



A. M. JACOBS, M.A.
Chairman, Electricity Supply Commission.

[Photo Maurice.]

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Electricity Supply Commission

Escom House,
Rissik Street,
Johannesburg,

8th June, 1950.

To the Honourable
The Minister of Economic Affairs,
Pretoria.

SIR,

As required by Section 14 of the Electricity Act, No. 42 of 1922, the Commission has the honour to present its twenty-seventh Annual Report, covering its operations for the year ended 31st December, 1949, together with a brief review of its activities up to 30th April, 1950.

GENERAL

Demand for Electricity.—The Commission has to record another year of effort to satisfy a constantly increasing demand with available plant and equipment. As will be seen later, some major items of plant were installed during 1949 at Colenso and Vaal Power Stations, but much plant required for the expansion of existing stations and the equipping of new stations is still to arrive, and the rate of deliveries is still slow.

The progress achieved, despite difficulties, during and since the war, is illustrated by the following figures. It will be remembered that the Commission purchased the Undertakings in the Union of the Victoria Falls and Transvaal Power Company Ltd. with effect from 1st July, 1948.

Year	Generating Capacity 1,000's kW	Units Sold, Millions	Capital	Value of Assets	Revenue
1939	713	3,574	£18,250,000	£22,878,312	£2,630,473
1945	875	4,706	£24,250,000	£34,443,648	£3,753,660
1948	1,461	5,577	£45,250,000	£61,840,084	£6,492,153
1949	1,486	6,222	£50,503,330	£69,492,449	£8,799,486

In the present state of national and international finance, development has to be confined to essentials, but even so the Commission's programme of planned

expansion is one of considerable magnitude by any standards, entailing capital expenditure over the next few years amounting to approximately £54,000,000, of which about £26,000,000 will be allocated to the provision of power for the Rand Undertaking, including the new goldfields of the Orange Free State.

The cost of constructing and equipping new power stations will be very much higher than the prices paid in connection with existing stations. Klip Power Station, with a capacity of 424,000 kW, was completed in 1940 at a cost of £15·4 per kW installed; the 106,000 kW installed at Vaal Power Station by 1945 cost, including construction work, £30 per kW; the corresponding figure for the 150,000 kW to be installed at Vierfontein by 1955 is estimated at £55 per kW.

It will be readily understood that such increases in costs must inevitably mean higher charges to consumers in future. Costs and tariffs will be dealt with later in this Report, but it may be mentioned here that, although the fact that most power stations have of recent years been kept fully loaded has helped in the maintenance of a low tariff of charges, consumers at present enjoy benefits arising from the Commission's policy of looking to the future and providing some margin above immediate needs when existing power stations were constructed. These benefits cannot, of course, continue indefinitely.

The programme of expansion and capital expenditure covers, of course, many items besides power stations and their equipment, including many miles of transmission and distribution lines, substations, etc. By April, 1951, it is hoped to complete 200 miles of new 132-kV lines in addition to more than 300 miles of 88- and 40-kV lines.

Plant and Equipment.—During 1949 two 180,000-lb/hr boilers were installed at Colenso Power Station, three 190,000-lb/hr boilers at Vaal, and two 1,000-kW diesel sets at Port Shepstone. At the year's end there were under erection a 40,000-kW turbo-generator at Congella; a 190,000-lb/hr boiler, a 33,000-kW turbo-generator and a 7,000-kW house set at Vaal; and a 1,000-kW diesel set at King William's Town.

The following major items of power station equipment were on order at 31st December, 1949; it will be noted that they provide for the continued expansion of existing stations as well as the equipping of new stations.

Colenso: Three 180,000-lb/hr boilers and one 25,000-kW turbo-generator.

Congella: Three 200,000-lb/hr boilers.

Hex River: Four 200,000-lb/hr boilers and three 20,000-kW turbo-generators.

Vaal: Eight 190,000-lb/hr boilers, four 33,000-kW turbo-generators (including one set under construction), and one 7,000-kW house set.

Witbank: Two 80,000-lb/hr boilers and one 20,000-kW turbo-generator.

Vereeniging: One 180,000 lb/hr boiler.

Vierfontein: Six 210,000-lb/hr boilers and five 30,000-kW turbo-generators; (an additional three boilers of similar capacity since ordered).

