property acquired for considerations amounting to ...	R14,525·00
Servitudes acquired — capitalised payments amounting to ... ..	R10,906·50
Servitudes acquired — annual payments amounting to ... ..	R84·00
Leases acquired for annual rental amounting to .. .. .	R216·00

**Border Undertaking**

Immovable property acquired for considerations amounting to ...	R50·00
Servitudes acquired — capitalised payments amounting to ... ..	R251·62

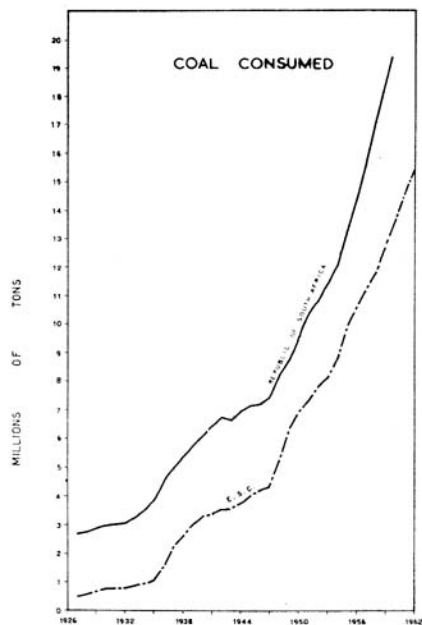
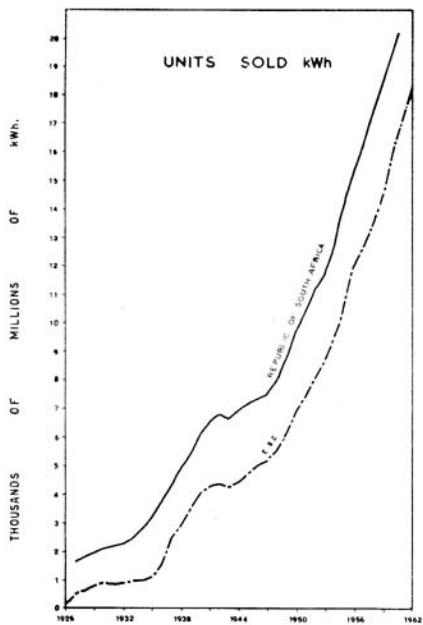
**Rand and O.F.S. Undertaking**

Immovable property acquired for considerations amounting to ...	R26,400·00
Servitudes acquired — capitalised payments amounting to ... ..	R203,485·06
Servitudes acquired — option moneys paid amounting to ... ..	R27,912·45
Leases acquired for annual rentals amounting to ... .. .	R638·64

**COAL USED AT COMMISSION'S POWER STATIONS**  
Average Cost per ton (2,000 lb.)

Power Station	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
	R.	R.	R.	R.	R.	R.	R.	R.	R.	R.	R.
Brakpan ... ..	0.96	1.01	1.33	1.42	1.50	1.65	1.73	1.93	1.70	1.77	1.82
Colenso... ..	1.85	1.99	2.15	2.52	2.71	2.87	2.97	3.17	3.12	3.11	3.36
Congella ... ..	2.35	2.54	2.72	3.13	3.25	3.43	3.58	3.82	3.79	3.75	3.91
Hex River ... ..	3.29	3.53	3.70	3.89	4.06	4.17	4.54	4.70	4.68	4.76	4.93
Highveld ... ..	—	—	—	—	—	—	—	1.33	1.45	1.60	1.53
Kimberley Central	2.64	2.78	2.91	3.08	3.28	3.40	3.59	3.83	3.78	3.75	3.90
Klip ... ..	0.97	1.16	1.31	1.45	1.61	1.73	1.79	1.82	2.09	2.14	2.13
King Williams Town ... ..	3.72	3.98	4.24	4.57	4.68	4.84	4.81	4.54	—	4.58	—
Komati ... ..	—	—	—	—	—	—	—	—	—	1.19	1.29
Rosherville ... ..	1.27	1.50	1.55	1.65	1.72	1.87	1.92	2.04	1.86	1.90	2.08
Salt River ... ..	3.53	3.75	4.10	4.07	4.22	4.38	4.57	4.86	4.83	4.85	5.03
Taaibos ... ..	—	—	0.89	0.87	0.73	0.76	0.84	0.93	1.83	1.98	1.75
Umgeni ... ..	—	—	3.07	3.28	3.31	3.49	3.72	4.05	4.04	4.01	4.28
Vaal ... ..	0.67	0.68	0.68	0.71	0.71	0.73	0.73	0.74	0.79	0.93	.95
Vereeniging ... ..	0.67	0.72	0.76	0.82	0.85	0.92	0.98	0.91	0.87	0.96	1.02
Vierfontein ... ..	—	0.94	0.82	0.83	0.96	1.10	1.23	1.23	1.50	1.56	1.46
West Bank ... ..	3.40	3.53	3.78	4.18	4.08	4.17	4.39	4.66	4.61	4.59	4.77
Wilge ... ..	—	—	0.81	0.78	0.79	0.89	0.91	0.97	0.90	0.94	.97
Witbank ... ..	0.59	0.70	0.70	0.76	1.03	1.03	1.05	1.11	1.06	1.05	1.14





STATISTICS RELATING TO THE PRODUCTION AND SUPPLY OF ELECTRICITY  
IN THE REPUBLIC OF SOUTH AFRICA  
WITH E.S.C. STATISTICS SUPERIMPOSED

