

Highveld Power Station showing the two 275 kV lines which will transmit the output to the Free State goldfields.

MEMBERS OF THE

Electricity Supply Commission



Dr. JOHANNES THEOBALD HATTINGH (Chairman)

WALTER HEINRICH ANDRAG

Dr. REINART LUDWIG STRASZACKER

THOMAS PRICE STRATTEN

IAN GRANGER FLEMING



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Electricity Supply Commission

Escom House,

Rissik Street,

Johannesburg,

3rd July, 1958.

To the Honourable,

The Minister of Economic Affairs,

Cape Town.

Sir,

As required by Section 14 of the Electricity Act, No. 42 of 1922, the Commission has the honour to present its thirty-fifth Annual Report, covering its activities during the year ended at 31st December, 1957.

The Report also incorporates brief comments on the more important developments which have taken place in the period up to 30th April, 1958.

GENERAL REVIEW

During 1957 the total units sold increased by 6·2 per cent., compared with increases of 9·6 per cent. in 1956 and 13·3 per cent. in 1955.

Escom's power stations now supply more than 75 per cent. of the Union's requirements of electricity: so that the Escom figures can be looked upon as a barometer of economic activity in South Africa.

From these figures, there has not been any "recession" in South Africa during the past year: on the contrary, there has been expansion in all the Commission's Undertakings, and increases in the use of electricity by all classes of consumers. But, as was expected, the rate of increase has diminished. The figures show also that adjustments are taking place within the economy.

Total Sales and the rates of increase during the past two years, according to classes of consumers, were as follows:—

		Sales		Annual Increase	
		1957	1956	1957	1956
Bulk Supplies:					
Municipal	...	2,543,879,781	2,286,481,969	11.3%	11.5%
Direct Supplies:					
Traction	...	752,695,755	739,743,531	1.8%	7.2%
Mining	... ..	6,935,881,455	6,622,525,637	4.7%	7.2%
Industrial	...	2,340,835,128	2,196,703,199	6.6%	16.2%
Domestic	...	185,576,777	170,345,636	8.9%	11.1%
Street Lighting		4,164,577	3,680,731	13.1%	12.0%
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		12,763,051,473	12,019,480,703	6.2%	9.6%
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Bulk Supplies to Municipalities. On the 12th May, 1957, the pooling agreement with the Cape Town City Council was terminated. From that date the City Council has taken a partial supply to cover the present shortfall of plant in the Council's own stations. This bulk supply will continue until the City Council is able to bring into service new plant in its Athlone Power Station, now under construction.

During 1957 units sold in bulk to Local Authorities, including Cape Town City Council in this category from the 12th May, 1957, increased at the high rate of 11·3 per cent. At this rate of expansion, the requirements of these consumers are being doubled in a period of seven years. This high rate of increase is due in part to the year-by-year extension of Escom's systems to serve additional towns and villages.

During the year the following towns and villages were connected to Escom supply: Piketberg, Lindley and Petrus Steyn; Theunissen, Frankfort and Villiers.

Traction. The sales figure does not show a great increase in the power purchased by the South African Railways during 1957: but conversion from steam to electric traction is being carried out wherever the volume of traffic justifies this change, and a number of extensions to the electric systems are under construction or in course of planning.

In the Western Cape, a proposal to convert to electric traction the section of main line between Touws River and Beaufort West was under consideration at the time of writing this Report.

In Natal, new traction substations were commissioned in 1957 at Cavendish and Frere; and work is proceeding on supplies to three new substations for the new railway between Durban and Cato Ridge. A proposal to double the railway track between Glencoe and Newcastle is under consideration.

In the Transvaal construction is proceeding on the following projects:—
(i) extensions and reinforcement of the supply to the electric traction system in the Pretoria area; (ii) to extend the electrification over the main line from Welverdiend to Potchefstroom and Klerksdorp; (ii) to extend the Reef system over the sections Germiston-Vereeniging and Midway-Vereeniging; and (iv) to construct a new by-pass between Springs and Natalspruit, which will facilitate

the handling of coal traffic routed to points south of the Witwatersrand. Plans have been drawn up, and equipment is on order, for converting to electric traction the section of main line between Vereeniging and Kroonstad, and the heavily loaded lines which carry coal traffic from the Witbank coalfields.

These developments of the traction system will be completed in the next three years, and will call for large increases in the traction supplies.

Mining Developments. Press announcements from time to time, of records achieved in shaft sinking, and records in output and working revenue testify to the energy and vigour which has been put into the development of the new goldfields in the Orange Free State, Klerksdorp, the West Witwatersrand and the Bethal areas. In these areas twenty-one new gold mines have been opened up since 1948, and development of the mines and the towns around the mines has continued at a rapid rate. The units purchased by the new mines in 1957 increased by 383·2 million units, which is an increase of 19 per cent. over the supplies purchased from Escom in the previous year. Although the majority of these mines have commenced production, they have not yet reached full production: and further large quantities of electricity will be required to enable the new mines to work to the planned outputs.

On the other side of the picture, the closing of some of the old mines and the warnings from leaders of the Mining Industry that, with rising costs and a fixed price for gold, profit margins are being eroded, are reminders that in mining the Industry is dealing with a wasting asset. Again, the Escom figures indicate the adjustment that is taking place: units sold in 1957 to mines which are in process of closing and mines which, under present conditions are thought to have relatively short lives, showed a decrease of 158·7 million units (electricity, air and steam) as compared with the previous year.

Thus the overall increase in Mining Supplies in 1957 was 4·7 per cent., compared with increases of 7·2 per cent. in 1956 and 11·8 per cent. in 1955.

On present notifications and information the Commission's overall forecast shows that the demand for electricity by the Mining Industry has not yet reached the peak; and it is expected to continue at a high level for many years thereafter.

Industrial Activity. Sales to Industrial Consumers increased by 6·6 per cent. over the figure for 1956.

The important increases recorded during the year were in supplies to Iscor and other steelworks and metal-producing industries; to African Explosives and Chemical Industries, Ltd., and Klipfontein Organic Products; and in supplies taken by cement factories.

In a general review, therefore, the Escom statistics for the period covered by this Report show that, although adjustments are taking place in some sections of the national economy, there has not been a recession in any major sector; while the future prospect is a steady increase in the demand for electricity, though the increase will probably be at a lower rate than was experienced in the 10-year period up to 1956.

EXTENSIONS TO ESCOM'S UNDERTAKINGS

Two applications were made for extensions to Escom's existing Undertakings.

On 30th August, 1957, Escom applied to the Electricity Control Board for extension of the area of supply of the Eastern Transvaal Undertaking, eastwards to the Kruger National Park and the border of Swaziland. The application was granted by the Board, and the new boundary of the Undertaking is shown on page 45.

The Sabie Gorge Power Station, which has been operated as a separate Undertaking of Escom, will be incorporated in the Eastern Transvaal Undertaking from 30th June, 1958, when the supply to the one remaining consumer of the former Undertaking is terminated. The hydro-electric power station will continue in service, to supply the Sabie Village and other consumers in the vicinity.

On 18th November, 1957, Escom made a further application for a small extension of the area of supply of its Cape Western Licence, primarily to undertake the supply to the Citrusdal Village Management Board. It is intended that the supply will be given by means of an 11 kV line to be built from an existing substation at De Hoek to Citrusdal.

Escom's offer to Citrusdal was made on the accepted basis of charging the standard tariff plus an extension charge to cover a share of the costs incurred in the transmission lines up to De Hoek, and the line from De Hoek to Citrusdal. The overall charge for a bulk supply from Escom equal to the present load would be about the same as the cost of local generation; but Escom's terms would be advantageous to the Village Board because the average cost per unit would be reduced markedly as the Board's electricity Undertaking expands. Existing consumers who pay extension charges in respect of the lines up to De Hoek would also benefit by reduction of their extension charges to the extent of the contribution that would be recovered from Citrusdal.

Objections to the application were raised by certain local authorities, and, at the time of writing, the Board had not decided the application.

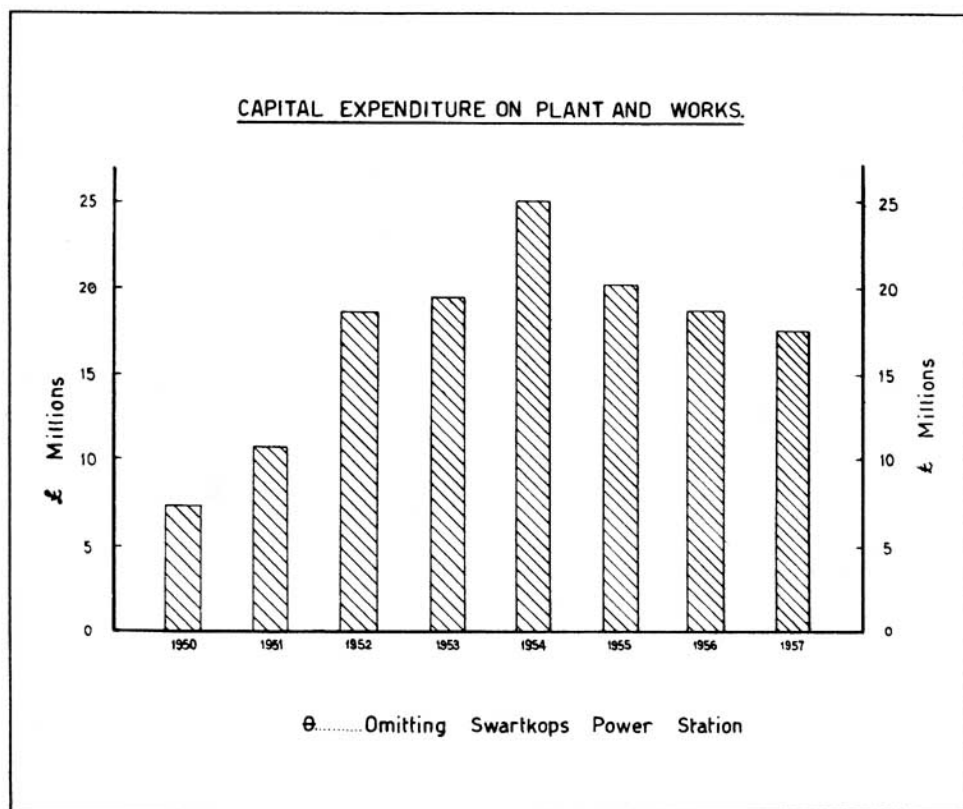
The authorization of Escom's programme of future capital works within its Undertakings which was conferred by the granting of additional borrowing powers in the sum of £49,500,000 was reported in the last Annual Report. That figure has since been increased by the approval of borrowing powers for a further amount of £2,600,000. This additional amount includes a revised estimate for the first stage of construction of a new power station, to be called Ingagane Power Station which is to be built near Newcastle, Natal.

Ingagane Power Station will be a pit-head station: and it is contemplated that the units will be the same size as those for Komati Power Station, i.e. turbo-alternator and boiler units of 100,000 kW capacity. The ultimate capacity of this power station is expected to be 500,000 kW.

CAPITAL EXPENDITURE

It is the responsibility of Escom, subject to the approval of the Governor-General as provided in the Act, to raise the capital needed for new power stations, transmission lines and all the apparatus of electricity supply; but it is Escom's consumers—existing consumers as well as new consumers—who commit Escom to future capital expenditure.

Escom's expenditure on capital account for each year from 1950 is represented in the following diagram:—



Two points of interest appear from the diagram.

First, the sum of the annual expenditure in the eight years shown in the pole diagram is over £138,500,000. This is a very large proportion of new capital, out of the total capital expenditure at 31st December, 1957, of £188,632,589. Obviously, capital expenditure over this period has had a profound effect upon Escom's tariffs.

Second, in spite of the fall in the rate of annual increase in Escom's output which was commented on in the introduction to this Report, the amount of new capital which has to be raised by Escom each year is a very large amount; and this investment in new plant cannot be reduced over a short period without imperilling the country's future supply of electricity. In times of scarcity of capital Escom cannot do more than defer the commencement of schemes which are judged to be of lesser national importance.

PLANT CAPACITY

The progress of construction in Escom's power stations during the period May, 1957, to the end of April, 1958, and the capacity of new plant under construction or on order at 30th April, 1958, are given in the following table:—

	Plant taken into service May 1957—April, 1958		Plant under construction or on order at April, 1958	
	Boilers	Generators	Boilers	Generators
	lb./hr.	kW	lb./hr.	kW
Border Undertaking:				
West Bank No. 2	—	—	170,000	—
Natal Undertakings:				
Colenso Power Station ...	—	—	400,000	30,000
Umgeni Power Station ...	720,000	60,000	1,300,000	120,000
Eastern Transvaal Undertaking:				
Komati Power Station ...	—	—	1,800,000	200,000
Rand and Orange Free State Undertaking:				
Highveld Power Station	—	—	3,300,000	360,000
Klip Power Station ...	—	—	180,000	—
Taaibos Power Station ...	580,000	60,000	—	—
Vierfontein Power Station	210,000	30,000	210,000	30,000
Wilge Power Station ...	—	—	580,000	60,000
	1,510,000	150,000	7,940,000	800,000

The principal items of plant which were installed in Escom's power stations at 31st December, 1957, and the total station capacities are given in Annexure B, Statement No. 1, to this Report.

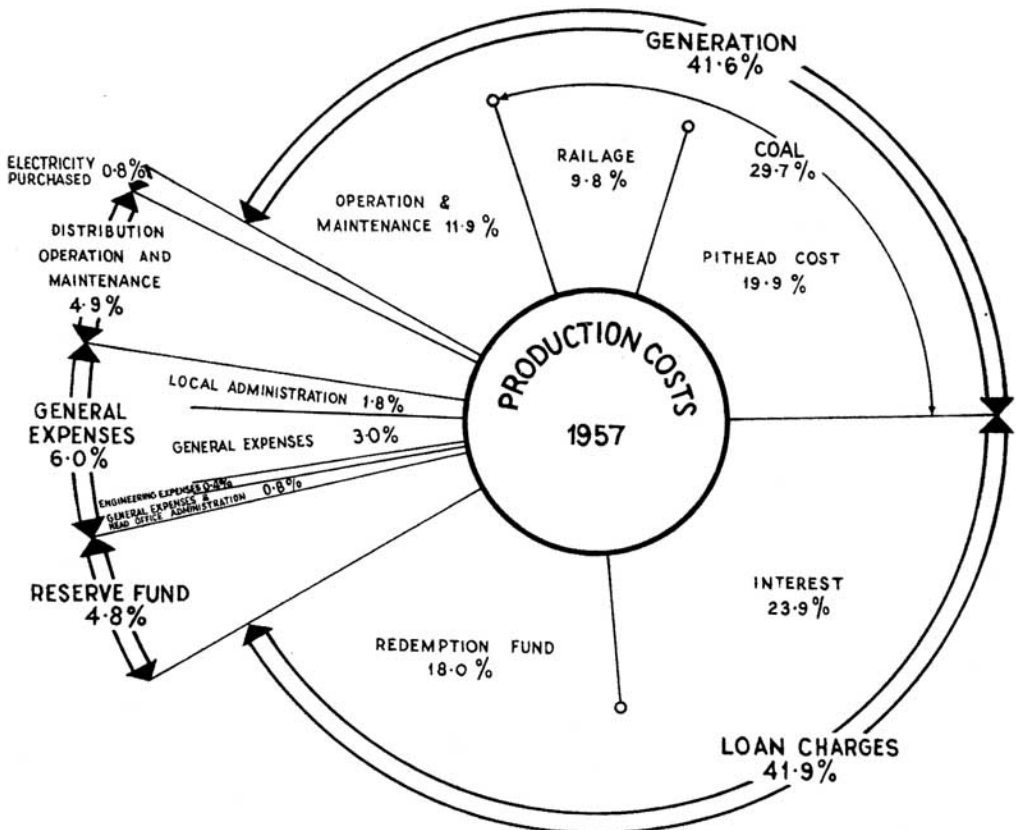
COSTS AND TARIFFS, 1957

Total production costs showed an increase of 9.0 per cent. in 1957 over the corresponding figure for 1956; total output increased by 7.7 per cent.; and the total quantity of coal burnt increased by 5.5 per cent.

The fact that the increase in coal burnt was less than the increase in output was due to the higher efficiencies of the new plant brought into service during the year. The relative increase in the cost of production is explained for the most part by the increase in the price of coal and in railage on coal.

During 1957 there was only one change in tariffs, i.e. the reduction in the general discount on the tariffs of the Rand and Orange Free State Undertaking from 17 per cent. discount to 13 per cent. discount, which was effective for the full year.

At the commencement of 1958 the discount on tariffs of the Rand and Orange Free State Undertaking was further reduced to 7 per cent., and the surcharge on tariffs for the Eastern Transvaal Undertaking which had stood for some time at 25 per cent. surcharge was raised to 30 per cent. surcharge. On the Cape Western Undertaking an increase in tariffs by 5 per cent. will be introduced with effect from the meter reading month of August, 1958.



NEW DEVELOPMENTS IN ESCOM'S UNDERTAKINGS

The operating statistics and reports on the year's work on Escom's Undertakings are given in the customary form on pages 27 to 48. New developments in the Undertakings are referred to briefly in the following notes:—

Cape Western Undertaking. The completion of Salt River No. 2 Power Station up to the stage of four 30,000 kW sets and six boilers was announced in the last Annual Report: but Nos. 3 and 4 sets and boilers were installed earlier than was necessary for Escom's consumers, in order to meet the needs of the Cape Town City Council during the period of construction of the Council's Athlone Power Station. The bulk supply agreement which was entered into with the Council with effect from the termination of pooling on 12th May, 1957, covers the period up to the end of the year 1961; and it provides for reduction of the Council's demands in 1960 and 1961 when the amount of the reduction will be absorbed by increases in the demands of Escom's other consumers.

The proposed extension of the Undertaking to supply the Citrusdal Village is referred to on page 8.

During the year investigations were started into the proposal of the South African Railways to convert the section of main line from Touws River to Beaufort West to electric working. To provide supplies at the traction substations which will serve this section, it is contemplated that two 132 kV overhead lines will be built from Hex River Power Station to Beaufort West, a route distance of about 230 miles; and the work of route location and survey was started at the end of the year.

Cape Northern Undertaking. Construction of the 132 kV transmission line from Grootkop Distribution Station (which is situated north of Odendaalsrus, O.F.S.) and the Kimberley Distribution Station, to transmit and receive bulk supply from the pooled power stations of the Rand and Orange Free State Undertaking, has proceeded according to programme. It is expected that electricity will be available over this inter-connection during the second half of 1958.

Partial supplies were given to Union Lime Company, Limited, and Anglo Alpha Cement Company, Limited, at Ulco in April, 1957. Full supplies of some 40 million units per annum will be taken after the interconnection with the Rand system is effected.

A bulk supply was given to Christiana Municipality at the end of February, 1958.

In April, 1958, the new £1½ million washing plant of De Beers Consolidated Mines, Limited, and a 4,000 h.p. electric hoist, were brought into operation.

Border Undertaking. In consequence of the reduction in the maximum demand of the East London Municipality which was achieved by the Council installing Ripplay control on water heaters, and the revision of the Council's estimates of future maximum demands, it was decided not to order the additional 15,000 kW set for West Bank No. 2 Power Station. The additional boiler (No. 3) was, however, justified, and was ordered for completion in 1960.

Satisfactory progress has been made in the construction of the 66 kV line from King William's Town to Grahamstown, and it is expected that the line will be in service at the end of June, 1958.

Negotiations are in hand for supplies to the Municipalities of Alexandria and Port Alfred, and an offer of supply has been made to Cathcart Municipality.

Natal Undertakings. At Umgeni Power Station boilers Nos. 5 and 6 were commissioned on the 10th May, 1957, and 27th June, 1957, and generator No. 3 was on load on 28th May, in time to meet the heaviest of the winter demands. No. 2 Cooling Tower was commissioned in May, 1957.

Two further boilers and No. 4 generator (30,000 kW) were completed for service in April, 1958.

For the further development of Umgeni Power Station economic studies showed that sets of 60,000 kW capacity would be cheaper, and the further extensions of Umgeni Power Station will therefore comprise five 260,000 lb/hr. boilers and two 60,000 kW turbo-alternators. The first of these sets is due for completion at the end of 1960 and the second at the end of 1961.

Towards the end of 1956 Escom approached the Department of Water Affairs on the problem of water supply for the future development of the Natal Undertakings. The Department of Water Affairs proposed the building of a storage dam on the Ingagane River, near Newcastle, Natal; and there have been lengthy negotiations for a coal supply adequate for a power station of 500,000 kW capacity.

The water and coal supplies being secured, Escom is now proceeding with the establishment of this new power station, which has been named Ingagane Power Station; and borrowing powers in the sum of £7,000,000 have been granted for the first stage.

It is contemplated that Ingagane Power Station will be built with units of 100,000 kW capacity; and, as it will be a pit-head power station, it is expected to bring about some saving in fuel costs for the pooled power stations of the Natal Undertakings.

New developments of the Natal traction system are referred to on page 41.

The establishment of a large ferro-manganese industry for the manufacture of steel alloys at Cato Ridge will call for a large supply of electricity. Negotiations have been concluded with a large fer alloy concern for an initial supply of 20,000 kVA, to commence in the last quarter of 1959. There is a prospect that this load will be doubled, and indeed the requirements of this enterprise may exceed that figure in time.

Eastern Transvaal Undertaking. The extension of the area of supply of this Undertaking is reported on page 8.

Escom's intentions, and the state of the preliminary negotiations, for the establishment of Komati Power Station were announced in the last Annual Report.

After study of the offers received from coal owners, the contract for the supply of coal for the power station was awarded to Blinkpan Koolmyne Beperk, a company formed by Federale Mynbou Beperk to exploit the coal deposits on the farms Broodsnyersplaats and Koornfontein, in the district of Middelburg, Transvaal.

Komati Power Station is being laid out on a site adjoining the colliery property so that the station will be a pit-head power station. The choice of this site will involve the construction of a water pipeline about 40 miles long from the dam on the Komati River to the power station; but, against this, there will be a saving in the cost of transmission lines from Komati Power Station to the Reef, where the bulk of the output will be sold.

Two hydrogen-cooled turbo-alternators of 100,000 kW capacity, with two 900,000 lb/hr. boilers, have been ordered for Komati Power Station. The boiler design is for a steam pressure of 1,250 lb/square inch and a temperature of 950° F; and under these conditions a high thermal efficiency will be attained. The first set is to be completed in September, 1961, and the second set will follow four months later.

Developments of the Eastern Transvaal Undertaking distribution system are reported on page 47.

Rand and Orange Free State Undertaking. During the year two boilers and one 60,000 kW set were commissioned at Taaibos Power Station and a further set (No. 8) was taken into service on 20th January, 1958. This completes the construction of Taaibos Power Station, which, with an installed capacity of 480,000 kW is now the largest power station in the Union.

At Vierfontein Power Station one additional boiler and No. 11 set (30,000 kW) were commissioned in April, 1958; and the last boiler and set (No. 12) for this station are expected to be in service in May.

Construction at Highveld Power Station and at Wilge Power Station proceeded according to programme.

The plant position on this Undertaking now appears to be secure; and the maximum winter load of 1,654,674 kW was carried in 1957 without restriction of supply. It is significant however, that the pooled power stations of the Rand Undertaking and the Eastern Transvaal Undertaking continue to operate at exceptionally high load factors. During 1957 the system monthly load factor was 80.5 per cent.—this figure being only two per cent. below the peak figure attained when control of consumers' demands was in force.

At the year-end thirteen gold mines in the Orange Free State goldfields were supplied, including Merriespruit Gold Mining Company Limited, which took a small supply. These mines purchased 1,510 million units during the year. The total units sold in the Orange Free State Province increased from 1,600 million in 1956 to 1,759 million units in 1957.

Large increases were recorded in the units purchased by the new mines in the Klerksdorp area and in the far West Witwatersrand. In December, 1957, an initial supply was given to Western Deep Levels, Limited, the formation of which was announced by the late Sir Ernest Oppenheimer in July, 1957. The gold-bearing reefs on this property are at depths from 5,000 feet to 12,500 feet below the surface, and the project has been described as "the greatest mining enterprise in the history of South Africa." Present estimates give the power requirements at about 68,000 kW, which would be nearly twice the load of the City of Bloemfontein.

During the year applications were received for electricity supply to a number of towns in the eastern Orange Free State. A joint scheme to provide for bulk supplies to Marquard, Clocolan and Ficksburg was placed before those towns and an extension of that scheme to serve Ladybrand was also planned. Escom's offers have been accepted, for supply in about 3½ years.

In response to a joint application a further scheme was designed to serve the local authorities of Excelsior, Tweespruit, Thaba 'Nchu, Hobhouse, Dewetsdorp and Wepener. This offer is still under consideration.

An offer of bulk supply has also been made to the local authorities of Sannieshof and Delareyville in the Western Transvaal.

DEVELOPMENT OF ELECTRICITY SUPPLY IN RURAL AREAS

Escom continues to give special attention to the extension of electricity supply into rural areas: but rural electrification involves a great deal of preparatory work and planning, not only on the part of Escom to make the supply available, but also on the part of consumers to enable them to make full use of the electricity when it becomes available.



Dairy cattle grazing near a pole transformer on a farm in Natal.

As a general statement it would be true to say that about one half of the applications which are investigated and answered by Escom are abandoned or deferred when the terms are quoted; and it is necessary to state again that, in spite of economical construction, the capital cost of building farm lines is high.