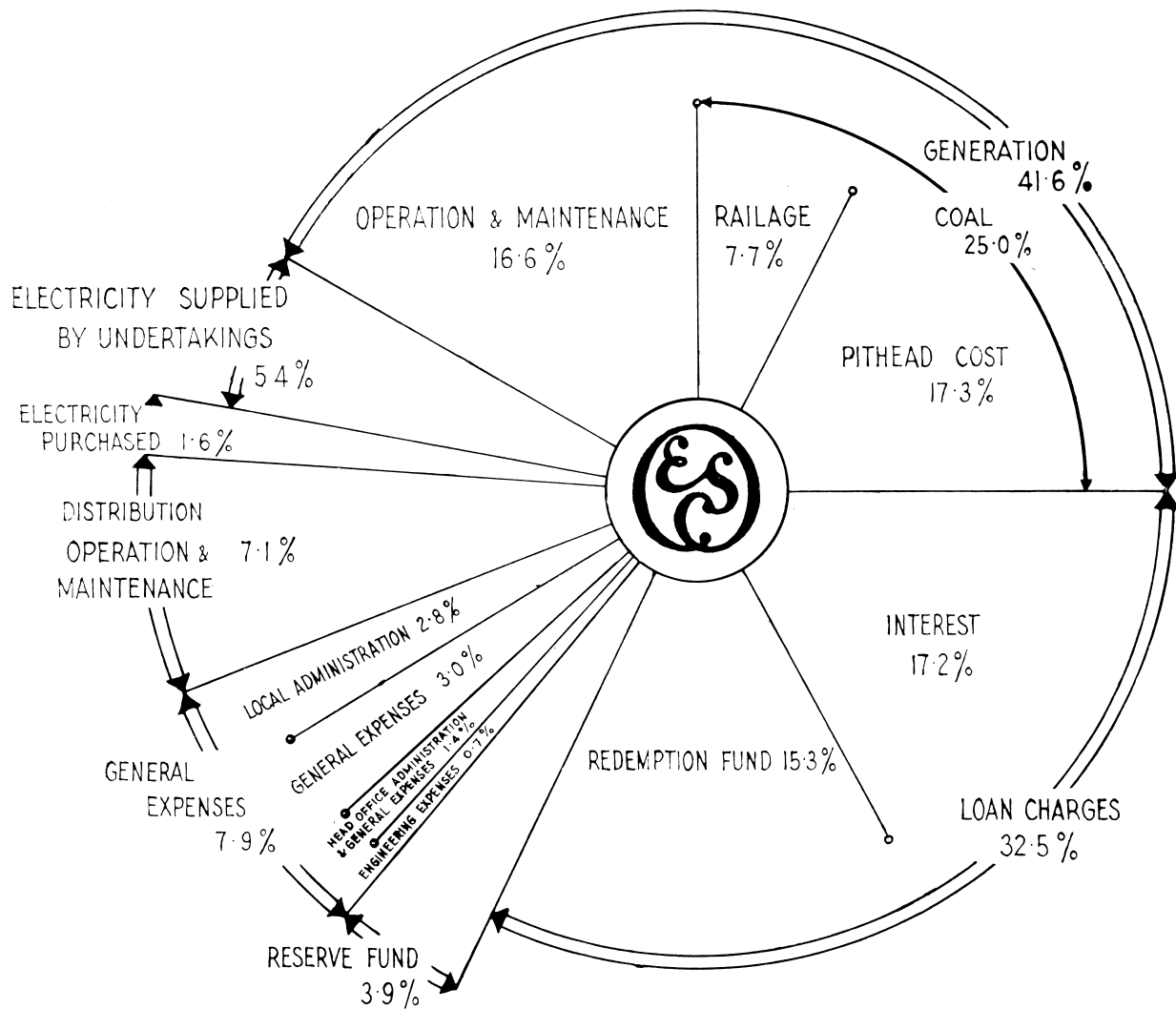
Umgeni: Four 180,000-lb/hr boilers and two 30,000-kW turbo-generators.

Salt River No. 2 Station. Four 260,000 lb/hr boilers and two 30,000-kW turbo-generators.

Taaibos: Two 450,000-lb/hr boilers and two 45,000-kW turbo-generators; (since amended to two 580,000-lb/hr boilers and two 60,000-kW turbo-generators). This new power station is described in page 9.

Costs and Tariffs.—As mentioned last year and emphasised earlier in this Report, increased operating costs will inevitably mean increased charges to consumers. During 1949 it was necessary to raise the tariff of charges at Durban Undertaking and details of the increases are shown on page 33.

SUB-DIVISION OF
TOTAL PRODUCTION COSTS
 FOR THE YEAR 1949



From the figures on page 16 it will be seen that while the Commission's total revenue rose by over 35 per cent. to £8,799,486, production costs rose by 37 per cent. to £8,820,887; thus the year's operations resulted in a deficit of £21,401. The magnitude of the recorded increases in revenue and in production costs reflects the fact that 1949 was the first complete year of operation of the Rand Undertaking, which was inaugurated on 1st July, 1948. Surpluses or deficits on the year's working at Undertakings are commented upon in the Auditors' Report and in sections of this Report dealing with the various Undertakings.