Four schemes in the Cape Western Undertaking, to serve 56 consumers, will cost £58,630; two schemes on the Border Undertaking, to serve 30 consumers, will cost £52,140; two schemes in the Eastern Transvaal Undertaking, to serve 65 consumers, will cost £77,350; and a scheme which has been proposed for the area around Parys, to serve 99 consumers, was estimated to cost £78,350. The average capital outlay in these nine schemes is £1,066 per consumer, without any allowance for Escom's expenditure on plant in its power station or the consumer's expenditure on the purchase of electrical equipment.

Rural Tariffs. During the year technical investigations and tariff studies have been directed towards the introduction of a new form of tariff for rural consumers.

Escom's tariffs are in most instances in the accepted form of a three part tariff: and in the tariffs for rural consumers the demand charge has been based upon the "h.p. installed." While the "h.p. installed" is a measure of the highest possible maximum demand that can be imposed by the consumer, the maximum demand that is in fact taken month by month is a more satisfactory basis for charging.

Hitherto there has not been any suitable meter, available at low cost, to measure the demands on small supplies; but several types of ampere-demand meters are now offered by manufacturers of electrical equipment, and Escom, after a series of tests, is satisfied that meters of this type will make it possible to measure the maximum demands of small consumers, with reasonable accuracy and without incurring excessive costs.

Escom accordingly proposes, during the course of this year, to apply for amendment of its rural tariffs to introduce a demand charge based on maximum demands measured by ampere-demand meters in place of the existing charge on "h.p. installed." It is hoped that the new tariffs based as they will be upon measured quantities, will find general acceptance amongst Escom's rural consumers.

The following is a brief summary of rural developments in Escom's Undertakings:—

Cape Western Undertaking. During the year the Cape Western Undertaking handled 705 applications for supply in rural areas. Of these 386 were connected, including 110 farmers. Five farm schemes, serving a total of 77 consumers, were completed; but six other schemes, covering 83 applications, were abandoned, as the terms were not accepted.

At the end of the year twelve schemes, covering 236 applicants, were being investigated.

Cape Northern Undertaking. Attention has been directed mainly to the supply to plotholders on the Vaalharts Settlement. During the year supply was given to 40 plotholders; and a scheme to extend the supply to a further 60 plotholders is under construction.

Border Undertaking. A scheme to supply 8 farmers in the Koonap River Valley, south of Adelaide, was completed and supply commenced in November.

Progress on the construction of the Fort Beaufort/Kat Valley 11 kV line, which is designed to serve 22 consumers, was delayed due to shortage of Native labour; but the first 15 miles of line was completed and commissioned in December.

Investigations are being made into the possibilities of supplying farms along the Great Fish and the Keiskama Rivers.

Natal Undertakings. During the year 62 new consumers were connected to the rural networks of the Natal Southern Undertaking, and 72 new consumers were connected to the rural networks of the Natal Central Undertaking.

Terms were quoted to 420 other applicants, who, for one reason or another, did not accept the terms offered.

Eastern Transvaal Undertaking. During 1957 supplies were given to an additional 19 farms in the Bethal area; and 22 other consumers were connected up to the Undertaking's rural networks.

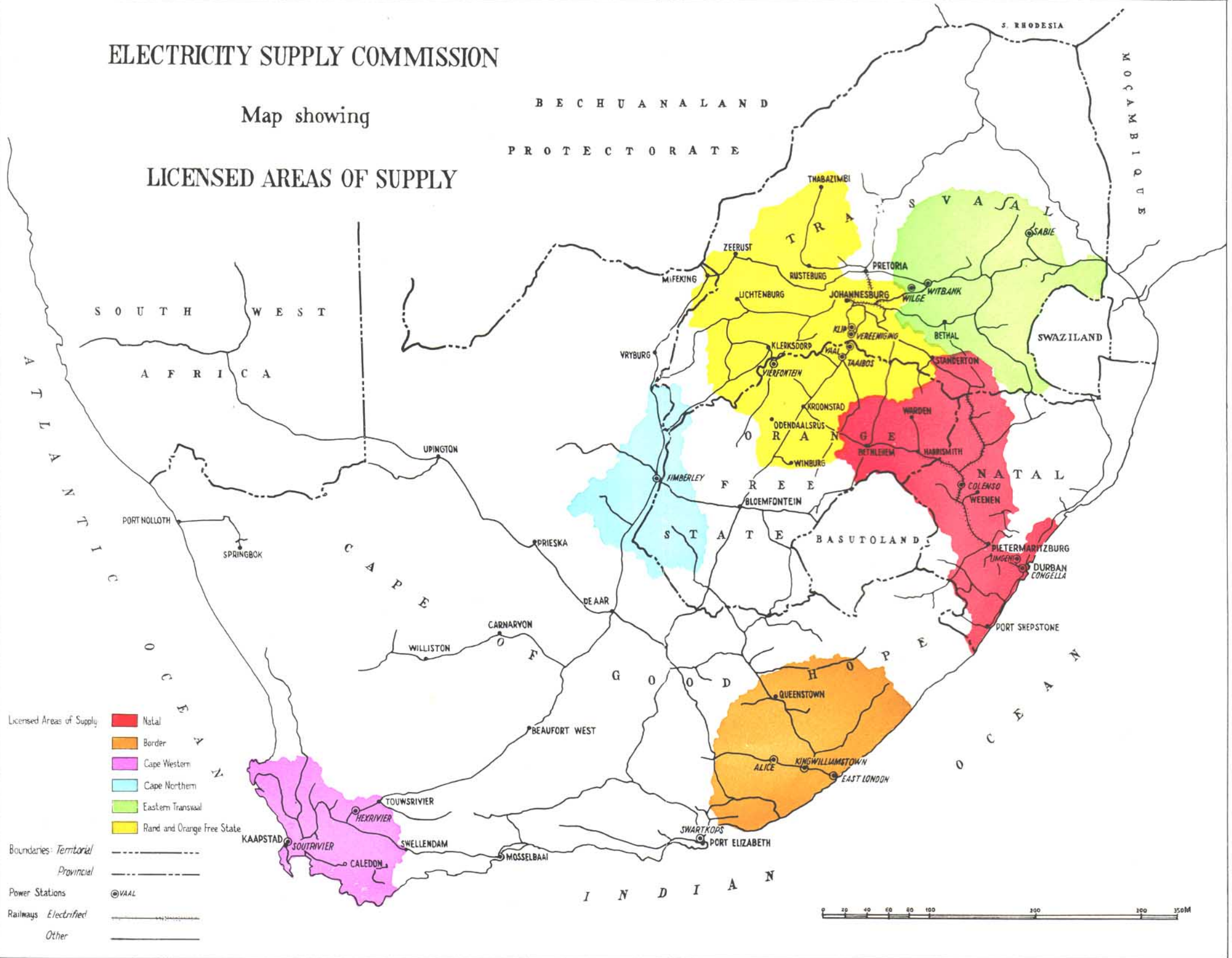
Two farm schemes the one in the area between Oogies and Kinross and the other in the vicinity of Devon, are in the course of construction and planning; and a start has been made in providing electricity to smallholdings near Bronkhorstspuit.

Rand and Orange Free State Undertaking. Construction in the first zone of the scheme to supply electricity to smallholdings between Johannesburg and Vereeniging was completed in 1957, and at the year-end 27 consumers in the Jackson's Drift area were connected. Work is proceeding in the area between Klipriver and Meyerton, and construction has been started on the Muldersdrif Boschkop scheme.

ELECTRICITY SUPPLY COMMISSION

Map showing

LICENSED AREAS OF SUPPLY



The schemes covering small farms and smallholdings in the Sundra/Eloff area and in the area north of Benoni had to be re-planned in the light of the response to Escom's offers; but it appears that the modified schemes will be acceptable to consumers in those areas.

Terms have been offered for a farm scheme covering the area around Parys. At the time of writing the Report this offer was still under consideration.

OUTPUT AND SALES

The total units generated in all Escom Undertakings was 14,638 million units, which showed an increase of 7·8 per cent. over the corresponding figure for 1956.

This output entailed the burning of more than 11¼ million tons of coal. The cost of this coal was £8,628,033, including railage on coal of £2,834,920.

Units purchased from outside sources amounted to 162 million units, which was 94 million units less than in the previous year.

Units sold by all Undertakings (electricity, air and steam) showed an increase of 6·2 per cent. over the total sales in 1956.

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

	1957	1956	Increase
Units generated	14,638,811,739	13,578,425,364	7·8%
Units purchased	162,828,351	257,186,420	—
Units sold	12,763,051,473	12,019,480,703	6·2%

Sales of units by individual Undertakings were as follows:—

	1957	1956	Increase
Cape Western	698,563,418	585,094,524	19·4%
Cape Northern	86,080,122	78,698,834	9·4%
Border	143,109,560	139,137,041	2·9%
Natal Southern	1,018,709,827	957,725,952	6·4%
Natal Central	621,692,049	595,383,919	4·4%
Eastern Transvaal	536,578,030	505,857,322	6·1%
Rand and Orange Free State ...	9,652,522,674	9,151,617,452	5·5%
Sabie	5,855,793	5,965,659	—
	12,763,051,473	12,019,480,703	6·2%

An analysis of sales according to classes of consumers is given on page 6.

AREAS OF SUPPLY AND DEVELOPMENT OF TRANSMISSION SYSTEMS

The existing areas of supply of Escom's Undertakings are shown on the map which appears opposite this page.

The development of the major transmission systems is indicated in the following lists which set out the more important transmission lines completed during 1957, and the lines under construction or projected at the end of the year:—

		Voltage	Total Circuit Miles
Completed during 1957			
C.W.U.	Firgrove-Lourens River (2 lines) ...	66	10
	Moorreesburg-De Hoek (2 lines) ...	66	36
	Gouda-Moorreesburg	6	66
B.U.	North Coast Spur line	66	8
C.N.U.	Holpan-Ulco	66	41
	Audalusia-Norlim	66	25
N.U.	Masons Mill-Umgeni (2nd line) ...	132	40
	Congella-Booth (Double circuit) ...	88	2
	Glencoe-Dundee	88	7
	Richmond-Ixopo	33	25
	Bethlehem-Lindley-Petrus Steyn ...	33	60
	Tongaat-Compensation	33	6
E.T.U.	Kinross-Leslie-Devon	21	25
	Grootpan-Wildebees	132	30
R. & O.F.S.U.	Doornfontein-West Wits	132	8
	S.A.R. Natalspruit, Jabavu, Crown. Stretford	88	18
	Trident turn-ins	88	11
	Heilbron-Frankfort-Villiers	88	55
	Westgate Network	42	30
	O.F.S. Goldfields Network ex Virginia	42	30
	West Wits Network	42	5
	Grootkop-Riebeek G.M. (2 lines) ...	42	20
	Olifants-Diepsloot	42	16
Under Construction 1.1.58:			
C.W.U.	Wellington-Gouda	66	25
	Sir Lowry's Pass-Bot River	66	15
B.U.	King William's Town-Grahamstown ...	66	70
C.N.U.	Grootkop-Kimberley	132	139
	Ulco-Silver Streams	132/66	42
N.U.	Umgeni-Coedmore (Double circuit) ...	132	12
	S.A.R. Supplies	88	25
	Colenso-Ladysmith	88	16
	Ladysmith-Van Reenen	88	33
R. & O.F.S.U.	Highveld-Everest (2nd line)	275	98½
	Doornfontein-Trident	132	60
	Virginia-Everest turn-ins	132	3
	Taaibos-Doornfontein	132	55
	Taaibos-Westgate	132	65½
	Vierfontein-Carrdell (1½ Double circuits)	132	51
	Westgate-Libanon-West Wits	132	30
	Klip-Simmerpan-Rosherville	88	30
	Sasol-Clydesdale	88	7
	S.A.R. Eerste Fabrieke turn-ins ...	88	3½

		Voltage	Total Circuit Miles
	Trident-Swartruggens	88	35
	S.A.R., Angus & Henley-on-Klip ...	88	4
	Everest 42 Kv Network	42	26
	Doornfontein-Frederickstad S.A.R. ...	42	14
	S.A.R., Dryden, Eloff, Welverdiend, Frederickstad	42	29
	Westonaria	42	4
	Diepsloot-Bryanston	42	10
	Libanon-Harvey Watt and other Reef Extensions	42	30
	Projected 1.1.58:		
C.W.U.	Bot River-Klipdale	66	45
	Wellington-Paarl (3rd line)	66	4
	Hex River-Beaufort West (2 lines) ...	132	220
	Salt River-Muldersvlei-Wellington-Hex River	132	76
	Muldersvlei-Firgrove	132	18
C.N.U.	Norlim-Reivilo	66	20
N.U.	Newcastle-Volksrust	88	35
	Glencoe-Dundee (2nd line)	88	10
	Glencoe-Newcastle (Cross country) ...	88	32
	Georgedale-Northdene (Double circuit)	88	16
	Tee lines to Ferralloys (Cato Ridge) ...	132	6
E.T.U.	Witbank-Middelburg	132	22
	Grootpan-Wildebees (2nd line) ...	132	30
	Komati-Witkloof-Machadodorp-Lyden- burg-Penge	132	186
	Grootpan-Kromklip-Vandyksdrift (two lines)	88	44
	Vandyksdrift-Komati	88	7
	Grootpan-Blackhill (two lines) ...	88	20
	Grootpan-Oogies (two lines)	88	8
	Grootpan-Arbor (two lines)	88	30
	Middelburg-Grobblersdal	88	46
R. & O.F.S.U.	Komati-Nevis (two lines)	275	120
	Nevis-Esselen (two lines)	275	54
	Pretoria Sw. Stn.-Cordelfos	88	6
	Carrdell Network	88	10
	Klerksdorp Municipality-Klerksdorp S.A.R.	88	6
	Esselen turn-ins	88	14
	S.A.R.-Machavie & Potchefstroom ...	88	6

COSTS AND TARIFFS

On occasions there has been criticism of Escom's tariffs. There is a general criticism that the charges are too high, and there have been complaints about particular tariffs.

Escom feels that much of the criticism arises from misunderstanding of the essential data for tariff-making; and, in fact, on more than one occasion the critics have complained about a lack of this information.

The increases in Escom's tariffs which have arisen in recent years must be considered, in the first place, against the background of the backlog in the provision of electricity that existed after the Second World War and the exceptional expansion which Escom was called upon to carry out.

*See Annual Report for 1955 at page 9

The total resources of generating plant which were available at the end of the war in Escom's Undertakings was 1,216,097 kW.* At the end of 1957 a total of 2,894,000 kW of generating plant was in commission in Escom's power stations.

The backlog has been completely wiped out: and thus it may be said that Escom has "delivered the goods."

As to the cost of electricity in the Union in comparison with other countries, the following figures, taken from the annual reports of the supply authorities, show the average price per unit sold during 1956:—

Supply Authority	Average Price per Unit Sold: 1956
	Pence per unit:
Central Electricity Authority, United Kingdom ...	1.403
Southern Electric Authority of Queensland, Australia	2.583(A)
Hydro Electric Power Commission of Ontario, Canada	.92 cents (= about 0.8d.)
Escom, South Africa	0.5142
Electricity Supply Commission, Southern Rhodesia ...	1.090

The wide differences in these figures are due mainly to differences in the cost of coal and the load factors on the supply systems. Electricity can only be supplied at a price below 0.5 pence per unit on the Rand and Orange Free State Undertaking and the Eastern Transvaal Undertaking where the power stations are large and are situated on the coalfields, and where the system load factors are exceptional. The average figure for South Africa is low because the major proportion of the units sold in South Africa were sold on the Witwatersrand and in the Witbank area.

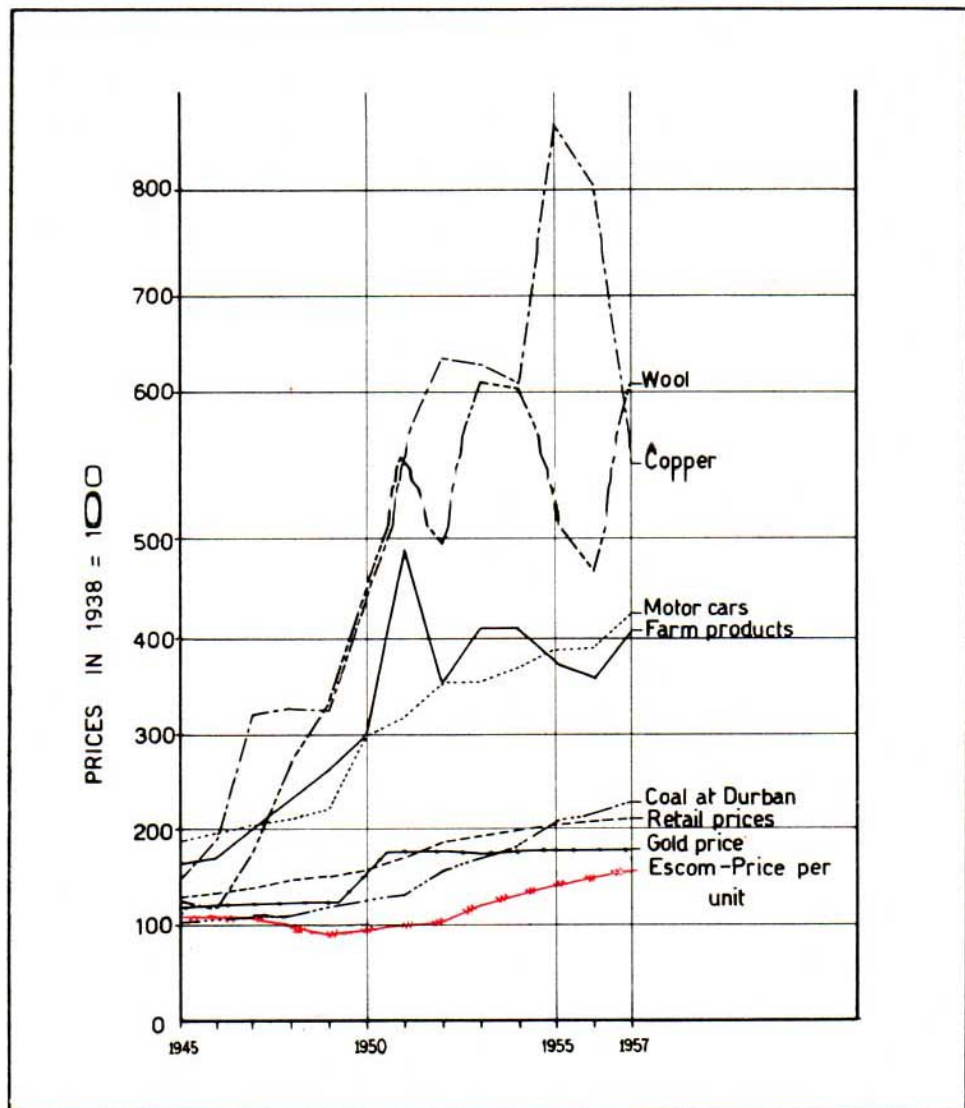
At the coast power stations in South Africa where the Undertakings are relatively small and the distance from the coalfields is great, the cost of electricity is appreciably higher; but a comparison with prices in other parts of the world is not unfavourable to South Africa.

In accordance with the Electricity Act of the Union, each Undertaking of Escom must operate at cost and have its own prices. The average prices per unit sold for Escom Undertakings in 1957 were as follows:—

Undertaking	Average Price per Unit Sold: 1957
	Pence per unit
Cape Western	1.1758
Cape Northern	1.2286
Border	1.2473
Natal Southern ... ..	.7373
Natal Central ... ..	.8543
Eastern Transvaal ... ..	.4362
Rand and Orange Free State ... ..	.4387

In the second place the changes in Escom's prices must be considered against the background of the changes that have taken place in other prices.

This background is illustrated in the following graph, in which all prices are plotted to the index of 1938=100:— The price changes shown in the graph are the following:—



- (i) The price of **copper** and of **coal** are two items which enter very largely into the costs of electricity supply: the changes in these prices is shown for the years 1945—1957.

- (ii) The price of **wool** illustrates the change in price of a commodity which, like copper, has been affected by shortages in world markets.
- (iii) The indices of the change in the price of **farm products**, of a popular make of **motor car** on the South African market, and of **retail prices** have been selected to give an indication of the change in the value of money.
- (iv) The change in the price of **gold**, showing the effect of the 1949 devaluation, is included in the graph as a matter of great public interest.
- (v) The red line shows the change in the price per unit of electricity sold by Escom and, prior to July, 1948, the V.F.P. Company.

When the increases in Escom's prices are compared with the increases in other prices, the adjustment in Escom's charges is seen to be less than, and in some cases very much less than, other increases. This is due to the fact that expansion of an electricity supply undertaking enables the supply authority to secure important savings, by the use of large items of plant in large power stations, by the location of those power stations in accordance with economic factors, and by the feature of diversity in consumers' maximum demands.

The use of larger units in Escom power stations and the increase in the rating of major networks was dealt with in a paper presented recently by Mr. I. de Villiers, Chief Engineer (Electrical) of Escom to the South African Institute of Electrical Engineers. The choice of generating sets of the capacity of 100,000 kW, and corresponding boilers, for Komati Power Station, and the contemplation of sets of a similar capacity for Ingagane Power Station are further steps to reduce costs by this means.

Another feature which is shown up clearly in the diagram is that whereas all other prices had risen considerably by 1950, Escom prices had hardly changed at all. This timelag is explained by the time taken to build new power stations. In the difficult conditions which prevailed after the War, little could be done in less than five years; so that up to 1950 and to a lesser extent in the early "fifties" Escom was drawing maximum output from the old plant. When the new plant was brought into service, and later when appropriate margins of reserve plant were restored, it became necessary to increase tariffs to cover the cost of the new plant as well as the increases in coal and other running costs.

STATISTICAL SUMMARY

Revenue, production costs, output and sales, and other figures relating to the operation of the Commission's Undertaking during the year 1957, with the comparative figures for 1956, are as follows:—

	1957	1956	Increase
Total Revenue	£28,625,411	£25,798,195	10·959%
Total Production Costs (including interest, redemption and reserve fund charges)	£28,814,184	£26,442,095	8·971%
Difference between Revenue and Production Costs	Dr. £188,773	£643,900	
Average Price per Unit sold ...	0·5374d.	0·5142d.	4·523%
Average revenue per Unit sold (including Sundry Revenue) ...	0·5383d.	0·5151d.	4·495%
Average cost per Unit Sold ...	0·5418d.	0·5280d.	2·622%
Units generated	14,638,811,739	13,578,425,364	7·809%
Units Sent Out	13,640,104,029	12,669,815,373	7·658%
Units Purchased	162,828,351	257,186,420	—
Units Sold	12,763,051,473	12,019,480,703	6·186%
Total cost of Coal Consumed (including Railage)	£8,628,033	£7,826,367	10·243%
Railage on Coal Consumed ...	£2,838,920	£2,541,240	11·714%
Coal Consumed (in tons of 2,000 lbs.)	11,266,237	10,679,763	5·491%

FINANCIAL

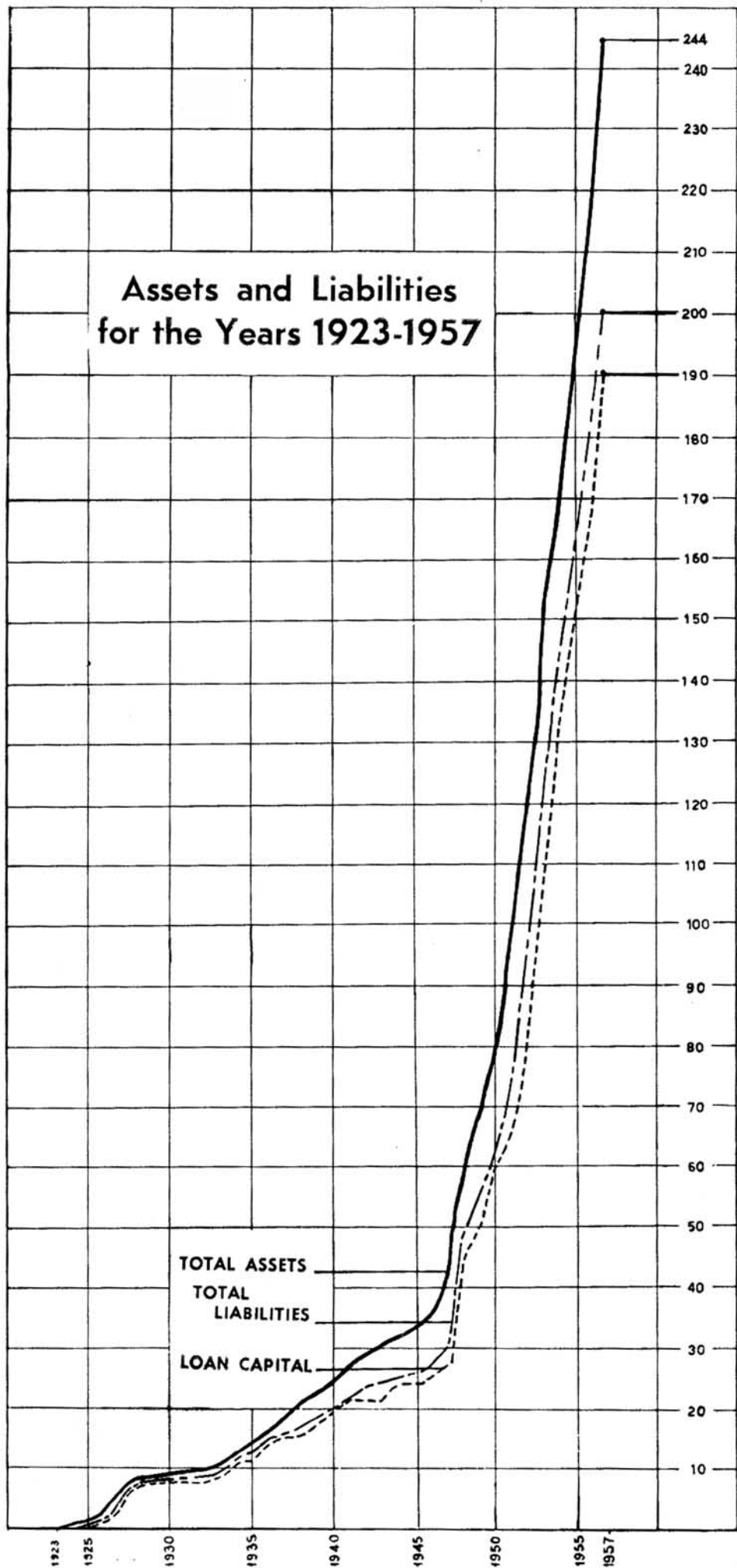
Loan Capital. During 1957 two local loans totalling £23,000,000 were raised as follows:—

Date Issued	Amount	Interest	Issue Price	Redeemable
26th February	£11,000,000	5 $\frac{1}{8}$ %	£100%	31/7/76-82
8th October	£12,000,000	5 $\frac{1}{8}$ %	£100%	28/2/77-83
	<hr/> <hr/>			
	£23,000,000			
	<hr/> <hr/>			

These loans were fully subscribed, but at the year end the amount received on account of the loan issued on the 8th October was £11,318,250. The balance of £681,750 payable not later than the 31st January, 1958, in terms of the prospectus, has since been received. At the year end the loans raised locally as Local Registered Stock totalled £169,000,000 of which £2,500,000 had been repaid.