The standard prices for the supply of electricity from the Commission's Undertakings and the conditions attaching thereto are embodied in the licences and permits granted to the Commission by the Electricity Control Board. These prices are subject to adjustment from time to time in terms of the Electricity Act, 1922, and the standard prices are subject, where necessary, to variation in terms of Section 26 of the Act, dependent upon the situation, extent and characteristics of consumers' loads.

New Power Stations.—All the new stations dealt with under this heading were mentioned in last year's Report and some will thus figure in future Reports, for the planning, construction and equipping of a major modern power station is a matter of years; but stations which were merely projects a year ago are now taking shape and progressing towards the stage where they will add their quota to the power required by the country's mines, industries, agriculture, municipalities and homes.

Vierfontein: The function of this station will be to meet the heavy demand for power which is expected from the new goldfields of the Orange Free State. Work has begun on clearing the site, on a coalfield about eight miles south of the Vaal River, and on the erection of houses intended initially for the construction staff and subsequently for the operating staff. Contracts have been placed for most of the major items of equipment for the initial installation, which will include five 30,000-kW turbo-generators and nine 210,000-lb/hr boilers, estimated to cost £7,000,000 and to be in commission early in 1953. The station is designed for conditions at turbine stop valve of 600 lb/sq. in. g. and 825°F, and its equipment will be extended, as mining development may require, to a possible total of 300,000 kW.

Hex River: This station is under construction at Worcester, and its function will be to supply the northern area of the Cape Western system and to provide power for the electrification of the railway main line from Bellville to Touws River. At the year's end construction work had proceeded to schedule; erection of the structural steelwork for the turbine house was almost completed and a start had been made on construction of the boiler-house bunker bay. Since the end of the year the progress of the work has been somewhat delayed by shortage of steel. The station is planned for seven 200,000-lb/hr boilers and five 20,000-kW turbo-generators, with four boilers and three turbo-generators in operation in 1952. The initial installation is estimated to cost £3,600,000.

Umgeni: This new station will be built near Pinetown, to secure adequate supply to the electrified railway system and to meet the increasing demands of all classes of consumers, including Durban Corporation. Levelling of the site has been completed and work has begun on excavation for the 2¼-mile railway siding from Sarnia. Initial installation will be four 180,000-lb/hr boilers and two 30,000-kW turbo-generators, at an estimated cost of £4,750,000. Ultimate plans envisage the installation of a further ten boilers and six turbo-generators of similar capacity. Contracts have been placed for all main items of plant for the initial

installation and it is anticipated that the station will start operating early in 1953. A large proportion of the boiler contract will be executed in South African workshops.

Salt River No. 2: To meet the increasing demands for power on the Cape Western system a new power station will be built on a site adjoining the existing Salt River Station. During 1949 contracts to the value of £2,173,824 were placed for the initial installation, the main items of which will be two 260,000-lb/hr boilers and one 30,000-kW turbo-generator, to be in operation by mid 1954; this installation will be followed by a second turbo-generator and two additional boilers operating in 1955. At the latter stage the cost is estimated at £4,134,000. When completed this power station will contain eight 260,000 lb/hr boilers and six 30,000-kW turbo-generators, estimated to cost over £8,000,000.

Taaibos: Last year's Report mentioned an additional power station in the Southern Transvaal area, but it has since been decided that the new station, which will be known as Taaibos, will be sited near Coalbrook in the northern Orange Free State; its main object will be to provide the additional power required for goldfields and industry. The initial installation will include two boilers each 580,000-lb/hr and two 60,000-kW turbo-generators. These generators will be the largest in the Union, and to rail the generator stators, which will each weigh approximately 107 long tons, from port of entry to the power station the Railways Administration is constructing a special truck, which may also be required for the transport of large step-up transformers. Taaibos will be a pulverised-fuel station, designed to operate at the same pressure as Vierfontein, and will be constructed on the unit system, that is, one boiler to each turbo set. The transmission system radiating from it will be mostly 132-kV, and there will be interconnection with Vaal and Vierfontein. The station is expected to be in operation early in 1954.

Swartkops: As plans already in hand will exhaust the possibilities for expansion at the site of the Port Elizabeth municipal power station, the Commission's new station will be sited at Swartkops, about seven miles to the north. It will operate in conjunction with the municipal station to meet the increasing demand from Port Elizabeth and the surrounding area. Orders are being placed early in 1950 for the initial installation, including two 210,000-lb/hr boilers and two 20,000-kW turbo-generators, expected to be in operation during the first half of 1953. The new station is designed to accommodate three 20,000-kW turbo-generators and thereafter 30,000-kW sets as required.

Westbank No. 2: This new station will be built on a site adjoining the existing (Westbank No. 1) station at East London. Specifications have been issued for the major items of plant required, and it is expected that the relative contracts will be placed in the first half of 1950. Initial installation will probably be three 170,000-lb/hr boilers and two 15,000-kW turbo-generators. During 1949 the S.A.R. & H. Administration continued the work of clearing and draining the site, this work, as mentioned in last year's Report, having been seriously delayed by the collapse of a section of rock face during a storm.

The Commission's Head Office engineering staff is responsible for the design of Vierfontein, Hex River, Taaibos and Swartkops Power Stations and the Commission's Consulting Engineers, Messrs. Merz and McLellan, are carrying out the design of Umgeni, Salt River No. 2 and Westbank No. 2 Power Stations.

Cape Northern Undertaking.—With effect from 1st January, 1950, the Commission acquires the Kimberley power station of De Beers Consolidated Mines Ltd., but the De Beers Company will operate the station on the Commission's

behalf for the first two months of 1950. The installed capacity is 20,000 kW, to which will be added two 6,000-kW sets previously at Congella; due to local steam conditions these will be derated to 5,500 kW each. Two 75,000-lb/hr boilers will be added to the present installation which has a steaming capacity of 240,000 lb/hr.

The station, which was originally constructed for the diamond mines and has for many years supplied Kimberley Municipality, will now provide power for the new Cape Northern Undertaking, with a licensed area of 14,800 square miles surrounding Kimberley.

Plant Capacity.—The aggregate installed capacity in the Commission's power stations at 31st December, 1949, was 1,485,975 kW, an increase of 24,714 kW over the corresponding figure for the previous year. Plant under erection or on order will bring the total to 2,187,935 kW.

Details of plant and equipment installed in each of the Commission's power stations are given in Annexure "B" to this Report.

Transmission System and Area of Supply.—Although construction of transmission lines was at times retarded by shortages and slow deliveries of materials, considerable progress was achieved in 1949, as illustrated by the following figures:

	1949	1948
Transmission lines and cables, route miles ...	6,108	5,192
Installed transformer capacity, kVA	6,139,759	5,262,926

The licensed area of supply remained unchanged at 73,200 square miles.

The following statement shows some of the major lines completed during 1949, and under construction or projected at the year's end:

Completed in 1949:

	kV	Route Miles
West Wits to Rustenburg and Rustenburg Platinum Mines	88	64
West Wits to Mafeking	88	130
Vaal to Alma Distribution Station (second line)	88	118
Witbank to Middeldrift and Bethal	88	48
Worcester to Robertson	66	30
Colenso to Winterton and Bergville	33	34

Under Construction:

Western Reefs to Balkfontein	88	40
Vaal to Vanderbijl Park	88	8
Vaal to Vereeniging and Nigel	88	10
Congella to Marburg	88	74
Oakdale to Wellington	66	20
Wellington to Worcester	66	63
Robertson to Ashton	66	11
Salt River to Oakdale	33	12 (triplicate)
Salt River to Elsie's River	33	8 (duplicate)

Projected:

Colenso to Umgeni	132	118
Umgeni to Springfield	132	10 (duplicate)
Vaal to Vierfontein	132	80
Vierfontein to Alma	132	60 (duplicate)



Electricity Supply Commission
Map
showing
The Commission's Licensed Areas of Supply
in the
Union of South Africa