The loan of \$19,600,000 U.S.A. from the Export-Import Bank of Washington, equivalent to £7,008,293 bears interest at 4 per cent. per annum and is redeemable over 15 years by equal half-yearly instalments, including interest, the final

Assets and Liabilities for the Years 1923-1957



instalment being due on the 16th August, 1970. The loan, used for the provision of power from Wilge Power Station for uranium production, was taken up before the 30th June, 1957.

The Commission's loan capital at the date of the Balance Sheet was £190,411,754.

Redemption Fund. The amount in the Redemption Fund at the 31st December, 1957, totalled £37,939,309 which in the aggregate, after taking into account the depreciation on the market value of investments, exceeded the amounts required for the redemption of the loans in accordance with the provision of the Act.

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

Reserve Fund. The amount in the Reserve Fund at the 31st December, 1957, was £6,188,127.

Capital Expenditure. Expenditure on Capital Account during the year amounted to £17,598,577 which increased the total capital expenditure at the 31st December, 1957, to £188,632,589.

Expenditure on Capital Account will amount to approximately £284,400,000 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 Government, Municipal and Electricity Supply Commission stocks held by the Commission on behalf of the various funds at 31st December, 1957, was £44,025,526, the nominal value being £44,319,382. The market value of these investments at that date was £40,799,687.

Assets and Liabilities. The Commission's total assets at the 31st December, 1957, amounted to £244,670,858, and its total liabilities to £200,459,350, the difference being £44,211,508 which is represented by the amounts in the redemption, reserve and sinking funds and loans repaid, less balance on revenue accounts.

STAFF

Home Ownership Scheme. The balance at 31st December, 1957, on loans granted to employees to enable them to acquire homes under the Commission's Home Ownership Scheme in terms of the 1941 amendments to the Electricity Act, was £931,855.

Personnel. The staff employed by the Commission at the 31st December, 1957, numbered 13,421 employees made up as follows:—

	1957	1956	Increase	
Europeans	4,913	4,707	206	4·4%
Non-Europeans	8,508	8,270	238	2·9%
	13,421	12,977	444	3·4%

The Commission desires to express to all members of the staff its appreciation of their loyal and conscientious service.

ESCOM'S UNDERTAKINGS

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

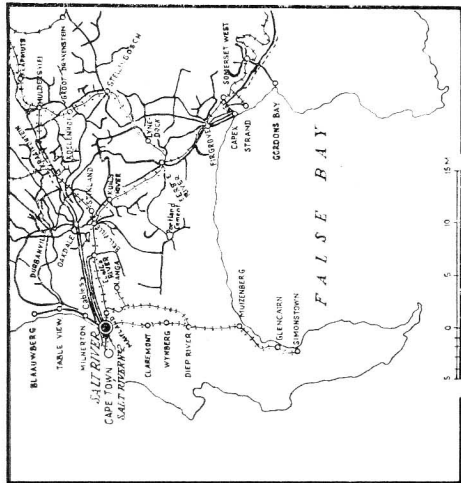
General Note: "Working Costs" include interest charges and Redemption Fund contributions on loan capital and amounts set aside to Reserve Fund.

CAPE WESTERN UNDERTAKING

CONSUMERS		SALES			Average Price per Unit Sold	
Class	Number	Increase or Decrease		Revenue from Sales		
		Units	%			
Traction	2	193,016,504	+ 3.972	£ 833,663	d	1.0476
Bulk	25	236,250,179	+ 60.137	1,024,326	d	1.0208
Industrial	2,019	157,707,011	+ 7.947	846,857	d	1.2888
Domestic and Lighting	24,669	111,589,724	+ 5.447	717,545	d	1.5432
	26,715	698,563,418	+ 19.393	3,422,391	d	1.1758
				3,422,391	d	1.1889
Total Revenue	...	£3,436,471		£2,916,444	Accumulated to 31.12.57	
Working Costs	...	£3,547,014		£3,060,505		
Deficit	...	£110,543		£144,061	£166,800	
Capital Expenditure	...	£1,223,268		£1,545,059	£23,691,416	

	Salt River Power Station No. 1		Salt River Power Station No. 2		Hex River Power Station	
	1957	1956	1957	1956	1957	1956
Units Sent Out	4,399,490	34,477,200	568,986,770	365,244,365	185,488,310	205,444,070
Maximum half-hour Demand kW S.O. }	29,109	58,683	123,448	87,000	58,400	58,400
Station Peak kW	32,500	69,600	135,000	93,000	60,400	60,000
Load Factor	1.7	6.7	52.6	47.8	36.3	40.0
Thermal Efficiency	6.5	13.0	26.4	24.9	23.2	24.1
	8,619	27,322	316,325	224,546	117,864	125,520
Coal Consumed—tons	4,515	2,256	1,108	1,173	1,271	1,222
Average per unit sent out—lb.	11,680	11,650	11,680	11,670	11,550	11,570
Calorific Value B.Th.U./lb	£711,612*	£531,631*	£531,631*	£531,631*	£254,737	£254,737
Total Cost	43s. 10d.*	42s. 3d.*	42s. 3d.*	42s. 3d.*	41s. 9d.	40s. 7d.
Cost per ton	...	...	...	...	...	...

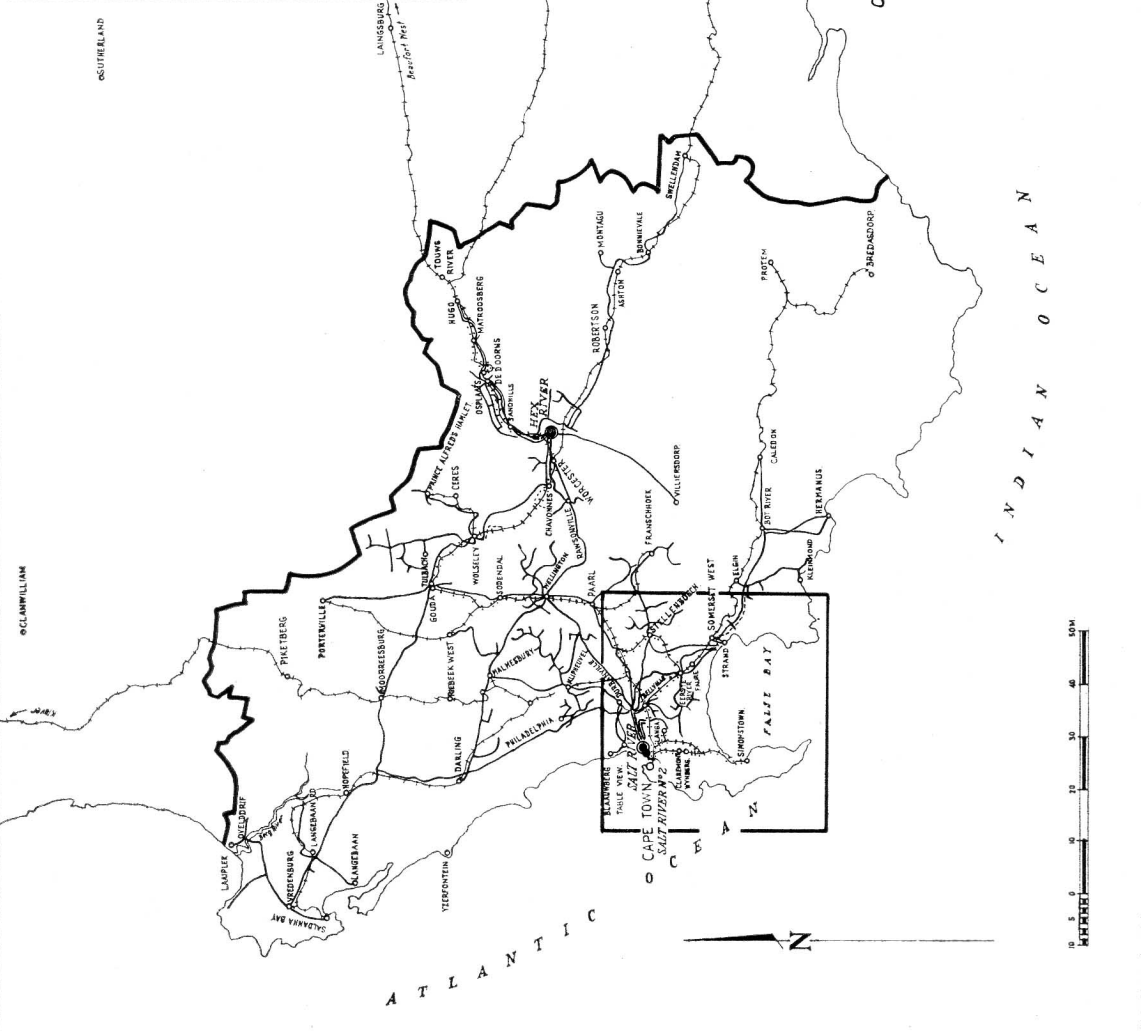
*For Salt River Power Stations Nos. 1 and 2.



CAPE WESTERN UNDERTAKING

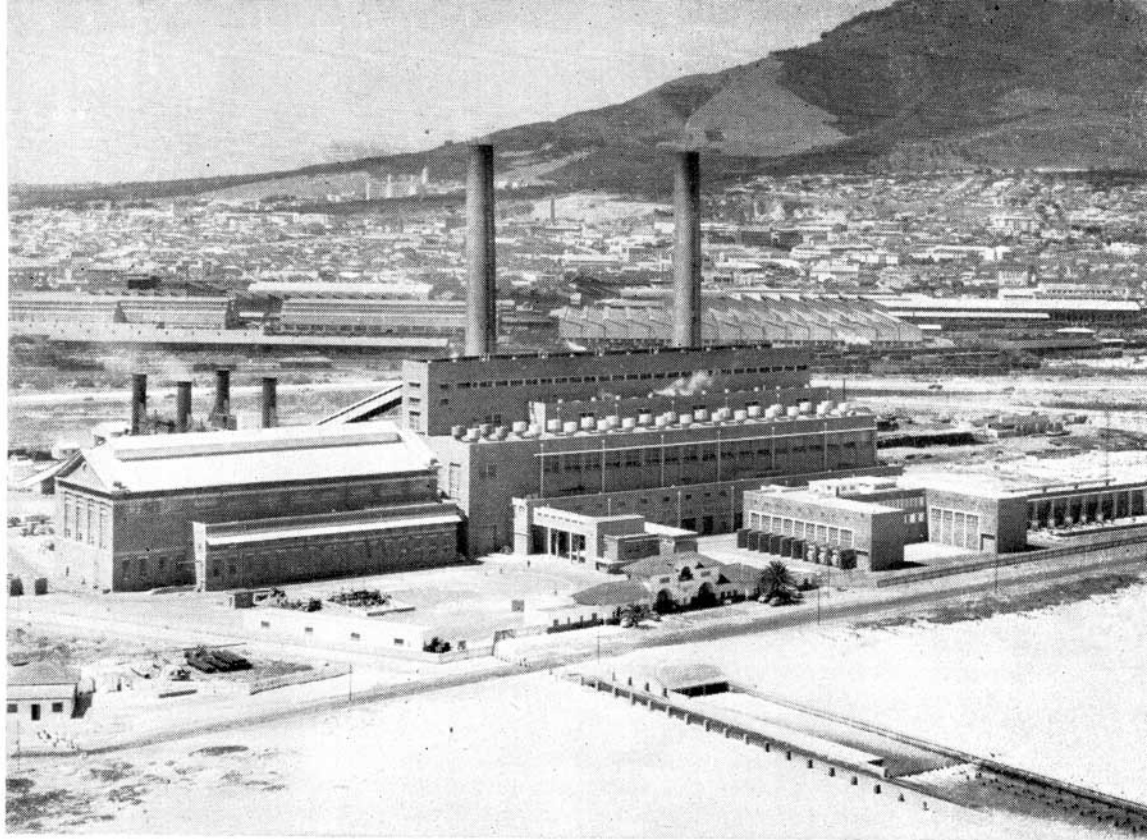
REFERENCE

- Area of Supply [thick black line]
- E.S.C. Power Stations [circle with dot]
- (Under Construction) [circle with dot]
- Transmission Lines [dashed line]
- Railways - Electrified [line with cross-ticks]
- Other [line with dots]



ATLANTIC

INDIAN OCEAN



A fine view of Escom's Salt River Power Stations.

General. During the portion of the year up to 12th May, 1957, the Pooling Agreement with the Cape Town City Council was in force, and in this period a total of 151,339,280 units was sent out to Escom's consumers from the pooled power stations and 85,128,440 units from Hex River Power Station. Of the Hex River output 44,870,535 units represented the quota which Hex River Power Station was entitled to send out in terms of the Pooling Agreement, and the balance of 40,257,905 units were sent out from Hex River and debited to the Pool, in order to make the most use of the Hex River plant rather than the less efficient plant at Salt River No. 1.

Twice during the year there were brief interruptions in supply to parts of the system, due to failure of power station equipment at Salt River. In both cases supplies were restored soon afterwards. There was no curtailment of supply due to lack of plant or other shortages.

Output and Sales. Omitting the bulk supply to the Cape Town City Council after the termination of the Pooling Agreement a total of 617,994,966 units were sold to Escom consumers during 1957, this being an increase of 5.62 per cent. over the sales for the previous year. The Cape Town City Council purchased a total of 80,568,452 units from Escom for the period 12th May to the end of the year.

Salt River No. 1 Power Station. As in the previous year, this station was run as little as possible, because it has the oldest and least efficient plant. It is nevertheless essential for peak load periods and for releasing plant at other stations for maintenance or repair, and consequently all plant is kept fully available.

Salt River No. 2 Power Station. Construction work at this station was completed with the commissioning of No. 6 boiler in January, 1957. The grounds have been cleared of Contractors' equipment and have been laid out with the necessary road system and parking areas.

Salt River No. 2 Power Station has been used as the base load station for this Undertaking, particularly since the termination of the Pooling Agreement, and operation has been satisfactory. There was no failure of equipment in the station resulting in interruption to supply.

Hex River Power Station. Due to the plant available in Salt River No. 2 Power Station, the output from Hex River Power Station was some 20 million units less than 1956. The station, however, was in continuous operation during the year, and there was no involuntary outage of plant.

Major Transmission System. Progress continued with the 132 kV network to link the Salt River Power Stations with the load centres of Firgrove, Muldersvlei and Wellington. All substation sites have been purchased, and at Firgrove construction of the 66 kV section of the substation has commenced. The negotiations for suitable routes for the 132 kV feeders progressed satisfactorily.

The two 66 kV lines from Moorreesburg to the De Hoek Cement Factory near Piketberg were completed by the middle of the year, but supply could not be made available until November, due to late delivery of transformers. Construction of a second 66 kV overhead line between Gouda and Moorreesburg was completed in September and thereafter work commenced on the construction of a second Wellington to Gouda 66 kV feeder, which is expected to be complete early in 1958.

The Lourens River 66 kV substation was completed during the year and the network in that area was changed from 33 kV to 66 kV working in April, 1957. Thereafter construction commenced on a 66 kV feeder from Lourens River to Bot River to extend the 66 kV network to Bot River, Hermanus and Bredasdorp in order to meet the increasing loads.

Bulk Supply and Industrial Consumers. One new bulk supply consumer was connected in November when a supply was made available to the Municipality of Piketberg. Twenty-two industrial consumers in the large user category were given supplies totalling just over 7,000 kVA.

Development of Urban Distribution. In the urban areas of Goodwood, Parow and Bellville, the units sold during the year increased by 11.6 per cent. and the demand of 30.5 MVA recorded for these areas is 2.35 per cent. higher than for the previous year.

Development of Rural Supplies. Details of the development of rural networks are reported on page 18.

During the year 386 consumers were connected in rural areas, of which 110 were farmers.

Financial. There was a deficit on the year's working of £110,543, which resulted in an accumulated deficit of £166,800 at the year end.

In order to balance the Undertaking's accounts, the tariff will be raised by applying a surcharge of 5 per cent. as from the meter reading month of August, 1958, in terms of Section 10 of the Act.

CAPE NORTHERN UNDERTAKING

CONSUMERS		SALES		Revenue from Sales	Average Price per Unit Sold	
Class	Number	Units	Increase or Decrease		1957	1956
Bulk	4	49,859,911	- 2.016	£210,470	d 1.0131	d 1.0184
Mining	7	25,636,782	+ 3.575	£142,541	d 1.3344	d 1.2219
Industrial	67	9,213,510	+301.490	£69,775	d 1.8175	d 3.6803
Domestic and Lighting	445	1,369,919	+ 78.695	£17,890	d 3.1343	d 3.2692
	523	86,080,122	+9.379	£440,676	d 1.2286	d 1.1820



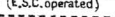

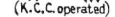
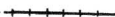
	1957	1956	Accumulated to 31.12.57
Total Revenue	£441,066	£388,003	
Working Costs	£447,303	£408,919	
Deficit	£6,237	£20,916	£26,975
Capital Expenditure	£571,960	£253,742	£2,504,418
CENTRAL POWER STATION—			
Units Sent Out	86,996,327	74,726,900	
Maximum half-hour Demand kW S.O. }	20,935	17,600	
Station Peak kW	22,600	19,300	
Load Factor %	47.4	48.3	
Thermal Efficiency	12.4	12.4	
COAL:			
Consumption—tons	98,021	84,498	
Average per unit sent out—lb	2.253	2.262	
Calorific Value B.Th.U./lb	12,240	12,180	
Total Cost	£166,623	£138,656	
Cost per ton	34s. 0d.	32s. 10d.	

Output and Sales. Although the sales record shows that the units sold during 1957 increased by 9.4 per cent. over the units sold during 1956, the increase in the Undertaking's output and in units used by consumers was 16.4 per cent. The difference in the figures is explained by the arrangement by which Escom purchased units from the Kimberley Municipality at Riverton for resale to Escom consumers. The arrangement was terminated towards the end of 1956, so that the figures of sales to Kimberley Municipality are not comparable for the two years. The increase in units sold to Kimberley Municipality for its own purposes during 1957 was 7.6 per cent. to 47.9 million units. Barkly West Municipality increased its consumption by 8.5 per cent. to 737,400 units; Boshof Municipality increased by 14.3 per cent. to 467,361 units; and the supply to Warrenton Municipality increased by 17.8 per cent. to 724,000 units.

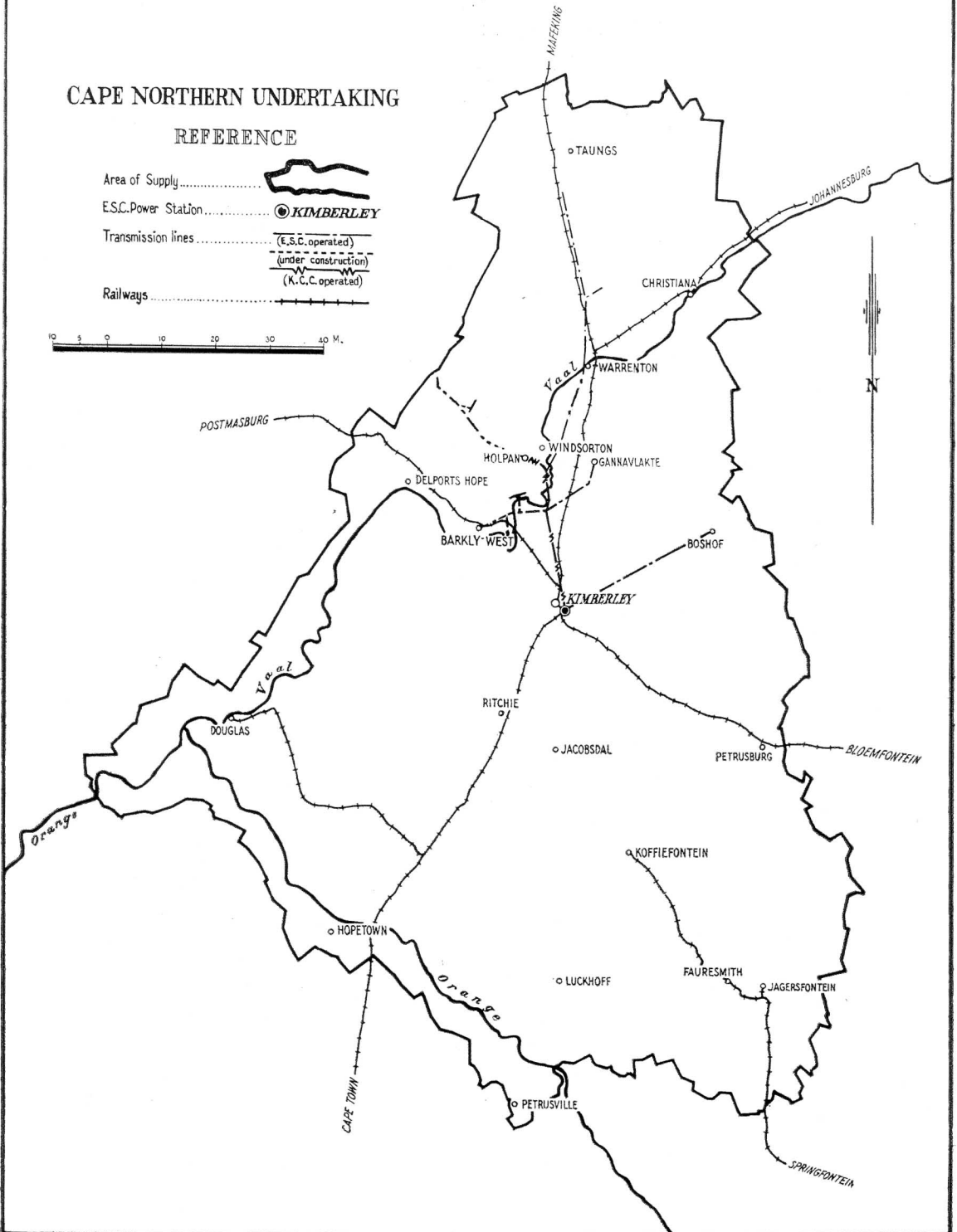
Supplies to farmers in the Riverton area showed a decrease due to the September floods, and also due to heavy rains which reduced their pumping consumption from 1,462,000 to 1,241,000 units.

CAPE NORTHERN UNDERTAKING

REFERENCE

- Area of Supply.....
- E.S.C. Power Station..... **KIMBERLEY**
- Transmission lines.....
 -  (E.S.C. operated)
 -  (under construction)
 -  (K.C.C. operated)
- Railways.....

10 0 10 20 30 40 M.



In the Vaalharts Settlement total sales increased by almost 40 per cent. to 1.78 million units of which 200,000 units were reticulated to ninety-three new consumers in Hartswater township. A scheme for the supply for the first 100 plotters' houses on the settlement was started, and at the end of the year sixteen houses were connected.

Domestic consumption increased from 226,000 to 280,000 units. Kimberley Gypsum Supplies Ltd., increased its consumption by 38 per cent. to 297,000 units.

Supply to the Northern Lime Company Limited's Works near Taungs was commenced in November, and this consumer used 586,000 units in the last two months of the year.

During the first complete year of supply the five small diamond mines near Smith's Mine and Bellsbank consumed 1.25 million units and are now developing steadily.

Partial supply was given to Union Lime Company Limited's works and the Anglo Alpha Cement Company's plant at Ulco in April, 1957, and up to the end of the year 6.57 million units were sold. Full supply of some 40 million units per annum is expected after the interconnection with the Rand and O.F.S. network towards the end of 1958.

De Beers Consolidated Mines at Kimberley took 24.1 million units which showed a slight increase over the previous year.

New Developments. The progress of work on the 132 kV interconnection with Grootkop Distribution Station is reported on page 14.

De Beers Consolidated Mines Ltd.'s new £1½ million washing plant was brought into operation, together with a 4,000 H.P. electric hoist in April, 1958. The electric hoist replaced steam winders at Du Toitspan and Bultfontein Mines, and further electrification is anticipated in the near future, when the demand will rise to about 11,000 kW and consumption to between 40 and 50 million units per annum.

A bulk supply to Christiana Municipality was given at the end of February, 1958. Supplies will also be given to farmers on the river between Warrenton and Christiana.