BECHUANALAND
PROTECTORATE

MGCAMBIQUE

Union of South Africa

SOUTH WEST

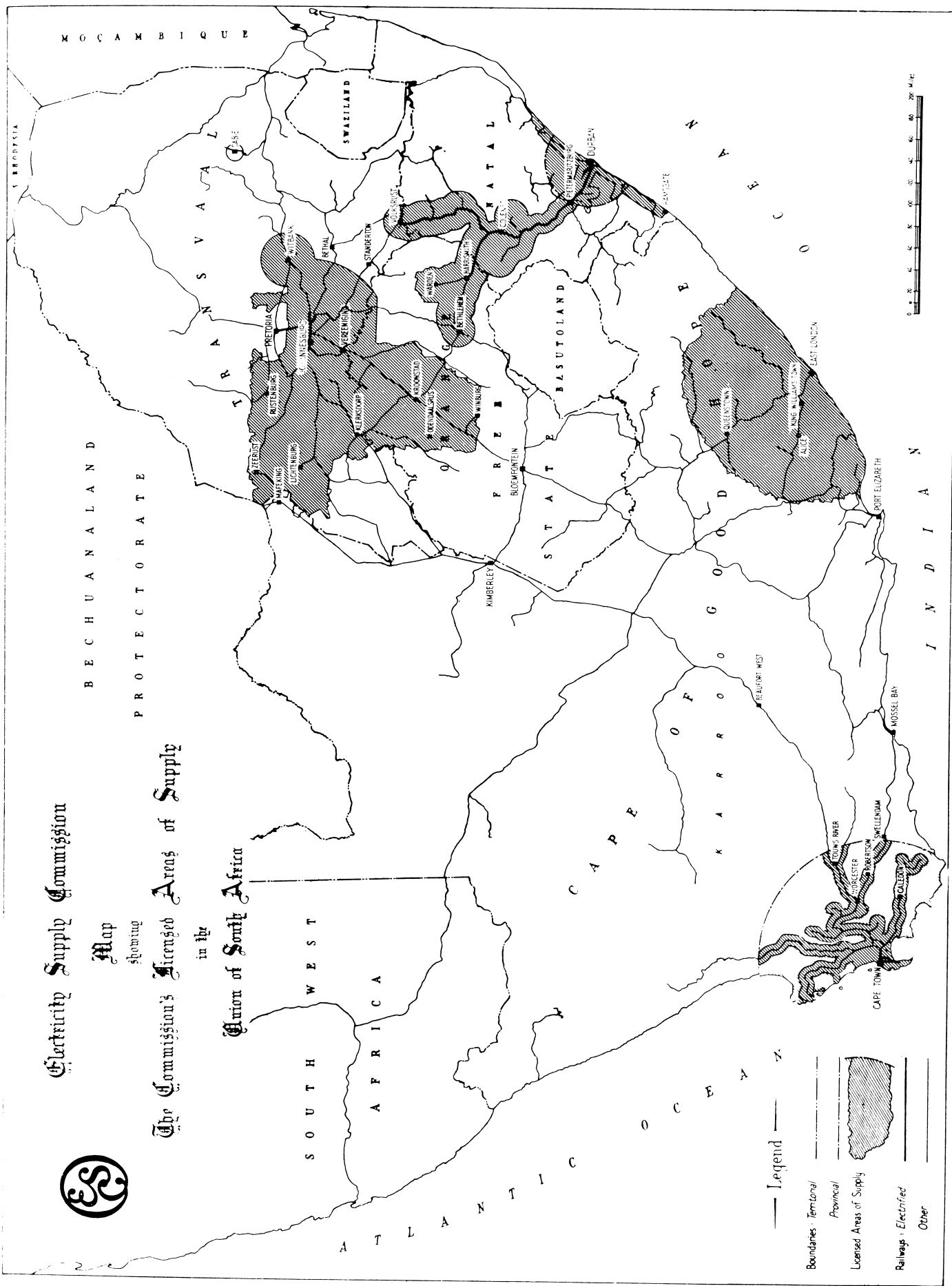
AFRICA

ATLANTIC OCEAN

CAPE

OCEAN

- Legend
- Boundaries: Territorial (dashed line), Provincial (solid line)
 - Licensed Areas of Supply (hatched area)
 - Railways: Electrified (line with cross-ticks), Other (solid line)



Projected—(continued).

				kV	Route Miles
Rustenburg to Thabazimbi	...	...	...	88	80
Vaal to Dunnottar	...	...	...	88	50
Klip to Rosherville and Midway	...	...	...	88	45
Vaal to West Wits (second line)	...	...	...	88	55
Bethal to Standerton	...	...	...	88	45
Slurry to Zeerust	...	...	...	88	27
Oakdale to Somerset West	...	...	...	66	19
Worcester to Touws River	...	...	...	66	42
Langebaanweg to Vredenburg	...	...	...	33	10
Moorreesburg to Ganzekraal	...	...	...	33	15

All 132 kV lines in the O.F.S. will be carried on H pole constructions with lattice strain and angle towers. Conductors will be 0·2 or 0·25 square inch copper equivalent steel cored aluminium and the lines will be equipped with two galvanised steel ground wires.

Due to financial stringency it has been decided not to proceed with the building of the following transmission lines referred to in the previous Report:

				kV	Route Miles
Colenso to Umgeni (second line)	...	...	...	132	118
Worcester to Robertson (second line)	...	...	...	66	30
Worcester to Touws River (second line)	...	...	...	66	42

Output and Sales.—Units generated by and sold from the Commission's power stations again achieved new records in 1949. In studying comparative figures it should be borne in mind that the Victoria Falls and Transvaal Power Company's Undertakings in the Union were purchased by the Commission and incorporated in the Rand Undertaking with effect from 1st July, 1948, so that 1949 is the first complete year of operation for that Undertaking. Aggregate figures for all power stations were:

	1949	1948	Increase
Units generated	7,075,282,135	6,106,914,109	15·857%
Units sold	6,222,163,115	5,576,858,881	11·571%

The following figures record units sold by individual undertakings:

	1949	1948
Border	68,691,220	69,217,120
Cape Western	249,498,856	222,439,123
Durban	512,978,243	448,671,496
Natal Central	371,804,946	367,858,108
Sabie	7,030,797	7,273,534
Witbank †	358,240,127	633,245,570
Rand	4,653,918,926	2,185,700,243*
Totals	6,222,163,115	5,576,858,881

†Excludes 546,123,467 units supplied to Rand Undertaking in 1949 and 254,800,413 units 1st July to 31st December, 1948.

*1st July to 31st December, 1948.

The 1949 increase over 1948 amounts to 11·571 per cent.

Analysis of sales of electricity by classes of consumers is shown below:

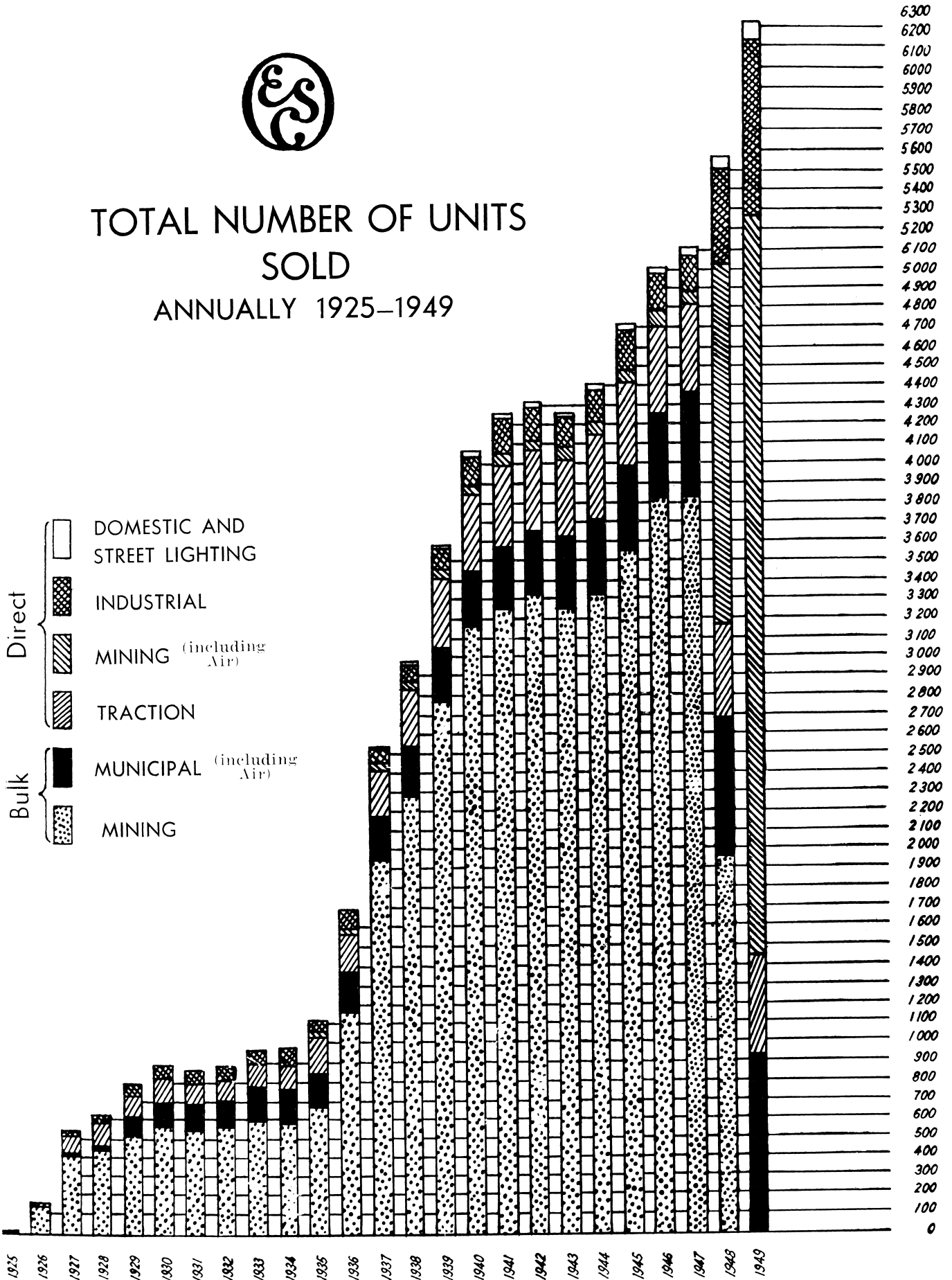
<i>Bulk Supplies:</i>	1949	1948
Mining	Nil *	1,950,774,437
Municipal	923,104,526	742,702,843