Negotiations have been concluded with the Reivilo Cheese Factory to take a bulk supply for their own requirements and also for the requirements of the Village Management Board. For this purpose the 66 kV line from the Northern Lime Company's works near Taungs will be extended for approximately 28 miles to Reivilo.

Negotiations have also been completed to supply Permanent Gypsum and Allied Minerals and New Vaal Farms Ltd., near the confluence of the Vaal and Harts Rivers with a total of 600 H.P. This will assist in the supply to small groups in the Delpportshoop area.

Further applications have been made by plotters in the Vaalharts settlement near Tadcaster, and it is expected that this development will continue steadily until all the 1,200 plotters, whose houses are a quarter of a mile apart, are served.

Power Station. The peak demand on the Central Power Station increased during the year from 19,300 kW to 22,600 kW, and the units sent out rose to 87 million, an increase of 16.4 per cent.

With the increased demands arising from new developments and the load of De Beers electric hoist, the Power Station will be loaded to full capacity during the 1958 winter, until interconnection is effected with the Rand and O.F.S. network.

Financial. The Revenue Account for the year showed a deficit of £6,237 on the total revenue of £441,066.

BORDER UNDERTAKING

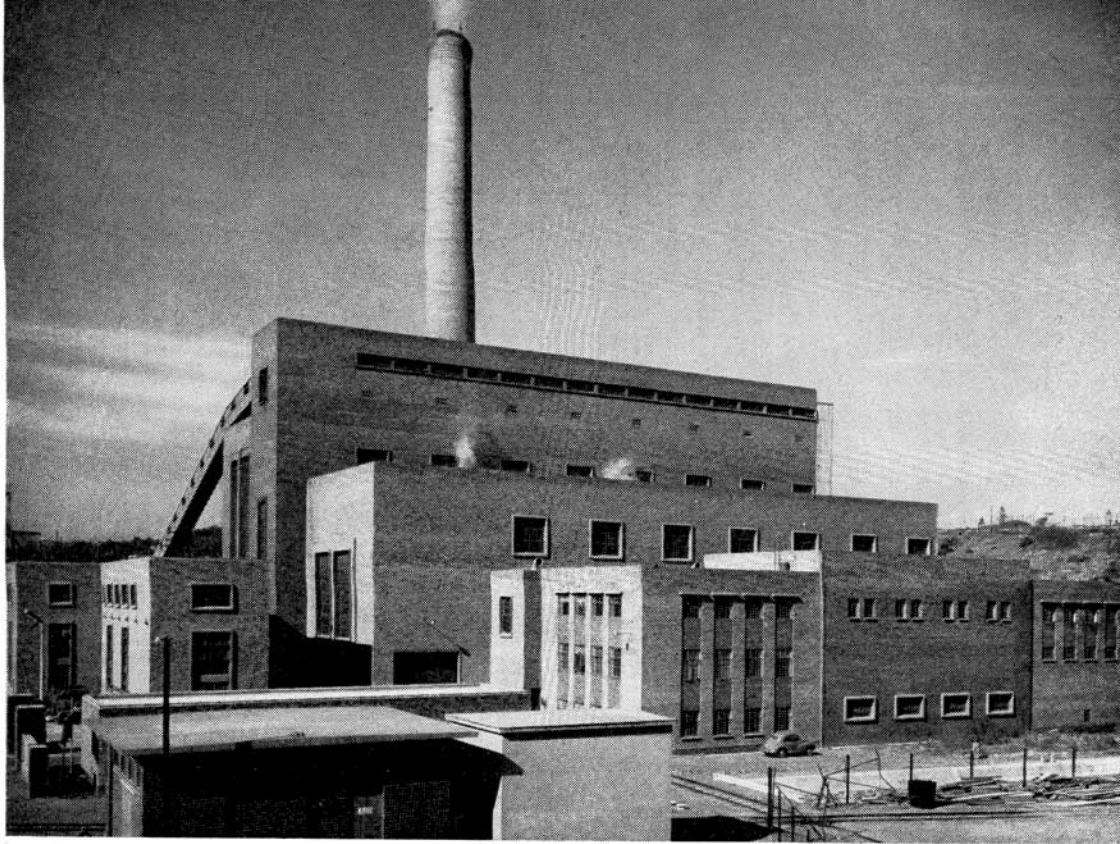
CONSUMERS		SALES			Average Price per Unit Sold	
Class	Number	Units	Increase or Decrease	Revenue from Sales	1957	1956
			%	£	d	d
Bulk	8	130,210,670	+2.769	617,078	1.1374	1.1268
Industrial	183	4,127,367	+6.570	39,174	2.2779	2.3909
Domestic and Lighting	2,325	8,771,523	+3.157	87,491	2.3939	2.3436
Steam—Industrial						1.1079
	2,516	143,109,560	+2.855	743,743	1.2473	1.2364
		1957		1956	to 31.12.57 Accumulated	
Total Revenue ... ..	...	£745,778		£717,993		
Working Costs ... ..	...	£746,668		£696,260		
Surplus ... ..	...			£21,733		
Deficit ... ..	...			£890		£132,452
Capital Expenditure ... ..	...	£363,841		£497,042		£1,426,636
King William's Town						
		1957		1956	1957	1956
Units Sent Out	83,920	Steam		7,848,812	Oil	Oil
Maximum Half-hour	2,900			3,940	990	900
Demand kW S.O.	—			37.8	In parallel with steam plant	
Load Factor %	11.7			12.6		
Thermal Efficiency % S.O.	98			8,556		
	2,305			2,163		
	12,680			12,590		
	£237			£20,026		
	48s. 5d.			46s. 10d.		
	7,363			0.564	69,788	0.571
	—			—		

East London West Bank No. 1 and No. 2

1957	1956
144,466,562	130,793,987
30,050	31,720
54.9	46.9
19.4	15.8
110,936	120,490
1.536	1.842
11,430	11,730
£231,354	£246,040
41s. 9d.	40s. 10d.

FUEL:

Coal Consumed—tons	
Average per Unit Sent Out	
Calorific Value B.Th.U./lb	
Total Cost	
Cost per ton	
Fuel Oil consumed—lb	
Fuel Oil per unit S.O.—lb	



West Bank No. 2 Power Station where an additional boiler will be installed.

Output and Sales. Units sold during 1957 showed an increase of 2.85 per cent. over the sales in 1956.

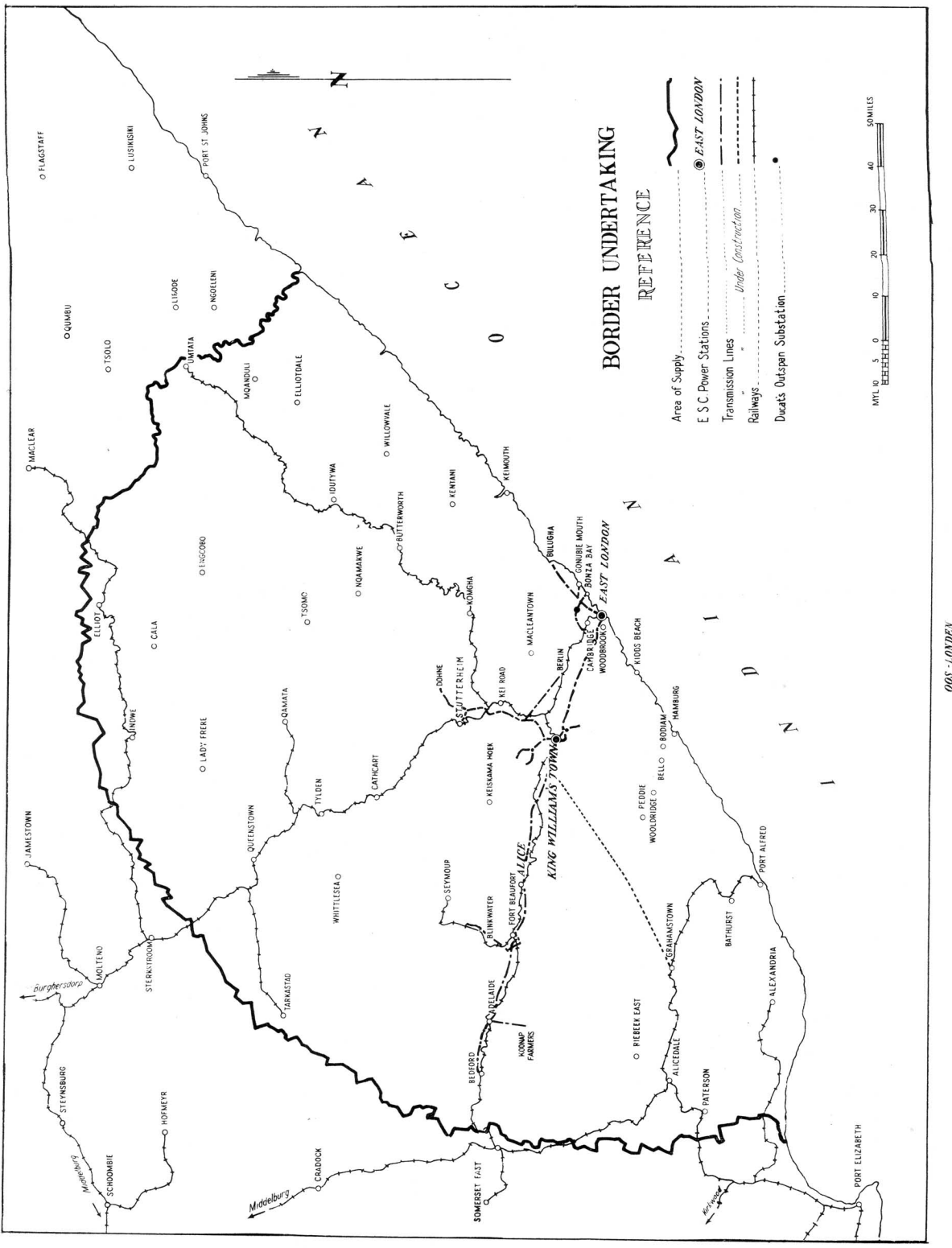
The East London Municipality increased its consumption by 2.3 per cent. to 126,854,490 units, but the maximum demand of this consumer fell from 28,796 kVA in 1956 to 27,240 kVA in 1957.

Sales in the King Williams' Town area increased by 5.9 per cent. and in the coastal area, excluding East London Municipality, by 14.9 per cent.

A total of 52 new consumers was added to the system.

The system maximum half hour demand was 30,050 kW, a decrease from the previous year's figure of 31,720 kW.

West Bank Power Stations. West Bank No. 2 Power Station carried the major portion of the load during the year, producing 92.1 per cent. of the total units generated. No new plant was commissioned during the year, but an order was placed for a third 170,000 lb/hr boiler for completion in 1960.



BORDER UNDERTAKING REFERENCE

- Area of Supply
- E S C Power Stations ● EAST LONDON
- Transmission Lines
- " Under Construction
- Railways
- Ducats' Outspan Substation ●



Extensive overhauls and repairs to plant in West Bank No. 1 Power Station were carried out during the year, and modifications to provide forced draught on the smaller boilers were nearing completion at the close of the year.

The load factor for the combined West Bank Power Stations was 54.9 per cent. as compared with 47 per cent. for 1956.

Despite an increase in the total units sent out from 130 million in 1956 to 144 million in 1957, there was a saving of approximately 10,000 tons of coal as a result of the higher efficiency of operation.

King William's Town Power Station. This station was retained as stand-by, and excepting a short period of operation in April when trouble was experienced on the 66 kV inter-connector between East London and King William's Town, operation was confined to routine test running of the 1,000 kW diesel set.

Development of the Undertaking. The construction of the North Coast 66 kV spur line together with the terminal step-down substation at Ducats Outspan was completed in May, and from that date all supplies for North Coast consumers were taken from this source.

Supply to a group of rural consumers on the Koonap River south of Adelaide was commenced in November.

Progress on the construction of the Fort Beaufort/Kat Valley 11 kV line was delayed somewhat due to Native labour troubles; but the first 15 miles of the were commissioned in December.

Erection of the King William's Town/Grahamstown 66 kV line progressed satisfactorily and by the end of the year 22 miles of line were completed.

The 11 kV lines to Dohne Experimental Farm and to Berlin were completed during the year.

Work was commenced on a scheme to supply consumers in the South Coast area by means of an 11 kV line from the 11/66 kV sub-station on the West Bank.

Negotiations were well advanced for supplies to the Municipalities of Alexandria and Port Alfred, and terms have been offered to Cathcart.

The prospects of supply to farmers in the Great Fish and Keiskama River areas are being investigated.

Financial. There was no change in the tariffs in force on the Undertaking.

The revenue account for the year shows a deficit of £890 on a total revenue of £745,778. The accumulated deficit was thus increased to £132,452.

Output and Sales. The total units sold increased by 6.4 per cent. as compared with the increase of 10.08 per cent. in 1956. During the year the units taken from pooled generation by the Natal Southern Undertaking amounted to 1,036.8 million units, an increase of 7.21 per cent., and the system maximum half-hour demand sent out was 217,709 kW, an increase of 9.28 per cent.

The sum of the maximum half-hour demands of all large power users, other than the traction supplies to the Railways, was 219,090 kVA, as against 201,788 kVA in 1956.

Pooled Generation. Congella, Umgeni and Colenso Power Stations were operated in parallel throughout the year, except for short periods during change-over from the 132 kV inter-connection to the 88 kV system. The improved carrier telephonic communications and telemetering resulted in more satisfactory operation of the pooled stations.

Coal supplies were satisfactory in quantity, but again it was necessary to accept large quantities of coal of a grade other than the grade normally required.

The second 132 kV Umgeni/Mason's Mill line was put into service on 29th November, 1957.

Trouble was experienced at the Springfield Substation on the Umgeni/Congella interconnection. A 33 kV busbar fault occurred on the switchgear similar to a previous fault in 1955. Repairs have been effected and reports are awaited from the manufacturers as to the cause of the fault and measures to be adopted to avoid a recurrence.

Congella Power Station. With the additional plant available at Umgeni Power Station, the output from Congella was slightly lower than in 1956. The old plant in Congella No. 1 station continued to be shut down at night throughout the year, except during February and March, when Generator 8 was out for overhaul.

Condenser 8 was retubed with cupro-nickel tubes and a new waterbox was fitted to the front end of the condenser.

The new fuel oil storage tank and transfer pumps were commissioned.

Civil construction on the new water clarification plant for closed-circuit operation of the Hydrovac system was started in the middle of the year.

Overhaul of the tippler in Station 2 is still outstanding and it is hoped to undertake this in the near future, as the new emergency coal-handling plant has been commissioned.

Umgeni Power Station. Boilers 5 and 6 were commissioned on the 10th May and 27th June, 1957, respectively, and Generator 3 was commissioned on 28th May, 1957. Cooling Tower 2 was also commissioned in May.

The further extensions to Umgeni Power Station are referred to on page 14.

Distribution System. During the year 85.52 miles of transmission and distribution lines at 6.6 kV and above were erected.

Richmond 88 kV substation was completed, and the Thornville/Richmond 88 kV line, which had been operated temporarily at 11 kV, was energised at full voltage in August.



A new 88/11 kV substation is under construction at Shongweni. This is to supply power at 11 kV to the Shongweni/Cato Ridge/Drummond area.

Negotiations for the purchase of Coedmore 132 kV substation site were concluded and contracts were placed for the purchase of the equipment and for the erection of the building and foundations. The survey of the Umgeni/Coedmore 132 kV line route was completed and the contract placed for the erection of the line.

The deviation and doubling of the 88 kV line along the railway track between Congella and Booth was being carried out by the Administration. By the end of the year approximately half of the work had been completed.

As corrosion of the insulators on the Congella/Cato Ridge 88 kV line was taking place, it was necessary to replace most of the insulators on this section. The work was undertaken by the South African Railways with some assistance from Escom staff.

A new traction substation was brought into commission at Cavendish on the 14th December, and Booth substation was shut down on the 8th September.

The 33 kV line from Richmond to Ixopo, 27.2 miles in length, was completed, and work on the Ixopo substation was nearing completion.

The extension of the 33 kV line on the North Coast from Tongaat to Compensation was placed in service in May, feeding into the Stanger Municipality's network through a new 33/11 kV substation at Compensation. The whole of the 6.6 kV network on the North Coast was converted to 11 kV in August.

Supplies were given to seven new large power users, including Stanger Municipality.

The maximum demand of the South Coast system increased from 8,600 kVA to 11,000 kVA. This is an increase of 27.9 per cent.

The maximum demand of the North Coast system increased by 37.34 per cent. to 1,269 kVA.

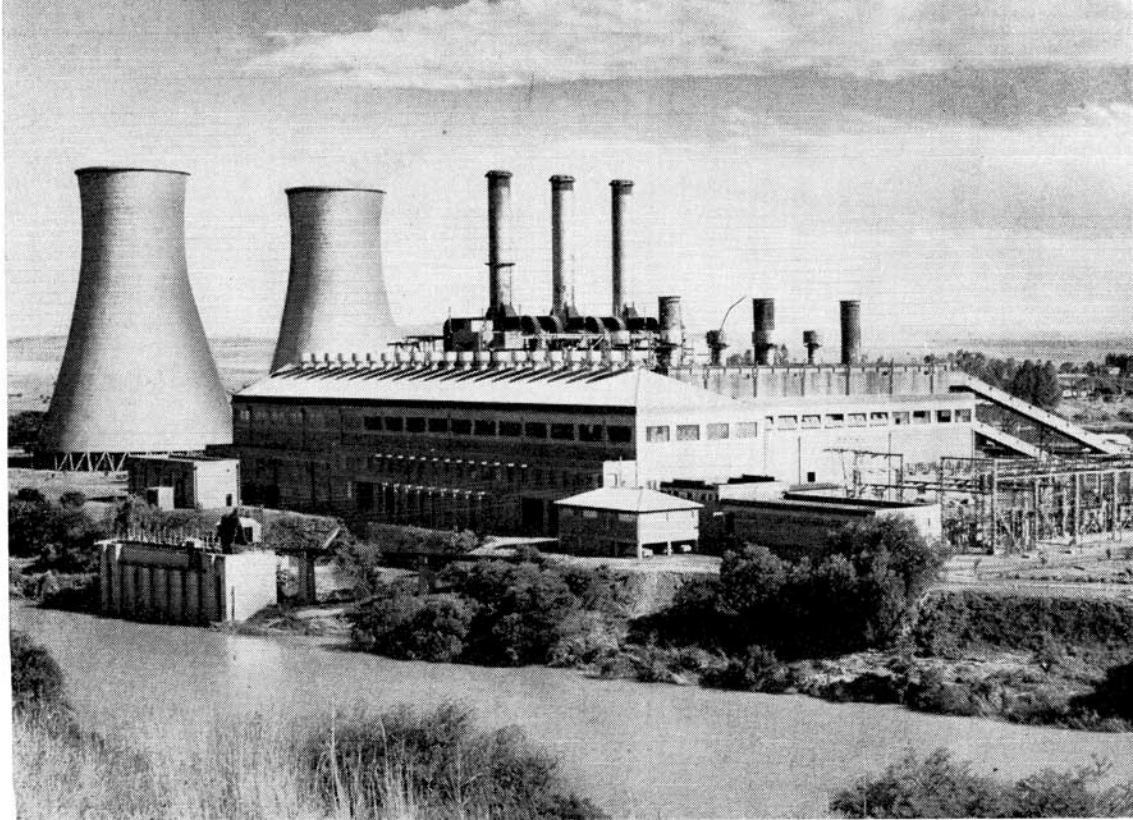
The diesel station at Port Shepstone was kept in service for standby purposes and was operated for a total of 97 hours during the year.

Rural Supplies. A report on rural supplies is given on page 18.

Financial. The revenue account showed a deficit of £11,713 on the year's working.

NATAL CENTRAL UNDERTAKING

CONSUMERS		SALES			Revenue from Sales	Average Price per Unit Sold	
Class	Number	Units	Increase	1957		1956	
			%	£	d	d	
Traction	1	287,197,222	0·890	958,194	0·8007	0·7892	
Bulk	17	227,343,736	5·308	774,615	0·8177	0·7849	
Mining	13	30,255,489	10·126	111,211	0·8822	0·8992	
Industrial	515	61,804,959	15·103	233,108	0·9052	0·9565	
Domestic and Lighting	4,483	15,090,643	10·432	135,921	2·1617	2·1879	
	5,029	621,692,049	4·419	2,213,049	0·8543	0·8399	
		1957	1956		Accumulated to 31.12.57		
Total Revenue		£2,219,648		£2,093,337			
Working Costs		£2,231,577		£2,041,695			
Surplus				£51,642	£85,225		
Deficit		£11,929					
Capital Expenditure		£361,114		£235,517	£9,982,954		
COLENZO POWER STATION—							
Units Sent Out		570,070,710		560,389,120			
Maximum half-hour } Demand kW S.O. }		114,500		118,410			
Station Peak kW		132,000		135,000			
Load Factor %		56·8		53·9			
Thermal Efficiency % Sent Out ...		18·7		18·1			
COAL:							
Consumption—tons		444,595		442,218			
Average per unit sent out—lb. ...		1·560		1·578			
Calorific Value B.Th.U./lb. ...		11,710		11,930			
Total Cost		£636,958		£598,110			
Cost per ton		28s. 8d.		27s. 1d.			



A new photograph of Colenso Power Station which has been extended to meet the growth of load.

Output and Sales. The total units sold increased by 4.4 per cent. as compared with an increase of 8.96 per cent. in 1956. There was virtually no increase in the units sold for traction. Traction supplies dropped to 46.1 per cent. of total sales, as compared with 47.8 per cent. last year.

During the year the units taken from the pooled generating stations by the Natal Central Undertaking amounted to 667,269,185 an increase of 6.2 per cent., and the system maximum half-hour demand sent out was 118,880 kW, an increase of 1.28 per cent.

The sum of the maximum half-hour demands of all large power users, other than the traction supplies to the Railway Administration was 85,969 kVA as against 81,365 kVA in 1956.

Colenso Power Station. Loading on Colenso Power Station increased and records were established with total units generated of 605,430,480 units; maximum monthly output (occurring in May) of 55,691,700 kWh and maximum daily output (occurring in September) of 2,098,330 kWh.

The rainfall recorded was the highest for ten years, being 41.734 inches, the maximum fall during one month being 7.274 inches in October.

Ingagane Power Station. A report on the projected Ingagane Power Station is given on pages 8 and 15.

Distribution System. During the year 117.74 miles of transmission and distribution lines at 6.6 kV and above were erected.

The Pietermaritzburg Congella 11/88 kV line was looped into Mason's Mill on the 9th June.

The new 88 kV substation at Dundee was completed in October, and is supplied via an 88 kV line teed off the Glencoe/Newcastle Green line which is the circuit on track structures.

At Pietermaritzburg the installation of the 88 kV summation metering for the Corporation's supply from Pietermaritzburg and Mason's Mill substations was completed.

On account of the Railway doubling the track, it will be necessary to move the 88 kV Green line between Glencoe and Newcastle.

The Railways Administration commissioned the first rectifier unit at the new traction substation at Frere on 28th May and added a second unit to the temporary substation at Cedara.

The 33 kV line from Bethlehem to Lindley and Petrus Steyn was completed and supplies were given to these two towns in July and September respectively.

A temporary diesel power station has been erected at Vrede in preparation for the replacement of conductors on the Warden/Vrede 33 kV line. Later it will be shifted to Reitz when the conductors on the Warden/Reitz line are replaced.

Work was started on the erection of the 11 kV line from Newcastle to Memel.

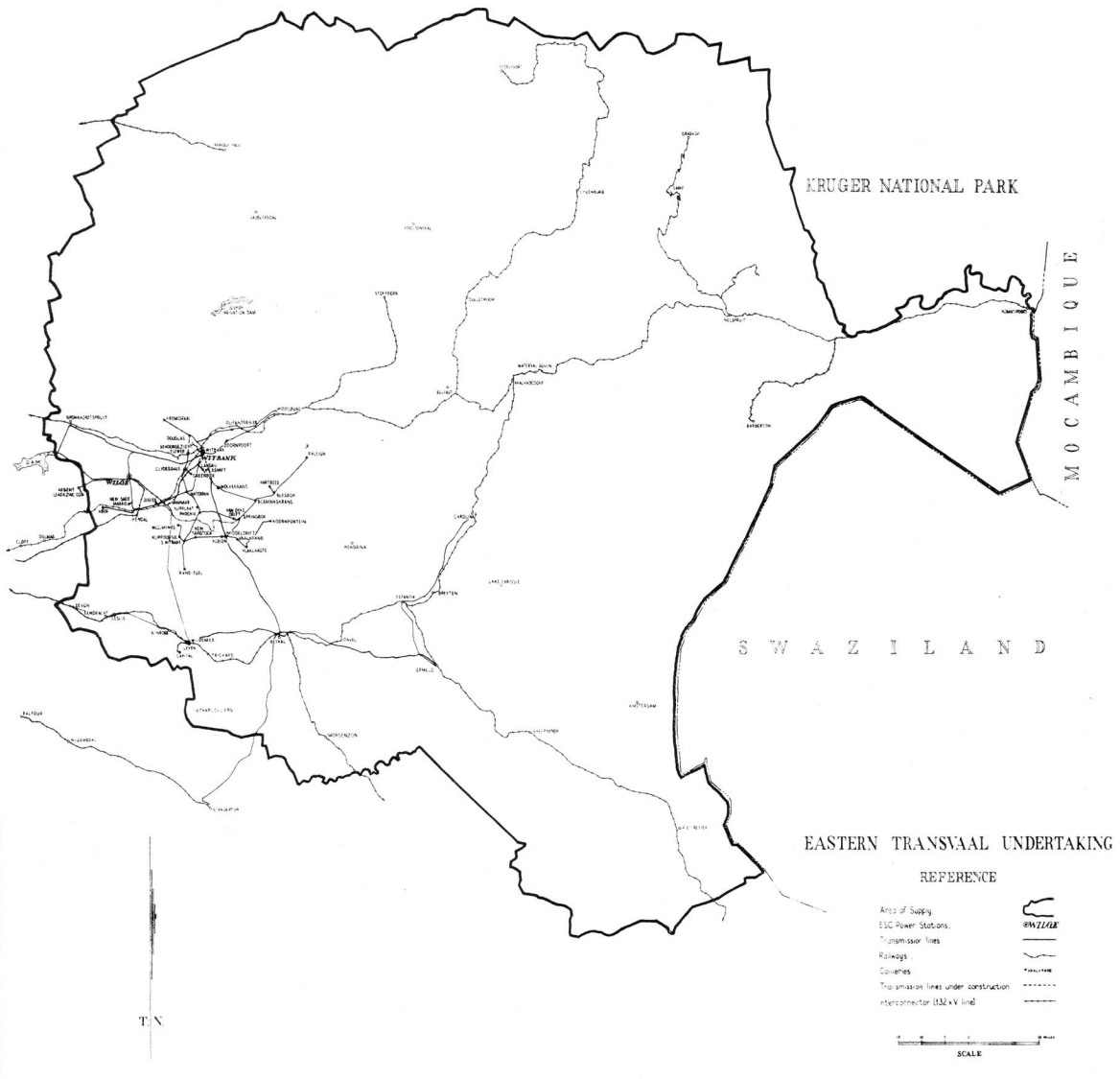
The reticulation of Swinburne Village was completed in April.