TOTAL NUMBER OF UNITS SOLD ANNUALLY 1925-1949

Millions

- Direct
 - DOMESTIC AND STREET LIGHTING
 - INDUSTRIAL
 - MINING (including Air)
 - TRACTION
- Bulk
 - MUNICIPAL (including Air)
 - MINING



<i>Direct Supplies:</i>				1949	1948
Traction	...	...	...	517,506,190	479,360,270
Mining	...	...	...	3,828,507,164	1,842,789,157
Industrial	...	...	...	857,975,998	494,605,149
Domestic	...	...	...	92,229,269	64,591,020
Street Lighting	...	...	...	2,839,968	2,036,005
				<hr/>	<hr/>
				6,222,163,115	5,576,858,881
				<hr/>	<hr/>

*Under a re-classification of consumers, bulk supplies for mining ceased from 1st July, 1948; see "Direct Supplies" above.

A chart showing annual sales of electricity is on page 13 of this Report. Statement No. 3 of Annexure "B" gives units sold to all consumers for the past 25 years, and the distribution of units sold is shown in Statement No. 4.

FINANCIAL

Loan Capital.—A loan of £3,000,000 bearing interest at $3\frac{1}{2}$ per cent. per annum redeemable on 30th September, 1969/74 was raised at par on 28th March, 1949. The loan was fully subscribed and the lists were closed on the 1st April, 1949. A further loan of £3,000,000 bearing interest at $3\frac{3}{4}$ per cent. per annum redeemable on 31st October, 1969/74, was raised at £99 per cent. on 8th November, 1949, and was fully subscribed on the day of issue. In terms of the prospectus for the latter loan the final instalment was payable on 31st January, 1950, and at the year's end the amount of £2,253,330 was received.

These loans increased the Commission's loan capital at the date of the Balance Sheet to £50,503,330.

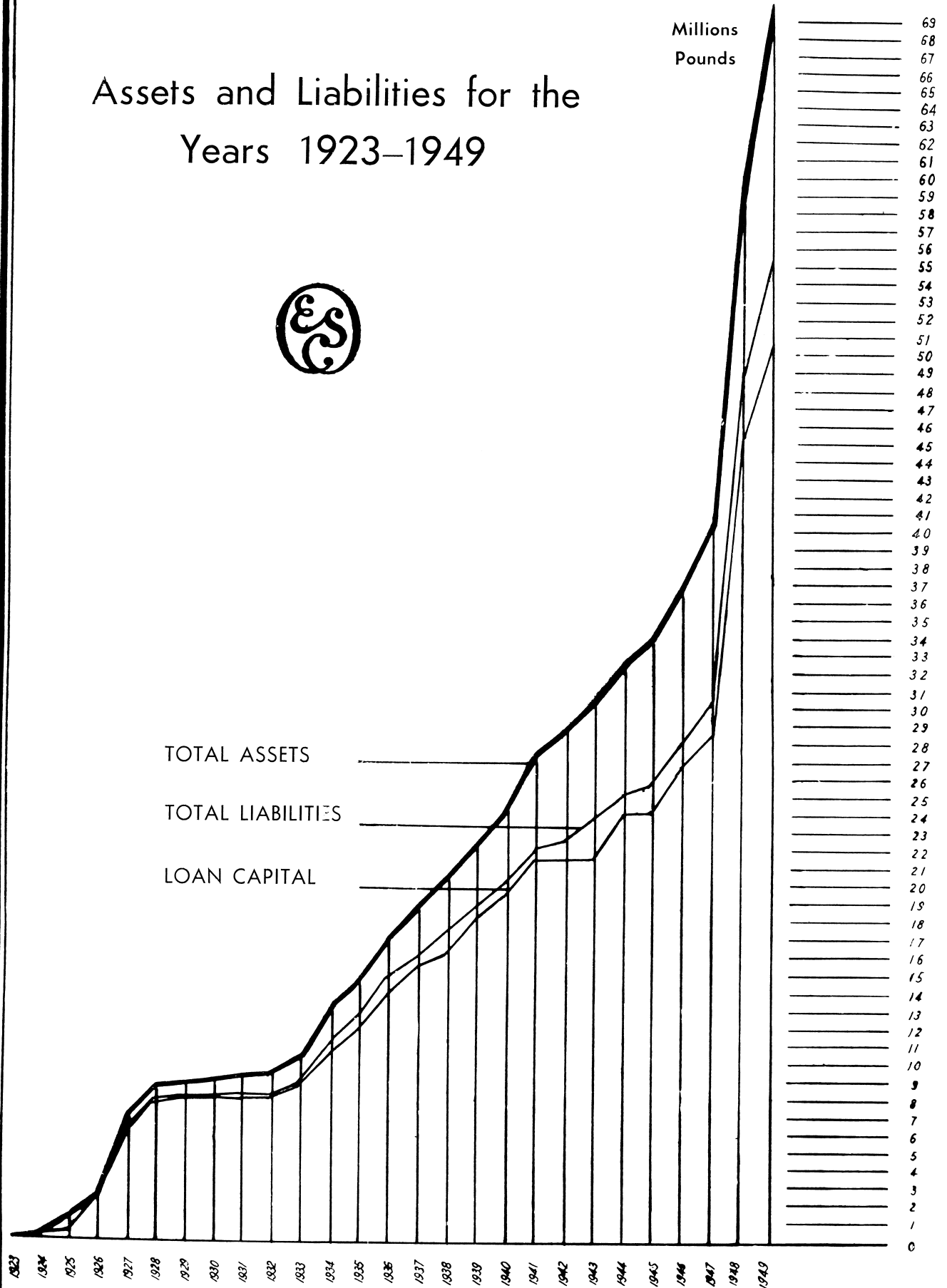
Reserve and Redemption Funds.—The amount in the Reserve Fund at 31st December, 1949, stood at £2,263,311 and the Redemption Fund at that date amounted to £11,885,624, which exceeded the amount required for the redemption of the loans over the periods fixed by the Commission, as referred to in the Auditors' Report. This excess includes the proceeds from the sales of assets, and profits on realisation of investments. Moreover, yields on securities purchased since June, 1941, for Redemption Fund investments were lower than the rate of $3\frac{1}{2}$ per cent. stipulated in the Act, on which the valuation of the Redemption Fund must be based, and in order to provide for this deficiency the excess has been retained in the Redemption Fund.