The systems in the northern and western areas were affected on two occasions by abnormally severe weather conditions. In June high winds were experienced, causing a large number of transient faults on the Ladysmith/Harrismith 88 kV line, a permanent fault on the Newcastle/Harrismith 88 kV line when a tree was blown down over the line near Mount Prospect, and a permanent fault on the Colenso/Newcastle Green 88 kV line when trees were blown down over the line near Ballengeich. A number of faults occurred on lower-voltage lines also. In July there were heavy snowfalls over a wide area, causing permanent faults on the Colenso/Newcastle Yellow 88 kV line near Glencoe and at Ballengeich, and on the Colenso/Newcastle Green 88 kV line near Ballengeich. Some of the rural lines were also affected.

During the year five large power users, including Lindley and Petrus Steyn, were connected on the Natal Central Undertaking.

Rural Supplies. The increase in rural supplies is reported on page 18.

Financial. The revenue account showed a small deficit of £11,929 on the year's working.



KRUGER NATIONAL PARK

MOZAMBIQUE

SWAZILAND

EASTERN TRANSVAAL UNDERTAKING

REFERENCE

- Area of Supply
- ESC Power Stations
- Transmission Lines
- Railroads
- Colonies
- Transmission lines under construction
- Interconnector (132 kV line)



T X

EASTERN TRANSVAAL UNDERTAKING

CONSUMERS		SALES		Revenue from Sales	Average Price per Unit Sold	
Class	Number	Units	Increase		1957	1956
			%	£	d	d
Traction	1	21,567,085	6.248	45,048	0.5013	0.4747
Bulk	9	32,525,405	12.922	89,648	0.6615	0.6519
Mining	34	132,018,139	21.887	329,910	0.5998	0.5940
Industrial	76	348,136,962	0.476	487,825	0.3363	0.3250
Domestic and Lighting	820	2,270,439	16.067	22,595	2.3884	2.1801
	940	536,518,030	6.061	975,026	0.4362	0.4144

	1957	1956	Accumulated to 31.12.57
Total Revenue	£978,165	£877,389	
Working Costs	£970,132	£882,546	
Surplus	£8,033		£27,002
Deficit		£5,157	
Capital Expenditure	£800,482	£552,741	£5,896,181
WITBANK POWER STATION:			
Units Sent Out	634,099,895	664,547,752	
Maximum one hour Demand kW S.O. }	116,653	116,472	
Load Factor %	62.1	65.0	
Thermal Efficiency % Sent Out	15.6	15.5	
COAL:			
Consumption—tons	616,666	649,760	
Average per unit sent out—lb ...	1.945	1.955	
Calorific Value B.Th.U./lb. ...	11,280	11,230	
Total Cost	£319,654	£333,490	
Cost per ton	10s. 4d.	10s. 3d.	

Area of Supply. The extension of the area of supply to include Groblersdal and Marble Hall and the Eastern Transvaal lowveld is reported on page 8. The new area of supply is shown on the map on page 45.

At the end of the year negotiations were in progress for a supply to an asbestos mine at Penge, for which supply a further extension of the licence area will be necessary.

Output and Sales. Units sold by the Undertaking increased by 6 per cent. over the sales in the previous year, the increases being recorded in bulk supplies and supplies to mining consumers.

The supply to Winkelhaak Mines, Limited, increased from 4 million units in 1956 to 17.9 million units in the year 1957. It is expected that gold production will commence during 1958, the milling rate to be built up over a period to 60,000 tons per month.

Reticulation of electricity commenced in Kinross in August, 1957, and the first supplies to consumers in Devon were given early in 1958.

Witbank Power Station. The operating statistics show a further reduction in the output of Witbank Power Station and in the load factor. These reductions reflect the present function of Witbank Station as a regulating and peak load station.

Komati Power Station. A report on the development of Komati Power station appears on page 15.

Distribution System. The 132 kV transmission line Grootpan/Wildebees and the 132/88/21 kV Wildebees Distribution Station were completed and commissioned in December, 1957. A second 88 kV line Wildebees/Capital substation (Winkelhaak Mines, Limited) was equipped with 4 x 3.1 MVA transformers. 21 kV lines from Wildebees to Kinross and Leslie were completed during the year, and an extension from Leslie to Devon was completed and commissioned in January, 1958.

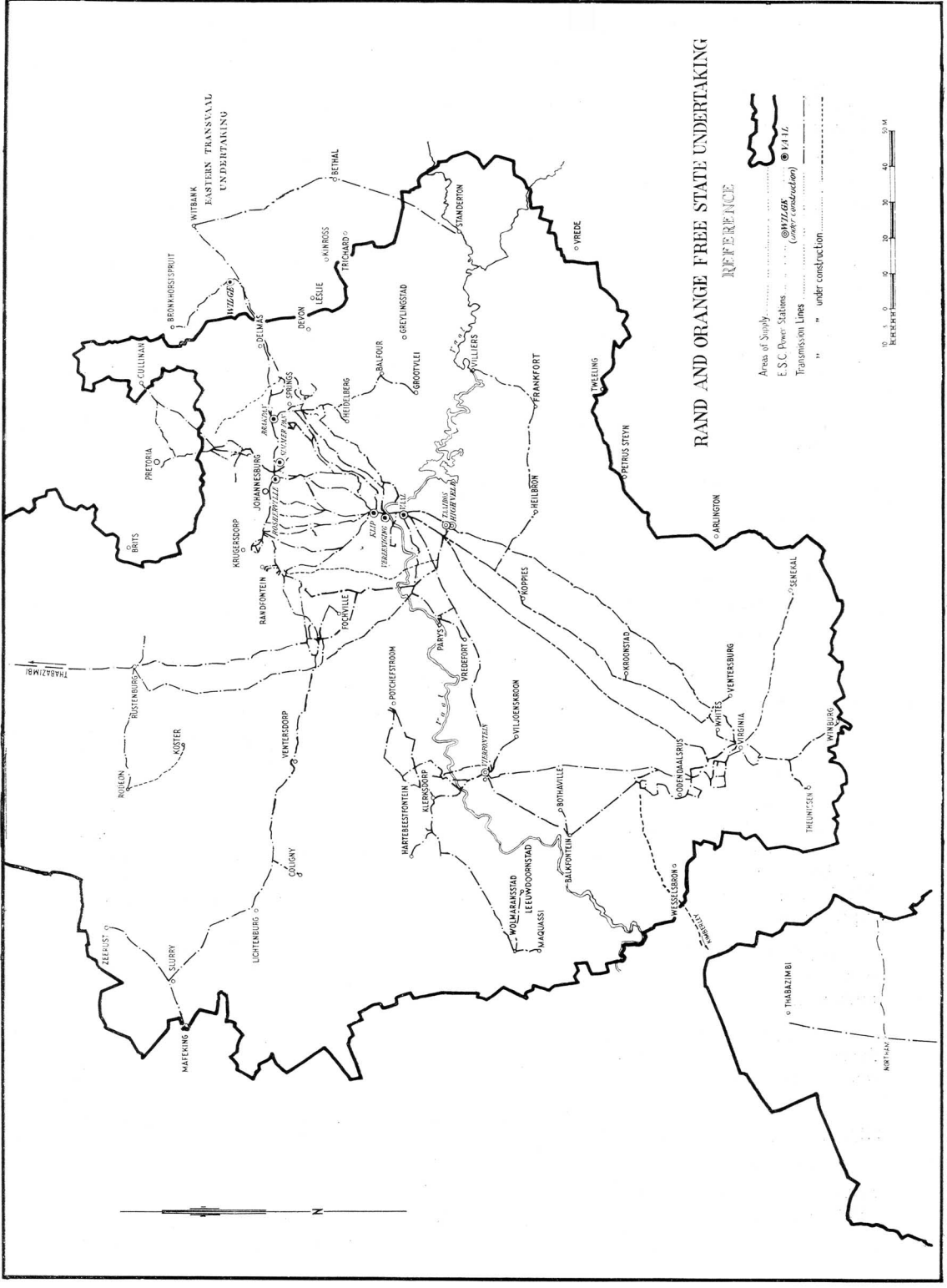
Wayleaves were being negotiated for the 132 kV line from Klipfontein to Middelburg, the 88 kV line from Middelburg to Groblersdal, and for the two 132 kV lines between Komati Power Station and Witkloof Substation which will be built near the site of the conservation dam for Komati Power Station. Wayleaves are also being obtained for the 88 kV lines to furnish the new traction supplies at Arbor, Oogies, Kromklip and Van Dyksdrif.

At Carolina the permanent substation was completed and placed in commission. An additional 10,900 kVA of transformers were installed in consumers substations.

During the year approximately 40 miles of 11 kV lines were built, most of these lines being for farm schemes; and a number of pole-mounted substations were established.

Financial. The Revenue Account for the year showed a small surplus of £8,033 in the total revenue of £978,165.

There was no alteration in tariffs in 1957; but in order to cover estimated costs the surcharge on standard tariffs, which has stood at 25 per cent. since 1953, was increased to 30 per cent. with effect from January, 1958.



RAND AND ORANGE FREE STATE UNDERAKING

REFERENCE

- Areas of Supply: - - - - -
- E. S.C. Power Stations: (O.F.S.)
- O.F.S. Power Stations: (O.F.S. (under construction))
- Transmission Lines: ———
- “ “ under construction: - - - - -



RAND AND ORANGE FREE STATE UNDERTAKING

CONSUMERS		SALES			Average Price per Unit Sold	
Class	Number	Units	Increase or Decrease	Revenue from Sales	1957	1956
ELECTRICITY:						
Traction	1	181,338,627	% + 0-453	378,681	d. 0-5012	d. 0-4746
Bulk	68	972,878,242	+ 11-019	1,972,216	0-4865	0-4506
Mining	115	6,595,901,793	+ 5-051	11,379,704	0-4141	0-3925
Industrial	416	1,718,222,411	+ 7-059	3,004,769	0-4197	0-3989
Domestic and Lighting	2,910	24,613,328	+ 23-169	113,449	1-1062	1-1151
	3,510	9,492,954,401	+ 5-942			
AIR AND STEAM:						
Bulk	1	3,751,573	- 12-922			
Mining	12	146,213,459	- 17-515			
Industrial	30	9,603,241	+ 0-634			
	43	159,568,273	- 16-505	796,438	1-1979	1-0803
	3,553	9,652,522,674	+ 5-473	17,645,257	0-4387	0-4167
				1957	1956	
Revenue ... ..	...	...	£17,661,346	£15,902,987	Accumulated to 31.12.57	
Working Costs ... ..	...	...	£17,716,669	£16,565,332		
Deficit ... ..	...	...	£55,323	£662,345	£905,206	
Capital Expenditure ... ..	...	...	£11,878,494	£13,700,833	£122,584,641	

RAND AND ORANGE FREE STATE UNDERTAKING—(continued)

	Brakpan Power Station		Klip Power Station	
	1957	1956	1957	1956
Electricity Units Sent Out ...	44,874,517	82,763,872	2,433,984,482	2,474,278,848
Maximum Load ...	32,021	41,352	368,805	349,865
One-hour kW S.O. ...	16.0	22.8	75.3	80.5
Load Factor % ...	12.6	12.5	19.9	20.1
Thermal Efficiency % Sent Out ...				
COAL:				
Consumption—tons ...	60,371	111,758	2,145,543	2,190,677
Average per unit sent out—lb ...	2.691	2.701	1.763	1.771
Calorific Value B.Th.U./lb ...	10,060	10,080	9,720	9,580
Total Cost ...	£55,865*	£90,565*	£1,863,689	£1,761,884
Cost per Ton ...	16s. 6d.	15s. 0d.	17s. 4d.	16s. 1d.

	Rosherville Power Station		Simmerpan Power Station†	
	1957	1956	1957	1956
Electricity Units Sent Out ...	130,085,506	166,346,408	16,497,828	47,741,957
Maximum Load ...	44,083	43,467	17,263	27,227
One-hour kW S.O. ...	33.7	43.6	23.6	20.0
Load Factor % ...	10.6	10.4	8.9	9.2
Thermal Efficiency % Sent Out ...				
COAL:				
Consumption—tons ...	213,482	277,318	32,548	89,619
Average per unit sent out—lb ...	3.282	3.334	3.946	3.754
Calorific Value B.Th.U./lb ...	9,820	9,840	9,720	9,870
Total Cost ...	£326,061	£364,625	£29,743	£75,689
Cost per Ton ...	18s. 9d.	17s. 2d.	18s. 3d.	16s. 11d.

*Includes cost of coal for compressed air. †Simmerpan Power Station closed down 15/6/57.

RAND AND ORANGE FREE STATE UNDERTAKING—(continued)

	Taaibos Power Station		Vaal Power Station		Wilge Power Station	
	1957	1956	1957	1956	1957	1956
Electricity Units Sent Out	2,454,148,592	1,601,003,719	1,965,742,693	1,685,714,335	878,246,959	929,539,514
Maximum Load	387,353	277,792	285,150	284,686	168,495	167,383
One-hour kW S.O.	72.3	65.6	78.7	67.4	59.5	63.2
Load Factor %	26.8	26.3	22.3	22.7	25.1	25.1
Thermal Efficiency % S.O.	1,713,952	1,114,059	1,681,747	1,413,356	608,662	640,452
COAL:						
Consumption—tons	1-397	1-392	1-711	1-677	1-386	1-378
Average per unit sent out—lb.	9,110	9,300	8,960	8,960	9,790	9,870
Calorific Value B.Th.U./lb.	£652,724	£408,262	£608,545	£502,314	£270,129	£252,086
Total Cost	7s. 7d.	7s. 4d.	7s. 3d.	7s. 1d.	8s. 11d.	7s. 10d.
Cost per ton	...	...	...	...	...	...

	Vereeniging Power Station		Vierfontein Power Station	
	1957	1956	1957	1956
Electricity Units Sent Out	655,350,288	722,716,224	1,616,881,102	1,758,287,089
Maximum Load—One-hour kW S.O.	135,318	141,226	283,920	280,356
Load Factor %	55.3	58.3	65.0	71.4
Thermal Efficiency % Sent Out	15.1	15.9	22.9	23.1
COAL:				
Consumption—tons	821,940	863,420	1,315,579	1,401,498
Average per Unit Sent Out—lb.	2-508	2-389	1-627	1-594
Calorific Value B.Th.U./lb.	8,990	9,000	9,150	9,270
Total Cost	£377,596	£366,841	£723,558	£675,884
Cost per ton	9s. 2d.	8s. 6d.	11s. 0d.	9s. 8d.

RAND AND ORANGE FREE STATE UNDERTAKING--(continued)

	Brakpan Power Station		Rosherville Power Station	
	1957	1956	1957	1956
Compressed Air Units Sent out				
Steam Units Sent Out	5,090,115	6,272,390	104,024,300	109,969,900
COAL:				
Consumption—tons	7,200	9,033	134,722	146,625
Average per unit sent out—lb	2,829	2,880	2,590	2,667
Calorific Value B.Th.U./lb	10,060	10,080	9,820	9,840
	Canada Dam Compressor Station		Robinson Compressor Station	
	1957	1956	1957	1956
Compressed Air Units Sent Out	23,560,000	34,143,500	34,211,600	41,684,000
Electric Input—kW exc. Trans. losses	28,547,477	41,978,901	43,695,310	53,188,638
Air Units Sent Out/kWh per cent.	82.53	81.33	78.30	78.37
	Modder B and New Modder Compressor Stations			
	1957	1956		
Units Sent Out	1,176,729	7,741,103		
Electric Input kWh	1,385,222	8,192,928		
Air Units Sent Out/kWh per cent.	84.95	88.04		

COMPRESSED AIR:

These supplies ceased in September, 1957.

RAND AND ORANGE FREE STATE UNDERTAKING

Output and Sales. Total Sales of the Undertaking (electricity, air and steam) were 9,652 million units for the year, which showed an increase of only 5.5 per cent. over the corresponding figure for 1956.

The requirements of the South African Railways for the Reef traction system showed little change; but work is proceeding on extensions of the traction system from Welverdiend to Potchefstroom and Klerksdorp, on the sections Midway/Vereeniging and Germiston/Vereeniging, and on the extensions at Crown, Alliance, Jabavu and Natalspuit, all of which are expected to be brought into service in 1958.

The increase of about 5 per cent. in mining supplies is at a much lower rate than has been experienced in recent years. To some extent mining development has been slowed up in the Orange Free State and the West Witwatersrand areas by some of the mines encountering large quantities of underground water; and the over-all figure is affected by the reduction of 158 million units in the supplies to the old mines on the Central Rand and East Rand. There is little doubt also that the efforts of the mines to reduce costs have extended to the use of electricity no less than the use of other consumables; and it now appears that the improvement in the load factor of mining supplies, which was first necessitated by shortage of plant in the early 'fifties, will continue as a permanent feature.

In the industrial category the important increases were in supplies to African Metals, Limited, Iscor, Scaw Metals Limited, African Explosives and Chemical Industries, Limited, Klipfontein Organic Products, and a partial supply to the Rand Water Board.

Generating Plant Capacity. The capacity of plant which was taken into service, and the capacity of plant under construction or on order, in the four new power stations, Vierfontein, Wilge, Taaibos and Highveld, are given on page 10 of the Report.

The first two sets at Highveld Power Station are expected to be in service at the end of 1958.

The capacity of the pooled power stations of the Rand and Orange Free State Undertaking and the Eastern Transvaal Undertaking will be further augmented by the development of Komati Power Station referred to earlier in this Report.

On 15th June, 1957, the old Simmerpan Power Station at Germiston was closed down after 48 years as a productive unit in the pooled power stations on the Witwatersrand. The personnel released from this station were transferred to other power stations.

In assessing the capacity of plant available in the future, the obsolete plant in Rosherville and Brakpan Power Stations is being written off.

Operation of the Pooled Power Stations. The maximum load carried by the pooled power stations during 1957 was 1,654,674 kW recorded in June. This was an increase of 138,844 kW over the maximum load sent out during the previous winter.

The maximum demands recorded by the Undertaking in 1957 were:—

Rand and Orange Free State Undertaking ...	1,573,014 kW (June)
Eastern Transvaal Undertaking	82,798 kW (August)

The output from Taaibos Power Station was maintained at a high level throughout the year, and the increase in output reflects the progress in completion of this station.

The outputs from Vierfontein and Wilge Power Stations were lower in 1957 than in 1956. At Vierfontein the reduction was due to limitations in the supply of coal from the Vierfontein Colliery. The shortage of Native labour on the Colliery in the last quarter of 1956 was overcome in the early months of 1957; but the labour position and mining conditions deteriorated sharply in September. In order to maintain coal stocks at the minimum required for safe working, it was necessary to reduce load on the power station during off peak hours and at week-ends.

At Wilge Power Station the low load factor in 1957 reflects abnormal plant outages during the year. Modifications were made to several items of plant, and on this account the periods of outage for general overhaul were longer than normal. Non-scheduled outages were necessitated by trouble with the induced draught fans and ducting and with the automatic control gear on the boilers.

The output from the old stations, Brakpan, Rosherville, Vereeniging and Witbank, declined further, on account of the reduced running hours at these stations.

Distribution System. The second 275 kV transmission line from Highveld Power Station to Everest Distribution Station (O.F.S. Goldfields) was completed in 1957 and was taken into service in January, 1958. These two lines are operating at present at 132 kV to transmit power from Taaibos Power Station to Alma Distribution Station.

The extensions to Alma Distribution Station were completed during 1957; and Everest Distribution Station is under construction.

In the Klerksdorp area good progress was made with the two 132 kV transmission lines Vierfontein/Carrdell, and in the construction of Carrdell Distribution Station. These extensions are expected to be in service about September next.

In the West Witwatersrand area, extensions to Libanon Distribution Station are nearing completion, extensions to Doornfontein Distribution Station are in progress and extensions to West Wits Distribution Station will be started later in the year. The 132 kV transmission line Taaibos/Westgate and the new Westgate Distribution Station are nearing completion. A second 132 kV line Taaibos/Doornfontein is under construction.

Supply to the Rustenburg area was re-inforced by completion of the 132 kV line West Wits/Doornfontein and the construction of the 132 kV line Doornfontein/Trident, which is connected temporarily into the existing 88 kV network.

Particulars of the new transmission and distribution lines of 88 kV and below which were constructed during 1957 and the lines under construction or projected at the year-end are given in the lists on pages 20 and 21.

Financial. The Revenue Account for the year showed a deficit of £55,323 on the total revenue of £17,661,346; and thus the accumulated deficit for the Undertaking was £905,206 at the end of 1957.

In order to cover the estimated costs for 1958 and to effect a reduction in the accumulated deficit, tariffs for the financial year 1958 were adjusted by reduction of the discount rate from 13 per cent. in 1957 to 7 per cent. for the year 1958.

SABIE UNDERTAKING

CONSUMERS		SALES		Revenue from Sales	Average Price per Unit Sold	
Class	Number	Units	Decrease		1957	1956
			%	£	d	d
Mining	1	5,855,793	1.842	10,824	0.4436	0.4170
		1957		1956	Accumulated to 31.12.57	
Total Revenue		£10,832		£10,365	£155	
Working Costs		£11,003		£10,320		
Surplus				£36		
Deficit		£171				
Capital Expenditure ... ..		—		—			£96,170
SABIE POWER STATION—						
Units Sent Out		5,981,921		6,094,000		
Maximum half-hour Demand kW S.O.)		1,200		1,180		
Station Peak kW		1,230		1,250		
Load Factor		56.9		58.8		
RAINFALL at Power Station:						
Inches		50.7		58.9		
Millimetres		1,288		1,496		

During 1957 the whole output of the Sabie Hydro Electric Power Station was taken by one mining consumer, at cost.

Notice was given in terms of the contract for the supply to terminate at 30th June, 1958.

The Sabie Hydro Electric Power Station is still in good condition and the proposal to transfer the Power Station to Escom's Eastern Transvaal Undertaking is reported on page 8.

MUNICIPAL ELECTRICITY SUPPLY SCHEMES—1957

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

TRANSVAAL:

New Schemes

Greylingstad
Trichardt

Extensions

Carletonville
Christiana
Kempton Park
Nigel (2)
Pietersburg
Potchefstroom (2)
Potgietersrus (2)
Pretoria
Rodeon
Rustenburg (2)
Schweizer Reneke
Ventersdorp
Warmbad (2)

Tenders

Heidelberg
Ventersdorp

ORANGE FREE STATE:

New Schemes

Wesselbron

Extensions

Clocolan
Marquard
Reddersburg
Thaba 'Nchu

Tenders

Bloemfontein (4)
Bothaville
Kroonstad
Steynsrus
Theunissen
Wesselsbron

NATAL:

New Schemes

CAPE:

New Schemes:

Brandvlei
Gansbaai
Jeffrey's Bay
Pofadder

Extensions

Harding
Extensions
Beaufort West
Ceres
De Aar
Keimoes
Kuruman
Ladismith
Phillipstown
Port Elizabeth
Umtata
Upington
Van Rhynsdorp
Victoria West

Tenders

Tenders

Barkly East
Berlin
Burgersdorp
Clanwilliam
Colesberg
Elliot
Engcobo
Keimoes
Lady Grey
Matatiele
Riversdale
Van Rhynsdorp
Victoria West

SOUTH WEST AFRICA:

New Schemes

Extensions

Swakopmund
Walvis Bay
Windhoek

Tenders

Otjiwarongo
Windhoek

Up to the 31st December, 1957, a total of 1,650 reports on Municipal Supply Schemes had been submitted by the Commission. Of these 260 were in respect of new schemes, 787 were in respect of extension schemes and 603 were reports on tenders.

ANNEXURES

The Commission submits for the year 1957 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 and Sundry Loans and Amounts outstanding for Rights Acquired
- Account No. 1—Redemption Fund Account
Account No. 2—Reserve Fund Account
Revenue Accounts in respect of:
Account No. 3—Cape Western Undertaking
Statement of Pooled Costs, Cape Town
Account No. 4—Cape Northern Undertaking
Account No. 5—Border Undertaking
Account No. 6—Natal Southern Undertaking
Account No. 7—Natal Central Undertaking
Account No. 8—Eastern Transvaal Undertaking
Account No. 9—Rand and Orange Free State Undertaking
Account No. 10—Sabie Undertaking

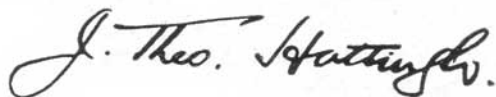
ANNEXURE B—STATISTICAL AND OTHER STATEMENTS

- Statement No. 1—Summary of principal plant and equipment installed at the Commission's several undertakings as at 31st December, 1957.
Statement No. 2—Summary of principal plant and equipment in course of installation or on order as at 31st December, 1957.
Statement No. 3—Units sold to all consumers during the past thirty-three years.
Statement No. 4—Units sold and number of consumers, 1957.
Statement No. 5—Power Station Statistics, 1957
Statement No. 6—Power Purchased, 1957.
Statement No. 7—Water consumed by power stations, 1957.
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 1957.
Statement No. 9—Coal used at the Commission's steam-raising power stations.

ANNEXURE C—UNION STATISTICS

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

Yours faithfully,



J. THEO HATTINGH,
Chairman.

ANNEXURE A

THE REPORT OF THE AUDITORS

Johannesburg,

28th May, 1958.

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

GENTLEMEN,

We have completed the audit of the books and accounts of the Commission for the year ended 31st December, 1957.

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 to provide for the redemption of the loans issued by the Commission.

In the records of the Commission the Redemption Fund is divided into sections corresponding to the loans. 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, 1957, we have taken into account the market value of the investments at that date.

In the aggregate the value of the Fund at 31st December, 1957, was in excess of the sum required for the redemption of the respective loans in terms of the Schedule to the Electricity Act (as amended). In the case of long term loans, the redemption period 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 is between 22 and 25 years.

The Minister has fixed the dates from which provision for redemption of Loans Nos. 32 and 33 commenced at 1st September, 1957, and 1st April, 1958, respectively.

We understand that application will be made, within the prescribed period, to the Minister to fix the dates from which provision for redemption of subsequent loans must be made. Provision has been made, however, for the redemption of moneys expended out of such loans on works which had come into commercial operation before 31st December, 1957.

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 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.

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 1956 and 1957.

	Surplus/Deficit		Amounts set aside to Reserve Fund	
	1956	1957	1956	1957
Cape Western	-£144,061	-£110,543	£186,100	£150,000
Cape Northern	- 20,916	- 6,237	7,500	7,500
Border	+ 21,733	- 890	28,700	40,400
Natal Southern	+ 115,168	- 11,713	100,000	160,000
Natal Central	+ 51,642	- 11,929	75,000	120,000
Eastern Transvaal	- 5,157	+ 8,033	65,000	65,000
Rand & O.F.S.	- 662,345	- 55,323	1,054,900	850,000
Sabie	+ 36	- 171	—	—
	<u>-£643,900</u>	<u>-£188,773</u>	<u>£1,517,200</u>	<u>£1,392,900</u>
Brought forward from previous year		-£783,490		
Accumulated Deficit at end of year, as detailed in Balance Sheet		<u>-£972,263</u>		

The year's operations have resulted in an overall deficit of £188,773, as compared with a deficit of £643,900 in the previous year. The lower deficit for the year is partly due to a reduction, from £1,517,200 in 1956 to £1,392,900 in 1957, in the amounts set aside to Reserve Fund.

As in the previous year the deficit has been principally in the operations at Cape Western Undertaking and Rand and Orange Free State Undertaking, at both of which the results continue to be affected by the coming into operation of new generating plant which is not yet fully employed, with consequentially high capital charges in relation to the revenue obtained.

We are informed that increases in charges for electricity at the Rand and O.F.S. Undertaking became effective in January, 1958, and that it is proposed to increase charges at Cape Western Undertaking with effect from 1st August, 1958. It is anticipated by the Commission that, although the Cape Western Undertaking may incur a further deficit for the current year, these increases will eliminate the accumulated deficits over the next few years.

The Border Undertaking has incurred a small deficit but it is expected that the accumulated deficit of £132,452 at this undertaking will be reduced by a surplus during the current year.

The Natal Southern and Natal Central Undertakings both have accumulated surpluses brought forward from prior years.

GENERAL

As the result of our audit of the books and accounts of the Commission for the year 1957 and, subject to the foregoing remarks, in terms of Clause 13(4) of the Electricity Act, 1922, 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 result of trading.
- (c) Due provision has been made for the redemption and repayment of moneys borrowed.
- (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. The value of the other assets of the Commission is correctly stated.
- (e) Sums fixed by the Commission have been set aside to the Reserve Fund under Section 9 as prescribed.
- (f) All our requirements as Auditors have been complied with and carried out.

Yours faithfully,

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

ACCOUNTS

STATISTICAL AND OTHER STATEMENTS

UNION STATISTICS

Electricity Supply Commission.

Incorporated under the

BALANCE SHEET at

Electricity Act, 1922.

31st DECEMBER, 1957.

Loan Capital	£190,411,754	Expenditure on Capital Account (Excluding Cost of Assets Sold)	£188,632,589
(As per Schedule No. 3)		(As per Schedule No. 1)	
Creditors and Credit Balances	9,032,358	Land and Rights	£1,838,478
Current Liabilities and Provisions	£6,638,318	Buildings and Civil Works	39,671,202
Interest Accrued on Loan Capital	1,694,512	Machinery and Plant	147,122,909
Deferred Liabilities for Assets and Rights Acquired	39,528		
Amount Received on account of the sale of Escom House	660,000	Movable Plant and Equipment (Less depreciation)	1,207,811
		Workshop Equipment, Instruments, Tools and Loose Plant	587,870
Temporary Advances	1,015,238	Transportation Equipment	432,950
Amount due to Bankers less Cash on Current Accounts	500,238	Furniture and Office Equipment	186,991
and on hand	515,000		
Advances at Call		Stores and Materials	7,210,311
Redemption Fund (As per Account No. 1)	37,939,30	Debtors and Debit Balances	3,594,621
Sinking Fund	7,107	Current Debtors less Reserves	2,613,842
Reserve Fund	6,188,127	Entire Share Capital of the Rand Mines Power Supply Company Limited	600
(As per Account No. 2)		Expenditure on Investigations in terms of Section 3(b) of the Act and Payments in Advance	58,323
Loan Capital and Deferred Liabilities Repaid less Assets Sold	1,049,228	Housing Loans to Employees Secured by First Mortgages, less Reserve	921,856
Loan Capital repaid (As per Schedule No. 3)	6,364,560		
Deferred Liabilities repaid	328,998	Investment of Redemption Fund (As per Schedule No. 2)	37,646,060
		(Market Value £34,668,187)	
	6,693,558	Investment of Sinking Fund	7,222
<i>Less</i> —Cost of Assets sold proceeds of which have been paid into the Redemption Fund in terms of the Act	5,644,330	Amount invested in Stocks of Electricity Supply Commission, the Government of the Union of South Africa and Municipalities, including Interest Accrued. (Market Value £6,620)	
NOTE —		Investment of Reserve Fund	6,372,244
In addition to the liabilities shown above the Commission is committed to the extent of approximately £51,400,000 for expenditure on Capital Account and £409,000 chargeable against Reserve Fund.		Amount invested in Stocks and Securities of Electricity Supply Commission, the Government of the Union of South Africa and Municipalities, including Interest Accrued. (Market Value £6,124,880)	
In addition to the annual contributions the Commission is committed to pay £65,102 annually to the Electricity Supply Commission Pension and Provident Fund for the period ending 31st December, 1969, and £11,027 during 1970.			
The Commission is committed to purchase at par from a stockholder £250,000 Electricity Supply Commission 5 per cent. Local Registered Stock 1967/70 in 1958 and £2,000,000 5½ per cent. Local Registered Stock 1977/83 during the period 1958 to 1962.		Balance on Revenue Accounts (As per Accounts Nos. 3 to 10)	972,263
The cost of Escom House, Johannesburg, sold under deed of sale dated the 16th August, 1954, for £800,000 is included in the expenditure on Capital Account, as this property will be transferred to the purchaser only when occupation is given in terms of the deed of sale.		Cape Western Undertaking	166,800
		Cape Northern Undertaking	26,975
		Border Undertaking	132,452
		Natal Southern Undertaking	Cr. 146,788
		Natal Central Undertaking	Cr. 85,225
		Eastern Transvaal Undertaking	Cr. 27,002
		Rand and Orange Free State Undertaking	905,206
		Sabie Undertaking	Cr. 155
	<u>£245,643,121</u>		<u>£245,643,121</u>

Referred to in our Report of 28th May, 1958.

Johannesburg,
15th April, 1958.

J. THEO. HATTINGH, Chairman.
J. VAN NIEKERK, Chief Accountant.

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

Electricity Supply Commission.

SCHEDULE No. 1.

Schedule of Expenditure on Capital Account at 31st December, 1957.

Expenditure in connection with Electricity Undertakings.	Total at 31st December, 1956	Year ended 31st December, 1957	Total at 31st December, 1957
RAND AND ORANGE FREE STATE UNDERTAKING:			
Rand.			
Land and Rights	£398,693	£19,371	£418,064
Buildings and Civil Works	2,941,656	313,653	3,255,309
Machinery and Plant	16,729,325	544,779	17,274,104
	£20,069,674	£877,803	£20,947,477
Klip Power Station.			
Land and Rights	£138,860	—	£138,860
Buildings and Civil Works	1,683,736	£768	1,684,504
Machinery and Plant	4,914,628	300,153	5,214,781
	£6,737,224	£300,921	£7,038,145
Vaal Power Station.			
Land and Rights	£5,348	—	£5,348
Buildings and Civil Works	2,382,994	£12,659	2,395,653
Machinery and Plant	8,566,956	48,319	8,615,275
	£10,955,298	£60,978	£11,016,276
Vierfontein Power Station.			
Land and Rights	£34,207	Cr. £3,222	£30,985
Buildings and Civil Works	4,796,524	36,257	4,832,781
Machinery and Plant	14,895,316	1,309,605	16,204,921
	£19,726,047	£1,342,640	£21,068,687
Taaibos Power Station.			
Land and Rights	£24,325	£87	£24,412
Buildings and Civil Works	5,783,344	229,723	6,013,067
Machinery and Plant	15,467,468	1,550,816	17,018,284
	£21,275,137	£1,780,626	£23,055,763
Wilge Power Station.			
Land and Rights	£4,055	—	£4,055
Buildings and Civil Works	2,867,646	£130,100	2,997,746
Machinery and Plant	7,389,199	1,149,685	8,538,884
	£10,260,900	£1,279,785	£11,540,685
Highveld Power Station.			
Land and Rights	£11,814	£427	£12,241
Buildings and Civil Works	1,535,145	1,243,579	2,778,724
Machinery and Plant	25,449	2,531,289	2,556,738
	£1,572,408	£3,775,295	£5,347,703
Rand Extension.			
Land and Rights	£77,129	£21,148	£98,277
Buildings and Civil Works	412,472	126,848	539,320
Machinery and Plant	9,331,569	1,401,525	10,733,094
	£9,821,170	£1,549,521	£11,370,691
Greater Rand Extension and Orange Free State.			
Land and Rights	£93,699	£55,319	£149,018
Buildings and Civil Works	641,492	29,867	671,359
Machinery and Plant	9,553,098	825,739	10,378,837
	£10,288,289	£910,925	£11,199,214
Total Rand and Orange Free State Undertaking:			
Land and Rights	£788,130	£93,130	£881,260
Buildings and Civil Works	23,045,009	2,123,454	25,168,463
Machinery and Plant	86,873,008	9,661,910	96,534,918
	£110,706,147	£11,878,494	£122,584,641

Expenditure in connection with Electricity Undertakings.	Total at 31st December, 1956	Year ended 31st December, 1957	Total at 31st December, 1957
CAPE WESTERN UNDERTAKING:			
Land and Rights	£167,341	£32,053	£199,394
Buildings and Civil Works	5,082,788	116,923	5,199,711
Machinery and Plant	17,218,019	1,074,292	18,292,311
	£22,468,148	£1,223,268	£23,691,416
CAPE NORTHERN UNDERTAKING:			
Land and Rights	£2,294	£4,784	£7,078
Buildings and Civil Works	166,145	168,540	334,685
Machinery and Plant	1,764,019	398,636	2,162,655
	£1,932,458	£571,960	£2,504,418
BORDER UNDERTAKING:			
Land and Rights	£7,908	£1,430	£9,338
Buildings and Civil Works	911,541	4,211	915,752
Machinery and Plant	3,143,346	358,200	3,501,546
	£4,062,795	£363,841	£4,426,636
NATAL SOUTHERN UNDERTAKING:			
Land and Rights	£149,866	£3,333	£153,199
Buildings and Civil Works	3,866,931	158,784	4,025,715
Machinery and Plant	12,260,590	1,568,607	13,829,197
	£16,277,387	£1,730,724	£18,008,111
NATAL CENTRAL UNDERTAKING:			
Land and Rights	£116,097	£37,212	£153,309
Buildings and Civil Works	1,690,383	70,999	1,761,382
Machinery and Plant	7,815,360	252,903	8,068,263
	£9,621,840	£361,114	£9,982,954
EASTERN TRANSVAAL UNDERTAKING:			
Land and Rights	£34,499	£80,468	£114,967
Buildings and Civil Works	948,233	134,131	1,082,364
Machinery and Plant	4,112,967	585,883	4,698,850
	£5,095,699	£800,482	£5,896,181
SABIE UNDERTAKING:			
Land and Rights	£510	—	£510
Buildings and Civil Works	60,491	—	60,491
Machinery and Plant	35,169	—	35,169
	£96,170	—	£96,170
HEAD OFFICE:			
Land	£319,423	—	£319,423
Buildings and Equipment	453,945	£668,694	1,122,639
	£773,368	£668,694	£1,442,062
SUMMARY:			
Land and Rights	£1,586,068	£252,410	£1,838,478
Buildings and Civil Works	36,225,466	3,445,736	39,671,202
Machinery and Plant	133,222,478	13,900,431	147,122,909
	£171,034,012	£17,598,577	£188,632,589

Schedule of Investments of the

Redemption Fund at 31st December, 1957.

SCHEDULE No. 2.

INVESTMENTS.							Nominal Value	Book Value	
LOCAL REGISTERED STOCKS.									
Electricity Supply Commission—									
4½	per cent.	1953/63	...	...	...	...	£116,775	£116,609
3½	per cent.	1954/64	...	...	...	...	929,860	926,463
3½	per cent.	1959/64	...	...	...	...	198,297	196,987
3¼	per cent.	1956/66	...	...	...	...	355,750	329,361
3½	per cent.	1957/67	...	...	...	...	362,777	342,463
3¾	per cent.	1959/64	...	...	...	...	656,160	623,356
3¾	per cent.	1960/65	...	...	...	...	447,150	431,926
3¼	per cent.	1961/66	...	...	...	...	520,835	494,919
3¼	per cent.	1965/70	...	...	...	...	556,900	538,353
3	per cent.	1967/73	...	...	...	...	644,998	615,939
3	per cent.	1968/74	...	...	...	...	1,154,400	1,126,073
3½	per cent.	1968/73	...	...	...	...	6,650,050	6,607,381
3½	per cent.	1969/74	...	...	...	...	301,600	289,800
3¾	per cent.	1969/74	...	...	...	...	58,700	55,569
3¾	per cent.	1965/67	...	...	...	...	50,200	48,679
3¾	per cent.	1964/67	...	...	...	...	619,000	604,961
3¾	per cent.	1964/68	...	...	...	...	102,500	100,187
4½	per cent.	1964/67	...	...	...	...	521,450	506,258
5	per cent.	1964/67	...	...	...	...	336,450	329,563
5	per cent.	1966/68	...	...	...	...	360,650	356,197
5	per cent.	1967/69	...	...	...	...	428,512	423,205
5	per cent.	1968/70	...	...	...	...	218,320	213,033
5	per cent.	1967/70	...	...	...	...	1,954,800	1,924,983
5	per cent.	1971/74	...	...	...	...	783,600	773,798
5	per cent.	1971/75	...	...	...	...	1,517,450	1,502,295
4½	per cent.	1975/80	...	...	...	...	4,766,350	4,750,263
4½	per cent.	1975/80	...	...	...	...	4,047,450	4,021,945
5½	per cent.	1976/81	...	...	...	...	2,002,500	1,977,487
5½	per cent.	1977/82	...	...	...	...	350,000	345,625
5½	per cent.	1976/82	...	...	...	...	1,817,000	1,794,288
5½	per cent.	1977/83	...	...	...	...	2,702,000	2,668,225
The Government of the Union of South Africa—									
3½	per cent.	1953/58	...	...	...	...	25,000	24,824
3½	per cent.	1955/65	...	...	...	...	2,300	2,300
3	per cent.	1956/61	...	...	...	...	40,000	39,289
3	per cent.	1957/66	...	...	...	...	535,000	522,722
3	per cent.	1958/68	...	...	...	...	15,000	14,849
3	per cent.	1959/69	...	...	...	...	100,000	94,750
3	per cent.	1960/70	...	...	...	...	343,700	331,746
Municipal—									
Johannesburg:									
3¼	per cent.	1956/66	...	...	...	...	1,600	1,600
3¾	per cent.	1959	...	...	...	...	6,200	6,200
3¾	per cent.	1960/65	...	...	...	...	20,000	19,056
3½	per cent.	1962/67	...	...	...	...	129,000	119,245
3½	per cent.	1965	...	...	...	...	1,200	1,200
3¼	per cent.	1965/70	...	...	...	...	294,000	284,895
3	per cent.	1967/77	...	...	...	...	30,000	30,000
Cape Town:									
3¾	per cent.	1960/65	...	...	...	...	2,000	2,000
3¼	per cent.	1962/67	...	...	...	...	225,000	222,568
3	per cent.	1976	...	...	...	...	100,000	95,588
Durban:									
3¼	per cent.	1962/72	...	...	...	...	115,500	90,090
3¼	per cent.	1965/75	...	...	...	...	45,000	41,484
3¼	per cent.	1966/76	...	...	...	...	50,000	50,000
3	per cent.	1967/77	...	...	...	...	334,000	320,320
							37,946,984	37,350,917	
Interest Accrued								295,143	
							<u>£37,946,984</u>	<u>£37,646,060</u>	
Market Value								<u>£34,668,187</u>	

ALLOCATION OF INVESTMENTS TO LOANS.

Loan No.	Local Registered Stocks.			Nominal Value	Book Value including Interest Accrued
3	£500,000	4½ per cent.	1953/63	£487,325	£486,140
5	£6,750,000	3¼ per cent.	1954/64	5,643,510	5,620,160
6	£2,500,000	3½ per cent.	1959/64	2,034,897	2,029,130
7	£2,000,000	3½ per cent.	1956/66	1,548,750	1,528,354
8	£2,000,000	3½ per cent.	1957/67	1,435,077	1,418,291
9	£2,000,000	3¾ per cent.	1959/64	1,342,360	1,321,623
10	£1,500,000	3¾ per cent.	1960/65	934,750	926,152
11	£2,000,000	3¼ per cent.	1961/66	1,160,935	1,137,522
12	£2,500,000	3¼ per cent.	1965/70	1,203,000	1,173,454
13	£3,000,000	3 per cent.	1967/73	1,097,498	1,062,500
14	£3,000,000	3 per cent.	1968/74	885,100	851,740
15	£15,000,000	3½ per cent.	1968/73	6,434,050	6,357,012
16	£3,000,000	3½ per cent.	1969/74	805,300	794,728
17	£3,000,000	3¾ per cent.	1969/74	732,000	726,884
18	£5,250,000	3¾ per cent.	1965/67	1,086,200	1,077,153
19	£3,000,000	3¾ per cent.	1964/67	600,000	593,080
21	£5,000,000	3¾ per cent.	1964/68	789,500	788,879
22	£4,500,000	4¼ per cent.	1964/67	614,800	613,913
23	£5,000,000	5 per cent.	1964/67	582,100	582,276
25	£3,500,000	5 per cent.	1966/68	387,900	388,349
26	£4,000,000	5 per cent.	1967/69	390,662	390,885
27	£4,250,000	5 per cent.	1968/70	377,320	376,127
29	£8,000,000	5 per cent.	1967/70	778,800	775,477
31	£8,000,000	5 per cent.	1971/74	855,650	859,093
32	£10,000,000	5 per cent.	1971/75	831,450	835,029
33	£8,000,000	4¾ per cent.	1975/80	3,511,350	3,525,293
34	£8,000,000	4¾ per cent.	1975/80	381,200	385,855
35	£8,250,000	5½ per cent.	1976/81	227,500	229,802
36	£10,000,000	5¼ per cent.	1977/82	335,000	338,847
37	£11,000,000	5½ per cent.	1976/82	303,000	302,477
38	£12,000,000	5¼ per cent.	1977/83	150,000	149,835

Electricity Supply Commission.

SCHEDULE No. 3.

LOAN CAPITAL AT 31st DECEMBER, 1957.

Loans Nos. 1 and 2, £8,000,000, repaid out of subsequent loans.

Loan No.	LOCAL REGISTERED STOCKS.				Outstanding	Repaid	
3:	£500,000	4 $\frac{3}{4}$	per cent.	1953/63	£500,000		
4:	£2,500,000	4 $\frac{1}{2}$	per cent.	1953		£2,500,000	
5:	£6,750,000	3 $\frac{3}{4}$	per cent.	1954/64	6,750,000		
6:	£2,500,000	3 $\frac{1}{2}$	per cent.	1959/64	2,500,000		
7:	£2,000,000	3 $\frac{1}{2}$	per cent.	1956/66	2,000,000		
8:	£2,000,000	3 $\frac{1}{2}$	per cent.	1957/67	2,000,000		
9:	£2,000,000	3 $\frac{3}{4}$	per cent.	1959/64	2,000,000		
10:	£1,500,000	3 $\frac{3}{4}$	per cent.	1960/65	1,500,000		
11:	£2,000,000	3 $\frac{1}{4}$	per cent.	1961/66	2,000,000		
12:	£2,500,000	3 $\frac{1}{2}$	per cent.	1965/70	2,500,000		
13:	£3,000,000	3	per cent.	1967/73	3,000,000		
14:	£3,000,000	3	per cent.	1968/74	3,000,000		
15:	£15,000,000	3 $\frac{1}{2}$	per cent.	1968/73	15,000,000		
16:	£3,000,000	3 $\frac{1}{2}$	per cent.	1969/74	3,000,000		
17:	£3,000,000	3 $\frac{3}{4}$	per cent.	1969/74	3,000,000		
18:	£5,250,000	3 $\frac{3}{4}$	per cent.	1965/67	5,250,000		
19:	£3,000,000	3 $\frac{3}{4}$	per cent.	1964/67	3,000,000		
21:	£5,000,000	3 $\frac{3}{4}$	per cent.	1964/68	5,000,000		
22:	£4,500,000	4 $\frac{1}{2}$	per cent.	1964/67	4,500,000		
23:	£5,000,000	5	per cent.	1964/67	5,000,000		
25:	£3,500,000	5	per cent.	1966/68	3,500,000		
26:	£4,000,000	5	per cent.	1967/69	4,000,000		
27:	£4,250,000	5	per cent.	1968/70	4,250,000		
29:	£8,000,000	5	per cent.	1967/70	8,000,000		
31:	£8,000,000	5	per cent.	1971/74	8,000,000		
32:	£10,000,000	5	per cent.	1971/75	10,000,000		
33:	£8,000,000	4 $\frac{5}{8}$	per cent.	1975/80	8,000,000		
34:	£8,000,000	4 $\frac{7}{8}$	per cent.	1975/80	8,000,000		
35:	£8,250,000	5 $\frac{1}{8}$	per cent.	1976/81	8,250,000		
36:	£10,000,000	5 $\frac{1}{2}$	per cent.	1977/82	10,000,000		
37:	£11,000,000	5 $\frac{1}{4}$	per cent.	1976/82	11,000,000		
38:	£12,000,000	5 $\frac{1}{4}$	per cent.	1977/83			
			(Payable in full not later than the 31st January, 1958, in terms of the Prospectus)				
			Fully Paid	£10,954,150			
			Partly Paid	364,100			
					11,318,250		
	£169,000,000	Total Local Registered Stocks			£165,818,250	£2,500,000	
		INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT.					
20:	£10,732,422	\$30,000,000	4 per cent.				
		Repayable by half-yearly instalments 1954/70			8,814,744	1,917,678	
28:	£8,717,349	\$30,000,000	4 $\frac{3}{4}$ per cent.				
		Repayable by half-yearly instalments 1955/63		£10,726,956			
		Less repaid out of local loans		2,009,607			
				£8,717,349	8,002,309	715,040	
		EXPORT-IMPORT BANK OF WASHINGTON.					
24:	£7,008,293	\$19,600,000	4 per cent.	Repayable by half-yearly instalments 1956/70	6,296,451	711,842	
		COMMONWEALTH DEVELOPMENT FINANCE COMPANY LIMITED.					
30:	£2,000,000	5 per cent.	Repayable by half-yearly instalments 1954/68		1,480,000	520,000	
	£197,458,064				£190,411,754	£6,364,560	

Electricity Supply Commission.

Redemption Fund Account for the Year ended 31st December, 1957.

Balance as per Balance Sheet	£37,939,309
Cape Western Undertaking	£4,281,498
Cape Northern Undertaking	209,658
Border Undertaking	299,214
Natal Southern Undertaking	2,949,444
Natal Central Undertaking	3,940,665
Eastern Transvaal Undertaking	1,198,880
Rand and Orange Free State Undertaking	19,703,510
Sabie Undertaking	25,637
Head Office	307,289
Assets Sold	5,023,514
	<u>£37,939,309</u>

Balance at 31st December, 1956, brought forward ...	£32,568,030
Cape Western Undertaking	£3,523,561
Cape Northern Undertaking	149,594
Border Undertaking	196,459
Natal Southern Undertaking	2,446,847
Natal Central Undertaking	3,567,875
Eastern Transvaal Undertaking	1,062,592
Rand and Orange Free State Undertaking	16,289,032
Sabie Undertaking	25,637
Head Office	282,919
Assets Sold	5,023,514
	<u>£32,568,030</u>

Loan No.	Local Registered Stocks.	
3	£500,000 4½ per cent. 1953/63	£499,682
5	£6,750,000 3½ per cent. 1954/64	5,978,308
6	£2,500,000 3½ per cent. 1959/64	2,025,304
7	£2,000,000 3½ per cent. 1956/66	1,532,989
8	£2,000,000 3½ per cent. 1957/67	1,444,080
9	£2,000,000 3½ per cent. 1959/64	1,361,362
10	£1,500,000 3½ per cent. 1960/65	951,053
11	£2,000,000 3½ per cent. 1961/66	1,156,981
12	£2,500,000 3½ per cent. 1965/70	1,170,980
13	£3,000,000 3 per cent. 1967/73	1,082,792
14	£3,000,000 3 per cent. 1968/74	861,224
15	£15,000,000 3½ per cent. 1968/73	6,129,967
16	£3,000,000 3½ per cent. 1969/74	809,884
17	£3,000,000 3½ per cent. 1969/74	732,403
18	£5,250,000 3½ per cent. 1965/67	1,083,422
19	£3,000,000 3½ per cent. 1964/67	588,802
21	£5,000,000 3½ per cent. 1964/68	810,499
22	£4,500,000 4½ per cent. 1964/67	610,236
23	£5,000,000 5 per cent. 1964/67	570,130
25	£3,500,000 5 per cent. 1966/68	387,733
26	£4,000,000 5 per cent. 1967/69	409,358
27	£4,250,000 5 per cent. 1968/70	389,127
29	£8,000,000 5 per cent. 1967/70	751,714
31	£8,000,000 5 per cent. 1971/74	844,825
32	£10,000,000 5 per cent. 1971/75	858,869
33	£8,000,000 4½ per cent. 1975/80	3,612,972
34	£8,000,000 4½ per cent. 1975/80	357,043
35	£8,250,000 5½ per cent. 1976/81	219,468
36	£10,000,000 5½ per cent. 1977/82	271,082
37	£11,000,000 5½ per cent. 1976/82	169,573
38	£12,000,000 5½ per cent. 1977/83	267,447
		<u>£37,939,309</u>
		<u>£37,939,309</u>

Loan No.	Local Registered Stocks.	
3	£500,000 4½ per cent. 1953/63	£499,682
5	£6,750,000 3½ per cent. 1954/64	5,978,308
6	£2,500,000 3½ per cent. 1959/64	2,025,304
7	£2,000,000 3½ per cent. 1956/66	1,532,989
8	£2,000,000 3½ per cent. 1957/67	1,444,080
9	£2,000,000 3½ per cent. 1959/64	1,361,362
10	£1,500,000 3½ per cent. 1960/65	951,053
11	£2,000,000 3½ per cent. 1961/66	1,156,981
12	£2,500,000 3½ per cent. 1965/70	1,170,980
13	£3,000,000 3 per cent. 1967/73	1,082,792
14	£3,000,000 3 per cent. 1968/74	861,224
15	£15,000,000 3½ per cent. 1968/73	6,129,967
16	£3,000,000 3½ per cent. 1969/74	809,884
17	£3,000,000 3½ per cent. 1969/74	732,403
18	£5,250,000 3½ per cent. 1965/67	1,083,422
19	£3,000,000 3½ per cent. 1964/67	588,802
21	£5,000,000 3½ per cent. 1964/68	810,499
22	£4,500,000 4½ per cent. 1964/67	610,236
23	£5,000,000 5 per cent. 1964/67	570,130
25	£3,500,000 5 per cent. 1966/68	387,733
26	£4,000,000 5 per cent. 1967/69	409,358
27	£4,250,000 5 per cent. 1968/70	389,127
29	£8,000,000 5 per cent. 1967/70	751,714
31	£8,000,000 5 per cent. 1971/74	844,825
32	£10,000,000 5 per cent. 1971/75	858,869
33	£8,000,000 4½ per cent. 1975/80	3,612,972
34	£8,000,000 4½ per cent. 1975/80	357,043
35	£8,250,000 5½ per cent. 1976/81	219,468
36	£10,000,000 5½ per cent. 1977/82	271,082
37	£11,000,000 5½ per cent. 1976/82	169,573
38	£12,000,000 5½ per cent. 1977/83	267,447
		<u>£37,939,309</u>
		<u>£37,939,309</u>

Amounts contributed during the year as per Revenue Accounts

Cape Western Undertaking	£581,723
Cape Northern Undertaking	52,212
Border Undertaking	91,836
Natal Southern Undertaking	383,353
Natal Central Undertaking	211,978
Eastern Transvaal Undertaking	88,531
Rand and Orange Free State Undertaking	2,565,396
Sabie Undertaking	Dr. 883
	<u>£3,974,146</u>

Other Contributions

Proceeds of Sales of Fixed Property	132,168
Interest earned on Investments	1,248,284
	<u>£37,939,309</u>

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 1922, subject to the remarks contained in our report dated 28th May, 1958

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

Electricity Supply Commission.

Reserve Fund Account for the Year ended 31st December, 1957.

Expenditure during the year on Replacements and Betterment	£459,956	Balance at 31st December, 1956, brought forward	£5,012,576
Cape Western Undertaking	£49,785	Cape Western Undertaking	£674,530
Cape Northern Undertaking Cr.	256	Cape Northern Undertaking	47,748
Border Undertaking	13,496	Border Undertaking	7,379
Natal Southern Undertaking	82,267	Natal Southern Undertaking	312,189
Natal Central Undertaking	23,165	Natal Central Undertaking	769,094
Eastern Transvaal Undertaking	25,005	Eastern Transvaal Undertaking	282,341
Rand and Orange Free State Undertaking	263,805	Rand and Orange Free State Undertaking	2,906,569
Sabie Undertaking	2,689	Sabie Undertaking	12,726
Balance as per Balance Sheet	6,188,127	Amounts set aside during the year as per Revenue Accounts	1,392,900
Cape Western Undertaking	807,356	Cape Western Undertaking	150,000
Cape Northern Undertaking	57,705	Cape Northern Undertaking	7,500
Border Undertaking	35,106	Border Undertaking	40,400
Natal Southern Undertaking	405,676	Natal Southern Undertaking	160,000
Natal Central Undertaking	901,459	Natal Central Undertaking	120,000
Eastern Transvaal Undertaking	335,436	Eastern Transvaal Undertaking	65,000
Rand and Orange Free State Undertaking	3,634,847	Rand and Orange Free State Undertaking	850,000
Sabie Undertaking	10,542		
		Profit on Redemption of Investment	125
		Interest earned on Investments	242,482
	<u>£6,648,083</u>		<u>£6,648,083</u>

Electricity Supply Commission.

ACCOUNT No. 3

CAPE WESTERN UNDERTAKING.

Revenue Account for the Year ended 31st December, 1957.

Generation.												
Proportion of Pooled Costs (as per attached statement) ...	£502,201											
Other Operation and Maintenance Costs—												
Operation—												
Fuel	756,304											
Water, Oil, Waste and Stores	20,635											
Salaries and Wages	98,510											
Other Expenses	2,367											
Maintenance—												
Stores	12,251											
Salaries and Wages	100,867											
Other Expenses	12,981											
	1,506,116											
Less—Electricity from Hex River Power Station charged to Pooled Costs	53,677											
							£1,452,439					
Distribution.												
Operation and Maintenance—												
Stores	31,670											
Salaries and Wages	207,261											
Other Expenses	25,242											
							264,173					
General Expenses.												
Local Administration and Technical Management	101,785											
General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	186,389											
Head Office Administration Expenses	33,127											
Head Office Engineering Expenses	17,937											
	339,238											
Less—Charged to Pooled Costs	14,490											
							324,748					
Capital Charges.												
Interest	990,992											
Redemption Fund	581,723											
Instalments and Provision for Repayment of Overseas Loan	104,606											
Instalments and Provision for Repayment of Deferred Liabilities for Assets Acquired	254											
Amount set aside to Reserve Fund	150,000											
	1,827,575											
Less—Charged to Pooled Costs	321,921											
							1,505,654					
							£3,547,014					
												£3,547,014
Balance at 31st December, 1956, brought forward							£56,257					
Balance brought down							110,548					
							£166,800					
												£166,800

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 28th May, 1958.

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

Johannesburg,
15th April, 1957.

Electricity Supply Commission and City of Cape Town.

Statement of Pooled Costs and Allocation for the Period 1st January, 1957 to 12th May, 1957

Generation.		Allocation in Terms of Agreement—	
Operation and Maintenance—			
Fuel	£508,510	Electricity Supply Commission	£502,201
Water, Oil, Waste and Stores	41,110	City of Cape Town	739,471
Salaries, Wages and Other Expenses	166,386		
	£716,006	Sundry Revenue	1,614
			£1,241,672
Electricity Purchased.			
Electricity purchased from Hex River Power Station	53,677		
General Expenses.			
General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	26,763		
Capital Charges.			
Interest	199,564		
Redemption Fund	164,162		
Provision for Repayment of Overseas Loans	25,640		
Reserve Fund	57,474		
	446,840		
	£1,243,286		£1,243,286

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 28th May, 1958.

Johannesburg,
15th April, 1958.

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

Electricity Supply Commission.

CAPE NORTHERN UNDERTAKING.

Revenue Account for the Year ended 31st December, 1957.

Generation.					
Operation—					
Fuel	£166,623				
Water, Oil, Waste and Stores	17,159				
Salaries and Wages	28,776				
Other Expenses	13,363				
Maintenance—					
Stores	3,183				
Salaries and Wages	17,834				
Other Expenses	2,075				
		£249,013			
Distribution.					
Operation and Maintenance—					
Stores	4,091				
Salaries and Wages	6,456				
Other Expenses	2,566				
			13,113		
General Expenses.					
Local Administration and Technical Management	12,987				
General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	10,499				
Head Office Administration Expenses	2,285				
Head Office Engineering Expenses	1,237				
			27,008		
Capital Charges.					
Interest	96,603				
Redemption Fund	52,212				
Instalments and Provision for Repayment of Overseas Loans	1,854				
Amount set aside to Reserve Fund	7,500				
			158,169		
		£447,303			
Balance at 31st December, 1956, brought forward	£20,738				
Balance brought down	6,237				
		£26,975			
Sales of Electricity.					
Bulk Supplies	£210,470				
Mining Supplies	142,541				
Industrial Supplies	69,775				
Domestic Supplies	17,890				
				£440,676	
Other Revenue					390
					441,066
Balance carried down					6,237
					£447,303
Balance as per Balance Sheet					£26,975
					£26,975

J. VAN NIEKERK, Chief Accountant.

Johannesburg,
15th April, 1958.

Referred to in our Report of 28th May, 1958.

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

Electricity Supply Commission.

BORDER UNDERTAKING.

Revenue Account for the Year ended 31st December, 1957

	Generation.			Sales of Electricity	
Operation—				Bulk Supplies	£617,078
Fuel		£231,663		Industrial Supplies	39,174
Water, Oil, Waste and Stores		4,841		Domestic and Lighting Supplies	87,491
Salaries and Wages		42,773			
Other Expenses		4,369		Other Revenue	£743,743
Maintenance—					2,035
Stores		7,709		Balance carried down	745,778
Salaries and Wages		25,773	£319,289		890
Other Expenses		2,161			
	Electricity Purchased.				
Electricity Purchased			5,391		
	Distribution.				
Operation and Maintenance—					
Stores		2,304			
Salaries and Wages		17,672			
Other Expenses		3,276	23,252		
	General Expenses.				
Local Administration and Technical Management		23,706			
General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)		22,771			
Head Office Administration Expenses		6,854			
Head Office Engineering Expenses		3,711	57,042		
	Capital Charges.				
Interest		193,545			
Redemption Fund		91,836			
Instalments and Provision for Repayment of Overseas Loans		9,721			
Instalments and Provision for Payment of Deferred Liabilities for Assets Acquired		6,192			
Amount set aside to Reserve Fund		40,400	341,694		
			£746,668		£746,668
Balance at 31st December, 1956, brought forward			£131,562	Balance as per Balance Sheet	£132,452
Balance brought down			890		
			£132,452		£132,452

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 28th May, 1958.

Johannesburg,
15th April, 1958.

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

Electricity Supply Commission.

ACCOUNT No. 6.

NATAL SOUTHERN UNDERTAKING.

Revenue Account for the Year ended 31st December, 1957.

Generation.		Sales of Electricity.	
Proportion of Pooled Costs (as per attached statement) ...	2,753,126	Traction Supplies	£210,950
Other Operation and Maintenance Costs—		Bulk Supplies	2,543,938
Operation—		Industrial Supplies	156,083
Fuel	1,453	Domestic and Lighting Supplies	218,764
Water, Oil, Waste and Stores	91	Other Revenue	9,495
Salaries and Wages	1,718	Less—Credited to Pooled Costs	7,125
Other Expenses	306		<u>2,370</u>
Maintenance—			£3,129,735
Stores	205		
Salaries and Wages	733		
Other Expenses	174		
	<u>£2,757,806</u>		
Electricity Purchased.			
Electricity Purchased	15,998	Balance carried down	3,132,105
			<u>11,713</u>
Distribution.			
Operation and Maintenance—			
Stores	17,355		
Salaries and Wages	58,905		
Other Expenses	19,959		
	<u>96,219</u>		
Less—Charged to Pooled Costs (Interconnector)	275		
	<u>95,944</u>		
General Expenses.			
Local Administration and Technical Management	58,005		
General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	71,753		
Head Office Administration Expenses	33,126		
Head Office Engineering Expenses	17,937		
	<u>180,821</u>		
Less—Charged to Pooled Costs	117,567		
	<u>63,254</u>		
Capital Charges.			
Interest	626,487		
Redemption Fund	383,353		
Instalments and Provision for Repayment of Overseas Loans	91,897		
Amount set aside to Reserve Fund	160,000		
	<u>1,261,737</u>		
Less—Charged to Pooled Costs	1,050,921		
	<u>210,816</u>		
	<u>£3,143,818</u>		
			<u>£3,143,818</u>
Balance brought down	£11,713	Balance at 31st December, 1956, brought forward	£158,501
Balance as per Balance Sheet	146,788		
	<u>£158,501</u>		
			<u>£158,501</u>

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 28th May, 1958.

Johannesburg,
15th April, 1958.

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

Electricity Supply Commission.

ACCOUNT No. 7.

NATAL CENTRAL UNDERTAKING.

Revenue Account for the Year ended 31st December, 1957.

Generation.			
Proportion of Pooled Costs (as per attached statement)	£1,687,326		
Other Operation and Maintenance Costs—			
Operation—			
Fuel	120		
Water, Oil, Waste and Stores	2		
Salaries and Wages	55		
Other Expenses	32		
Maintenance—			
Stores	16		
Salaries and Wages	65		
	—		
	£1,687,616		
Distribution.			
Operation and Maintenance—			
Stores	18,334		
Salaries and Wages	93,526		
Other Expenses	23,121		
	134,981		
Less—Charged to Pooled Costs (Interconnector)	2,108		
	132,873		
General Expenses.			
Local Administration and Technical Management	70,882		
General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	76,536		
Head Office Administration Expenses	33,126		
Head Office Engineering Expenses	17,937		
	198,481		
Less—Charged to Pooled Costs	93,837		
	104,644		
Capital Charges.			
Interest	397,412		
Redemption Fund	211,978		
Instalments and Provision for Repayment of Overseas Loans	31,947		
Amount set aside to Reserve Fund	120,000		
	761,337		
Less—Charged to Pooled Costs	454,893		
	306,444		
	£2,231,577		
Balance brought down	£11,929	Balance at 31st December, 1956, brought forward	£97,154
Balance as per Balance Sheet	85,225		
	£97,154		£97,154

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 28th May, 1958.

Johannesburg,
15th April, 1958.

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

Electricity Supply Commission.

NATAL SOUTHERN AND NATAL CENTRAL UNDERTAKINGS.

Statement of Pooled Costs and Allocation for the Year ended 31st December, 1957.

	Generation.		Allocation.
Operation—			
Fuel	£2,044,403		Natal Southern Undertaking £2,753,126
Water, Oil, Waste and Stores	92,031		Natal Central Undertaking 1,687,326
Salaries and Wages	209,270		<hr style="width: 100%;"/>
Other Expenses	47,481		<hr style="width: 100%;"/>
Maintenance—			£4,440,452
Stores	98,395		Sundry Revenue 19,412
Salaries and Wages	225,265		
Other Expenses	23,418	<hr style="width: 100%;"/>	
		<hr style="width: 100%;"/>	
		£2,740,263	
	Interconnector.		
Operation and Maintenance—			
Stores	167		
Salaries and Wages	1,854		
Other Expenses	362	<hr style="width: 100%;"/>	
		<hr style="width: 100%;"/>	
		2,383	
	General Expenses.		
Local Administration and Technical Management	52,665		
General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	87,426		
Head Office Administration and Engineering Expenses	71,313	<hr style="width: 100%;"/>	
		<hr style="width: 100%;"/>	
		211,404	
	Capital Charges.		
Interest	737,021		
Redemption Fund	436,469		
Instalments and Provision for Repayment of Overseas Loans	123,844		
Reserve Fund	208,480	<hr style="width: 100%;"/>	
		<hr style="width: 100%;"/>	
		1,505,814	
		<hr style="width: 100%;"/>	
		<hr style="width: 100%;"/>	
		<hr style="width: 100%;"/>	
		<hr style="width: 100%;"/>	
		<hr style="width: 100%;"/>	
		<hr style="width: 100%;"/>	
		£4,459,864	<hr style="width: 100%;"/>
			<hr style="width: 100%;"/>
			£4,459,864

Johannesburg,
15th April, 1958.

J. VAN NIEKERK. Chief Accountant.

Referred to in our Report of 28th May, 1958.

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

Electricity Supply Commission.

EASTERN TRANSVAAL UNDERTAKING.

Revenue Account for the Year ended 31st December, 1957.

Generation.			
Proportion of Pooled Costs (as per attached statement)	£704,075		
Electricity Purchased.			
Electricity Purchased	45,444		
Distribution.			
Operation and Maintenance—			
Stores	£6,263		
Salaries and Wages	23,005		
Other Expenses	4,620		
	33,888		
General Expenses.			
Local Administration and Technical Management	25,640		
General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	39,365		
Head Office Administration Expenses	31,984		
Head Office Engineering Expenses	17,318		
	114,307		
Less—Charged to Pooled Costs	52,663		
	61,644		
Capital Charges.			
Interest	156,318		
Redemption Fund	88,531		
Instalments and Provision for Repayment of Overseas Loans	16,820		
Amount set aside to Reserve Fund	65,000		
	326,669		
Less—Charged to Pooled Costs	201,588		
	125,081		
	970,132		
Balance carried down	8,033		
	£978,165		
Balance as per Balance Sheet	£27,002		
	£27,002		
Sales of Electricity.			
Traction Supplies	£45,048		
Bulk Supplies	89,648		
Mining Supplies	329,910		
Industrial Supplies	487,825		
Domestic and Lighting Supplies	22,595		
	£975,026		
Other Revenue	6,331		
Less—Credited to Pooled Costs	3,192		
	3,139		

Johannesburg,
15th April, 1958.

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 28th May, 1958.

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

Electricity Supply Commission.
RAND AND ORANGE FREE STATE UNDERTAKING
Revenue Account for the Year ended 31st December, 1957.

Generation.			
Proportion of Pooled Costs (as per attached statement)	£13,659,840		
Other Operation and Maintenance Costs—			
Operation—			
Fuel	132,111		
Water, Oil, Waste and Stores	18,679		
Salaries and Wages	78,698		
Other Expenses	728		
Maintenance—			
Stores	28,836		
Salaries and Wages	101,956		
Other Expenses	696		
	£14,021,544		
Distribution.			
Operation and Maintenance—			
Stores	199,575		
Salaries and Wages	616,537		
Other Expenses	30,573		
	846,685		
Less—Charged to Pooled Costs (Interconnector)	26,518		
	820,167		
General Expenses.			
Local Administration and Technical Management	238,437		
General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)			
	462,740		
Head Office Administration Expenses	87,023		
Head Office Engineering Expenses	47,119		
	835,319		
Less—Charged to Pooled Costs	562,328		
	272,991		
Capital Charges.			
Interest	4,479,264		
Redemption Fund	2,565,396		
Instalments and Provision for Repayment of Overseas Loans	974,973		
Instalment and Provision for Payment of Deferred Liability for Rights Acquired			
	5,413		
Amount set aside to Reserve Fund	850,000		
	8,875,046		
Less—Charged to Pooled Costs	6,273,079		
	2,601,967		
	£17,716,669		
Balance at 31st December, 1956, brought forward	£849,883		
Balance brought down	55,323		
	£905,206		

Sales of Electricity.			
Traction Supplies	£378,681		
Bulk Supplies	1,972,216		
Mining Supplies	11,379,704		
Industrial Supplies	3,004,769		
Domestic and Lighting Supplies	113,449		
	£16,848,819		
Sales of Air and Steam	796,438		
Other Revenue	92,596		
Less—Credited to Pooled Costs	76,507		
	16,089		
	17,661,346		
Balance carried down	55,323		
	£17,716,669		
Balance as per Balance Sheet	£905,206		
	£905,206		

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 28th May, 1958.

Johannesburg,
15th April, 1958.HALSEY, BUTTON & PERRY,
ALEX. AIKEN & CARTER,
Registered Accountants and Auditors.

Electricity Supply Commission.

SABIE UNDERTAKING.

Revenue Account for the Year ended 31st December, 1957.

Operation—		Generation.		
Water, Oil, Waste and Stores	£131
Salaries and Wages	6,127
Other Expenses	4
Maintenance—				
Stores	205
Salaries and Wages	326
Other Expenses	115
				£6,908
Operation and Maintenance—		Distribution.		
Stores	120
Salaries and Wages	628
Other Expenses	174
				922
Local Administration and Technical Management		General Expenses.		
General Expenses (including Maintenance of Quarters, Insurance, Pension Fund Contributions, etc.)	1,019
Head Office Administration Expenses	934
Head Office Engineering Expenses	506
				3,099
Interest		Capital Charges.		
Redemption Fund	957
				883
				74
				£11,003
Balance brought down	£171
Balance as per Balance Sheet	155
				£326
				£326

Mining Supplies		Sales of Electricity.		
Other Revenue	£10,824
				8
				10,832
Balance carried down	171
				£11,003
Balance at 31st December, 1956, brought forward	£326
				£326
				£326

Johannesburg,
15th April, 1958.

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 28th May, 1958.

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

ANNEXURE B

Electricity Supply Commission

POWER STATIONS: PRINCIPAL EQUIPMENT INSTALLED AS AT 31st DECEMBER, 1957.

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	4.5	1	10.0	2	1.5		
		Oil		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		
Cape Northern 14,800	Central, Kimberley	Steam	30.0	2	170.0	3	7.5		
		Steam				2	15.0		
		Steam				1	3.0		
Cape Western 12,600	Salt River No. 1 Salt River No. 2 Hex River	Steam	90.3	2	60.0	3	10.0		
		Steam	120.0	6	100.0	3	20.0		
		Steam	60.0	4	260.0	4	30.0		
		Steam			200.0	3	20.0		1
Eastern Transvaal 6,000	Witbank	Steam	128.0	20	70.0	6	20.0		
		Steam			80.0	2			1
Natal Central 20,500	Colenso Nos. 1 and 2 Volksrust	Steam	135.0	8	60.0	5	12.0		
		Steam			80.0	4	25.0		
		Oil	0.5	5	180.0	3	0.25		
				—	—	2	0.25		

Natal Southern	Congella Nos. 1 and 2	Steam	206-0	6	60-0 100-0 200-0	3	12-0 20-0 30-0 40-0	
4,000	Ixopo	Hydro Oil	0-3	—	—	{ 1	0-125 0-046 0-075	
	Port Shepstone	Oil	3-4	—	—	2	0-7	
	Umgeni	Steam	90-0	6	180-0	2	1-0	
						3	30-0	
	Brakpan	Steam	48-0	8	28-0	1	3-0	
				10	45-0	2	12-5	
	Klip	Steam	424-0	1	70-0	1	20-0	
				24	180-0	12	33-0	7-0
	Rosherville	Steam	48-0	32	38-0	5	9-6	
				8	48-0	7	60-0	
	Taaibos	Steam	420-0	8	580-0	9	33-0	7-0
				18	160-0	3	20-0	
	Vaal	Steam	318-0	20	45-0	3	32-5	
				2	60-0	10	30-0	
	Vereeniging	Steam	157-5	6	180-0	2	30-0	
				4	125-0	2	60-0	
	Vierfontein	Steam	300-0	17	210-0	3	0-45	
				{	400-0	3		
	Wilge	Steam	180-0	4	—	3		
				{				
	Sabie Gorge	Hydro	1-35	—				
Sabie 200								

SUMMARY:

Total Number of Boilers	...	...	...	...	...	...	271
Total Boiler Horse Rating	...	...	...	...	...	...	33,549,000 lb./hr.
Total Number of Main Generators	...	...	...	...	...	...	126 Capacity 2,769-571
Total Number of House Sets	...	...	...	...	...	...	9 Capacity 57-30
Total Plant Capacity (Electricity)	...	...	...	...	...	...	2,826-871

Major Items of Plant Commissioned 1957.

Taaibos	...	...	...	...	1-60 MW Generator
Umgeni	...	...	...	...	1-30 MW Generator

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 Compressor Station	1	Turbo	3,000	} 22,200	Electric Motor
	4	Turbo	4,800		
Robinson Compressor Station	3	Turbo	2,000	} 14,000	" "
	1	Turbo	2,150		
	1	Turbo	2,850		
	1	Turbo	3,000		
<i>Steam Driven</i>					
Brakpan Power Station ...	3	Recip.	800	} 5,050	Recip. Steam Engines
	1	Turbo	2,650		
Rosherville Power Station ...	1	Turbo	2,500	} 48,800	" "
	1	Turbo	4,400		
	3	Turbo	6,000		
	2	Turbo	7,100		
	1	Turbo	9,700		
Total - Compressed Air Sets	23		90,050 = 67·177 MW		

CAPACITY OF TRANSFORMERS IN SERVICE AT 31st DECEMBER, 1957.

Undertaking	Number	MVA
Border	193	76·5
Cape Northern	183	78·9
Cape Western	2,460	821·2
Eastern Transvaal	530	507·6
Natal Central	1,424	510·0
Natal Southern	885	513·5
Rand	3,212	9,252·3
Sabie	13	3·6
At Compressor Stations, Rand	42	340·6
TOTALS	8,942	12,104·2

TRANSMISSION LINES AND CABLES: CIRCUIT MILES (EXCLUDING SERVICE CONNECTIONS ON RETICULATION SYSTEMS) AT 31st DECEMBER, 1957.

(a) TRANSMISSION LINES

Undertaking	275 kV	132 kV	88 kV	66 kV	40 kV	33 kV	22 kV	21 kV	20 kV	11 kV	6-6 kV	3-3 kV	2-0 kV 2-1 kV 2-2 kV	525 V	380/ 220 V	Totals
Border ...	—	—	—	40-50	—	67-70	—	—	—	140-99	—	3-50	—	—	66-24	318-93
Cape Northern ...	—	—	—	128-50	—	—	—	—	—	152-50	—	4-50	—	—	12-00	297-50
Cape Western ...	—	—	—	487-57	—	211-80	—	—	—	878-31	258-38	—	—	—	519-33	2,355-39
Eastern Transvaal ...	—	31-40	167-85	—	—	—	329-09	—	—	90-74	16-22	—	32-74	—	46-30	714-34
Natal Central ...	—	74-69	570-09	—	—	253-71	35-90	—	—	676-75	215-80	0-15	0-95	—	157-10	1,985-14
Natal Southern ...	—	94-92	161-04	—	—	13-05	—	—	—	350-77	55-27	—	—	—	211-71	886-76
Rand and O.F.S. ...	—	947-71	1,890-62	—	1,021-50	—	7-20	—	117-86	155-58	92-85	—	5-61	—	111-33	4,343-06
Sabie ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1-00	8-20
Totals ...	—	1,148-72	2,789-60	656-57	1,021-50	546-26	43-10	329-09	117-86	2,445-64	638-52	8-15	39-30	—	1,125-01	10,909-32

(b) UNDERGROUND CABLES

Undertaking	275 kV	132 kV	88 kV	66 kV	40 kV	33 kV	22 kV	21 kV	20 kV	11 kV	6-6 kV	3-3 kV	2-0 kV 2-1 kV 2-2 kV	525 V	380/ 220 V	Totals
Border ...	—	—	—	—	—	—	—	—	—	18-70	—	3-34	—	—	—	22-04
Cape Western ...	—	—	—	23-32	—	69-89	—	—	—	83-76	3-23	1-39	—	—	48-38	229-97
Eastern Transvaal ...	—	—	—	—	—	—	—	22-39	—	2-89	1-17	—	—	—	0-15	26-60
Natal Central ...	—	—	—	—	—	—	—	—	—	2-61	3-52	1-89	—	—	3-01	11-03
Natal Southern ...	—	—	—	—	—	2-15	—	—	—	10-20	0-07	0-03	—	—	7-17	19-62
Rand and O.F.S. ...	—	—	—	—	1-76	—	—	—	80-70	29-38	105-48	1-73	24-87	1-55	21-36	266-83
Totals ...	—	—	—	23-32	1-76	72-04	—	22-39	80-70	147-54	113-47	8-38	24-87	1-55	80-07	576-09

TOTAL OVERHEAD LINES AND UNDERGROUND CABLES: 11.485 CIRCUIT MILES.

STATEMENT No. 2

POWER STATIONS: PRINCIPAL EQUIPMENT ON ORDER AS AT 31st DECEMBER, 1957.

Undertaking	Electric Power Stations	BOILERS		GENERATORS		Trans- mission Lines and Cables Circuit Miles	TRANSFORMERS	
		No.	Continuous Maximum Rating Each, thousand lb/hr	No.	Normal Rating Each MW		No.	Total Capacity MVA
Border	West Bank No. 2	1	170	—	—	228	6	8
Cape Northern	Central, Kimberley	—	—	—	—	271	165	54
Cape Western	Salt River No. 2	—	—	—	—	32	99	25
Eastern Transvaal	Witbank	—	—	—	—	—	82	47
Natal Central	Umgeni	2	200	1	30·0	81	37	30
Natal Southern	Highveld	7	180	11	30·0	62	2	90
	Klip	6	550	2	60·0			
	Komati	1	180	—	—			
	Taaibos	2	900	2	100·0			
	Vierfontein	—	—	1	60·0			
	Wilge	2	210	2	30·0			
Rand		1	580	1	60·0	542	292	2,655

SUMMARY:

Number of Boilers	...	22	...	C.M.R. 8,110,000 lb./hr.
Number of Generators	...	16	...	Total Rating 920·0 MW
Transmission Lines	...	...	...	1,216 Circuit Miles
Transformers	...	683	...	Rating 2,909 MVA

STATEMENT No. 3
UNITS SOLD BY UNDERTAKINGS TO ALL CONSUMERS DURING THE PAST THIRTY-THREE 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	99.1		3.2		797.0
1930			52.1	603.4		101.1	103.9		4.6		889.6
1931			100.7	610.3		100.3	109.8		6.6		867.1
1932			73.6	639.4		109.2	118.5		6.1		890.7
1933			80.0	648.3		124.9	131.1		6.3		974.1
1934			85.8	727.9		154.3	149.8		7.3		985.2
1935			94.0	696.4	557.0	171.5	170.4		7.2		1,119.2
1936			98.8	684.5	1,349.9	210.6	189.4		7.2		1,688.0
1937			106.5	768.1	1,666.9	234.9	209.5		7.2		2,535.6
1938			119.8	767.7	2,193.2	266.2	233.7		6.4		2,985.4
1939			136.2	853.3	2,566.6	281.1	242.7		6.7		3,573.7
1940			151.8	862.6	2,675.9	302.4	270.3		6.6		4,254.0
1941			145.7	873.4	2,707.8	307.7	273.8		6.3		4,320.8
1942			158.7	849.1	2,669.1	312.4	293.4		5.9		4,275.6
1943			165.9	889.2	2,703.6	336.0	321.6		6.7		4,415.8
1944			184.6	830.7	2,643.0	333.2	348.8		6.6	377.9	4,706.1
1945			198.6	887.7	2,614.3	347.0	369.7		7.4	582.5	5,002.4
1946	56.2		222.4	853.2	2,547.2	346.0	402.6		7.6	668.6	5,114.5
1947	69.2		249.5	633.2	1,207.4	367.9	448.7	2.185.7	7.3	435.1	5,576.9
1948	68.7		271.9	358.3		371.8	513.0	4,653.9	7.0		6,222.2
1949	79.9	53.9	303.5	378.5		406.5	561.8	5,151.8	6.3		6,910.6
1950	88.0	58.5	341.2	386.8		433.4	617.0	5,563.2	6.1		7,456.5
1951	97.7	61.3	375.5	425.0		454.0	655.6	6,039.6	6.1		8,080.5
1952	107.8	67.1	409.9	409.9		492.3	713.2	6,560.0	6.4		8,732.2
1953	118.2	70.7	436.2	270.5		532.5	777.7	7,465.2	5.6		9,676.6
1954	130.8	73.2	527.1	394.6		546.4	870.0	8,416.3	5.6		10,964.0
1955	139.1	78.7	585.1	505.9		595.4	957.7	9,151.6	6.0		12,019.5
1956	143.1	86.1	698.6	536.5		621.7	1,018.7	9,652.5	5.9		12,763.1

Notes.—(1) The units sold at Cape Western since 1934 do not include the units supplied to Cape Town City Council under the Pooling Agreement, which ceased 12/5/57.

(2) The units purchased from Durban Corporation for sale down the South Coast and up the North Coast are included in the Durban Undertaking figures above.

(3) The decreases of Klip, Vaal and Witbank are due to the E.S.C. taking over the V.F.P. at 00.00 hours on 1st July, 1948, since when Klip and Vaal became part of the Rand and O.F.S. Undertaking.

STATEMENT No. 4

UNITS SOLD AND NUMBER OF CONSUMERS, 1957 (Electricity, Air and Steam)

ELECTRICITY ONLY

Undertaking	TRACTION			BULK			MINING			INDUSTRIAL			DOMESTIC AND STREET LIGHTING			TOTAL UNITS SOLD		Total Number Consumers
	Units	Per cent. Traction	No. Cons.	Units	Per cent. Bulk	No. Cons.	Units	Per cent. Mining	No. Cons.	Units	Per cent. Industrial	No. Cons.	Units	Per cent. Domestic and Lighting	No. Cons.	Units	Per cent. Total Units Sold	
Border				130,210,670	5.126	8							8,771,523	4.668	2,325	143,109,560	1.135	2,516
Cape Northern ..				49,859,911	1.963	4	25,636,782	0.378	7	9,213,510	0.395	67	1,369,919	0.729	445	86,080,122	0.683	523
Cape Western ...	193,016,504	25.643	2	236,250,179	9.301	25				157,707,011	6.765	2,019	111,589,724	59.391	24,669	698,563,418	5.543	26,715
E. Transvaal ...	21,567,085	2.865	1	32,525,405	1.281	9	132,018,139	1.944	34	348,136,962	14.934	76	2,270,439	1.208	820	536,518,030	4.257	940
Natal Central ...	287,197,222	38.156	1	227,343,736	8.950	17	30,255,489	0.446	13	61,804,959	2.651	515	15,090,643	8.032	4,483	621,692,049	4.933	5,029
Natal Southern ..	69,576,317	9.244	1	891,060,065	35.079	3				32,037,667	1.374	275	26,035,778	13.857	5,461	1,018,709,827	8.083	5,740
Rand and O.F.S.:	181,338,627	24.092	1	972,878,242	38.300	68	6,595,901,793	97.146	115	1,718,222,411	73.704	416	24,613,328	12.115	2,910	9,492,954,401	75.320	3,510
Sabie							5,855,793	0.086	1							5,855,793	0.046	1
Total Electricity ...	752,695,755	100.000	6	2,540,128,208	100.000	134	6,789,667,996	100.000	170	2,331,249,887	100.000	3,551	189,741,354	100.000	41,113	12,603,483,200	100.000	44,974
Percentage of Total	5.972			20.154			53.871			18.497			1.506			100.000		

AIR AND STEAM ONLY

Rand and O.F.S. Air				3,751,573	100.000	1	141,123,344	96.519	11	9,603,241	100.000	30				154,478,158	96.810	42
Steam							5,090,115	3.481	1							5,090,115	3.190	1
Total Air and Steam				3,751,573	100.000	1	146,213,459	100.000	12	9,603,241	100.000	30				159,568,273	100.000	43
Per cent. of Total				2.351			91.631			6.018						100.000		

ELECTRICITY, AIR AND STEAM

Grand Total, all Sales	752,695,755		6	2,543,879,781		135	6,935,881,455		182	2,340,853,128		3,581	189,741,354		41,113	12,763,051,473		45,017
Per cent. of Grand Total	5.898			19.932			54.343			18.341			1.486			100.000		

ENERGY USED (BY PROVINCES)

ELECTRICITY, AIR AND STEAM

Cape	193,016,504	25.644	2	422,655,051	16.614	37	25,339,806	0.365	6	171,029,637	7.306	2,266	121,502,786	64.036	27,331	933,543,784	7.314	29,642
Natal	346,007,294	45.969	1	1,092,497,961	42.946	14	30,255,489	0.436	13	91,686,662	3.917	638	35,667,193	18.798	7,697	1,596,114,599	12.506	8,363
O.F.S.	10,766,245	1.430	1	152,394,687	5.991	26	1,548,051,129	22.320	18	85,453,401	3.651	103	1,859,144	0.980	716	1,798,524,606	14.092	864
Transvaal ...	202,905,712	26.957	2	876,332,082	34.449	58	5,332,235,031	76.879	145	1,992,683,428	85.126	574	30,712,231	16.186	5,369	8,434,868,484	66.088	6,148

Electricity 98.750 per cent. } of Total Sales.
Air and Steam 1.250 per cent. }

POWER STATION OPERATING STATISTICS: YEAR 1957

STEAM ELECTRIC (19 STATIONS AT 31/12/57).

Power Station	Units Generated	Units Sent Out	MAXIMUM DEMANDS		Station Load Factor % Sent Out	Coal Burned 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 %	
			½ Hour (or Hour) Sent Out kW	Peak kW			Per Unit Generated	Per Unit Sent Out		Generated	Sent Out	Generated	Sent Out
Brakpan	50,647,278	44,874,517	Hour 32,021	—	16.0	60,371	2.384	2.691	10,060	23,980	27,070	14.2	12.6
Central, Kimberley ...	98,620,900	86,996,327	20,935	22,600	47.4	98,021	1.988	2.253	12,240	24,330	27,580	14.0	12.4
Colenso No. 1 and No. 2 ...	605,430,480	570,070,710	114,500	132,000	56.8	444,595	1.469	1.560	11,710	17,200	18,270	19.8	18.7
Congella No. 1 and No. 2	792,319,800	730,376,340	154,088	173,000	54.1	550,713	1.390	1.508	11,410	15,860	17,210	21.5	19.8
Hex River	196,325,800	185,488,310	58,400	60,400	36.3	117,864	1.201	1.271	11,550	13,870	14,680	24.6	23.2
King William's Town (Standby only) ...	92,140	83,920	2,690*	2,900*	—	98	2.138	2.305	12,680	27,100	29,200	12.6*	11.7*
Klip	2,609,627,682	2,433,984,482	Hour 368,805	—	75.3	2,145,543	1.644	1.763	9,720	15,980	17,140	21.4	19.9
Rosherville	138,571,838	130,085,506	Hour 44,083	—	33.7	213,482	3.081	3.282	9,820	30,260	32,230	11.3	10.6
Salt River No. 1	6,723,642	4,399,490	29,109	32,500	1.7	8,619	2.954	4.515	11,680	34,500	52,740	9.9	6.5
Salt River No. 2	597,502,600	568,986,770	123,448	135,000	52.6	316,325	1.055	1.108	11,680	12,320	12,940	27.7	26.4
Simmerpan o/c 23.00 hours 15/6/57	17,725,771	16,497,828	Hour 17,263	—	23.6	32,548	3.672	3.946	9,720	35,690	38,360	9.6	8.9
Taaibos	2,657,578,399	2,454,148,592	Hour 387,353	—	72.3	1,713,952	1.290	1.397	9,110	11,750	12,730	29.0	26.8
Umgeni	430,111,025	403,696,650	84,600	92,000	54.5	266,654	1.240	1.321	11,280	13,920	14,900	24.4	22.9
Vaal	2,088,401,610	1,965,742,693	Hour 285,150	—	78.7	1,681,747	1.611	1.711	8,960	14,430	15,330	23.6	22.3
Verëeniging	706,072,774	655,350,288	Hour 135,318	—	55.3	821,940	2.328	2.508	8,990	20,920	22,550	16.3	15.1
Vierfontein	1,737,812,521	1,616,881,102	Hour 283,920	—	65.0	1,315,579	1.514	1.627	9,150	13,850	14,890	24.6	22.0
West Bank No. 1 and No. 2	153,545,270	144,466,562	30,050	—	54.9	110,936	1.445	1.536	11,430	16,520	17,560	20.7	19.4
Wilge	950,581,944	878,246,959	Hour 168,495	—	59.5	608,662	1.281	1.386	9,790	12,540	13,570	27.2	25.1
Witbank	685,006,225	634,099,895	Hour 116,653	—	62.1	616,666	1.800	1.945	11,280	20,290	21,940	16.8	15.6
Grand Totals	14,522,697,699	13,524,476,941				11,124,315							

*Includes Diesel Plant.

HYDRO ELECTRIC (2 STATIONS)

Power Station	Units Generated	Units Sent Out	Maximum Demands kW		Station Load Factor Sent Out	Rain	
			½ Hr. Sent Out	2 Mins. Generated		Inches	mm.
Ixopo ...	350,706	350,706	—	—	—	33.9	860
Sabie ...	6,154,900	5,981,921	1,200	1,230	56.9	50.7	1,288
Totals ...	6,505,606	6,332,627					

STEAM GENERATION (1 STATION)

Station	Units Generated	Units 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	5,130,280	5,090,115	7,200	2.829	2,750	21.1

Statement No. 5—(continued)
POWER STATION OPERATING STATISTICS: YEAR 1957
 DIESEL ELECTRIC (4 STATIONS):

Power Station	Units Generated	Units Sent Out	Maximum Demands		Fuel Consumed		Lub. Oil Galls.
			kW	2 Mins.	Total lb	Per kWh Sent Out	
Ixopo	93,968	93,968	—	—	97,456	1.037	87
King William's Town	13,050	13,050	990	1,000	7,363	0.564	4
Port Shepstone	60,416	59,720	2,962	3,300	35,995	0.596	90
Volkstrust	13,720	13,308	400	400	9,728	0.731	60
TOTALS	181,154	180,046			150,542		241

(2) COMPRESSED AIR GENERATION (3 STATIONS at 31/12/57).

Station	Type*	Units Generated	Air Units Sent Out		Coal Burned		Electric Input		Max. Sustained Load over One Hour	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	104,297,000	104,024,300	64.3	134,722	2.590	—	43,695,310	} 58,420 (June)	31.6
Robinson	Electric	34,211,600	34,211,600	21.1	—	—	—	28,547,477		
Canada Dam	Electric	23,560,000	23,560,000	14.6	—	—	—	—		
Air Pipe-line Totals		162,068,600	161,795,900	100.0	134,722			72,242,787		
Other Air Stations:—										
Modder B and New Modder (ceased Sept.)	Electric	1,176,729	1,176,729					1,385,222	84.95	
Total Air		163,245,329	162,972,629		134,722			73,628,009		

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

GENERATION SUMMARY:

TOTAL COAL BURNED

= Steam Driven Generating Stations + Compressed Air Steam Driven Stations + Steam Sales.

= 11,124,315 + 134,722 + 7,200

= 11,266,237 tons of 2,000 lb. (Increase of 586,474 over 1956 or 5.491%).

TOTAL UNITS GENERATED

= Electricity (Steam + Hydro + Diesel + Air Units Generated at Steam Driven Stations + Steam Units Generated).

= Steam 14,522,697,699

= Hydro 6,505,606

= Diesel 181,154

= 14,638,811,739. (Increase of 1,060,386,375 or 7.809% over 1956.)

TOTAL UNITS SENT OUT

= 13,640,104,029 (93.178% of Generated).

STATEMENT No. 6

POWER PURCHASED, YEAR 1957.

Under-taking	Purchased From	Maximum Demands	UNITS
Border	East London, Municipality of ...	567 kVA	987,563
Eastern Transvaal	Pretoria City of—at Pinedene ...	—	21,567,085
Natal Southern	Durban, City of— At Canelands	1,269 kVA	4,311,555
Rand and O.F.S.	Pretoria, City of— at North Rand	43,000 kW (Aug.)	135,962,148

TOTAL UNITS PURCHASED, 162,828,351
(1.276% of Units Sold)

Note re Cape Western Undertaking:

Under the Pooling Agreement, the E.S.C. received 191,597,185 Units from the Pool; the Pooling Agreement ceased at 10-00 hours on 12th May, 1957.

STATEMENT No. 7

WATER (OTHER THAN SEA WATER) CONSUMED BY POWER
STATIONS FOR THE YEAR 1957

(Millions of Gallons)

Undertaking	Potable Water	Crude River Water	Water from Other Sources including Bore-holes, Dams and Sewage
Border	23		1
Cape Northern	147		
Cape Western	32	152	
Natal Southern	439		
Natal Central	28	228	
Rand (including Witbank Power Station)	275	12,123	415

NOTE—No deduction has been made for water disposed of as blow-down from cooling tower ponds.

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 1957.

(See previous Annual Reports for Rights or Interests in or over land acquired prior to 1957).

Cape Western Undertaking

Immovable property acquired for considerations amounting to	£22,251	1	6
Servitudes acquired—capitalised payments amounting to ...	£1,020	2	7

Cape Northern Undertaking

Immovable property acquired for considerations amounting to	£3,400	0	0
Servitudes acquired—capitalised payments amounting to ...	£361	4	0

Natal Central Undertaking

Immovable property acquired for considerations amounting to	£4,423	0	0
Servitudes acquired—capitalised payments amounting to ...	£1,399	13	1

Natal Southern Undertaking

Servitudes acquired—capitalised payments amounting to ...	£4,834	4	9
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Eastern Transvaal Undertaking

Immovable property acquired for considerations amounting to	£70,000	0	0
Servitudes acquired—capitalised payments amounting to ...	£375	0	0

Border Undertaking

Immovable property acquired for considerations amounting to	£350	0	0
Servitudes acquired—capitalised payments amounting to ...	£61	18	2

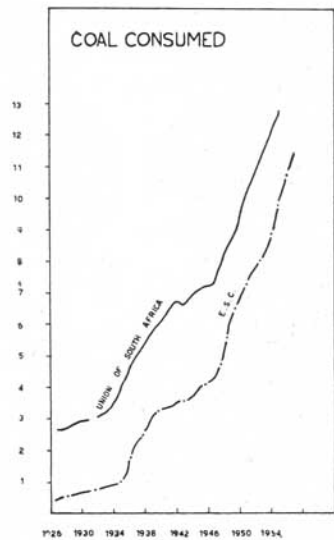
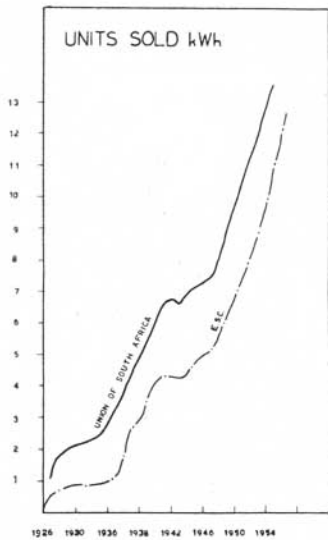
Rand and Orange Free State Undertaking

Immovable property acquired for considerations amounting to	£18,498	5	9
Servitudes acquired—capitalised payments amounting to ...	£16,604	11	4
Servitudes acquired—option moneys paid amounting to ...	£8,341	6	1
Property hired on Lease—annual rentals amounting to ...	£4,800	0	0
Stand Licence moneys paid for Industrial Stands amounting to	£237	0	0

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

Power Station	1947		1948		1949		1950		1951		1952		1953		1954		1955		1956		1957	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Brakpan	—	—	7	9	7	8	8	9	8	10	9	7	10	1	13	4	14	2	15	0	16	6
Colenso	11	4	11	6	12	9	13	2	14	3	18	6	19	11	21	6	25	2	27	1	28	8
Congella	16	4	16	4	18	0	19	5	20	0	23	6	25	4	27	2	31	4	32	6	34	3
East London ...	26	7	26	11	28	6	30	5	31	6	34	0	35	4	37	10	41	9	40	10	41	9
Hex River	—	—	—	—	—	—	—	—	—	—	32	10	35	4	37	0	38	11	40	7	41	9
Kimberley, Central	—	—	—	—	—	—	—	—	—	—	26	4	27	9	29	1	30	10	32	10	34	0
Klip	4	5	4	1	4	7	5	0	7	7	9	8	11	7	13	1	14	5	16	1	17	4
King William's Town	—	—	27	10	29	6	31	8	33	1	37	2	39	9	42	5	45	8	46	10	48	5
Rosherville ...	—	—	8	3	8	5	9	5	10	7	12	9	15	0	15	6	16	6	17	2	18	9
Salt River	28	1	28	5	29	6	32	5	33	10	35	3	37	5	41	0	40	9	42	3	43	10
Simmerpan (Closed down June, 1957)	—	—	8	4	8	3	9	6	9	9	10	9	11	3	15	6	16	3	16	11	18	3
Taabos	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	11	8	9	7	4	7	7
Umgeni	—	—	—	—	—	—	—	—	—	—	—	—	—	—	30	9	32	10	33	1	34	11
Vaal	5	7	4	11	4	9	5	4	5	11	6	8	6	10	6	10	7	2	7	1	7	3
Vereeniging ...	—	—	4	11	4	10	5	5	5	9	6	9	7	3	7	8	8	2	8	6	9	2
Vierfontein ...	—	—	—	—	—	—	—	—	—	—	—	—	9	5	8	2	8	4	9	8	11	0
Wilge	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	1	7	9	7	10	8	11
Witbank	3	4	4	0	3	9	4	2	4	6	5	10	6	11	7	0	7	7	10	3	10	4

ANNEXURE C



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