Investments.—The book value of securities, representing investments in Government, Municipal, Rand Water Board and Electricity Supply Commission stocks, and first mortgages on freehold properties, held by the Commission on behalf of the various funds at 31st December, 1949, was £14,798,633, the nominal value being £14,815,473. The market value of these investments at that date was £13,758,442.

Capital Expenditure.—Expenditure on Capital Account during the year amounted to £4,709,098, which brought the total capital expenditure at 31st December, 1949, to £50,117,042. Expenditure on Capital Account will amount to approximately £104,100,000 on completion of all the works to which the Commission is committed and on projected works.

Assets and Liabilities for the Years 1923-1949

Millions
Pounds



Assets and Liabilities.—The Commission's total assets at 31st December, 1949, amounted to £69,492,449 and its total liabilities to £55,114,122, the excess of assets (as shown in the Balance Sheet), over liabilities being £14,378,327. A graph showing the growth of assets and liabilities since 1923 is reproduced on page 15.

Summary of Operating Statistics.—Revenue, production costs and other important figures relating to the operation of the Commission's Undertakings during the year 1949, with the comparative figures for 1948 are as follows:

	1949	1948	Increase
Revenue as per Revenue Accounts	£8,799,486	£6,492,153	35·54%
Total Production Costs (including interest, redemption and reserve fund charges)	£8,820,887	£6,425,105	37·29%
Difference between Revenue and Production Costs	Dr. £21,401	Cr. £67,048	—£88,449
Average price per unit sold ...	0·3031d.	0·2598d.	16·70%
Average revenue per unit sold (including Sundry Revenue)	0·3049d.	0·2636d.	15·66%
Average cost per unit sold ...	0·3056d.	0·2609d.	17·15%
Total cost of coal consumed (including railage)	£2,217,633	£1,754,840	26·37%
Railage on coal consumed ...	£682,783	£560,299	21·86%
Coal consumed (in tons of 2,000 lb)	6,365,573	5,286,201	20·42%

A diagram showing the sub-division of the Commission's total production costs for the year 1949 is reproduced on page 7.

STAFF

Home Ownership Scheme.—Loans granted to employees, to enable them to acquire homes under the Commission's Home Ownership Scheme in terms of the 1941 amendment to the Electricity Act, totalled £104,917 at 31st December, 1949, of which amount £35,739 had been repaid at that date.

Personnel.—The staff employed by the Commission at the 31st December, 1949, numbered 8,764 made up as follows:

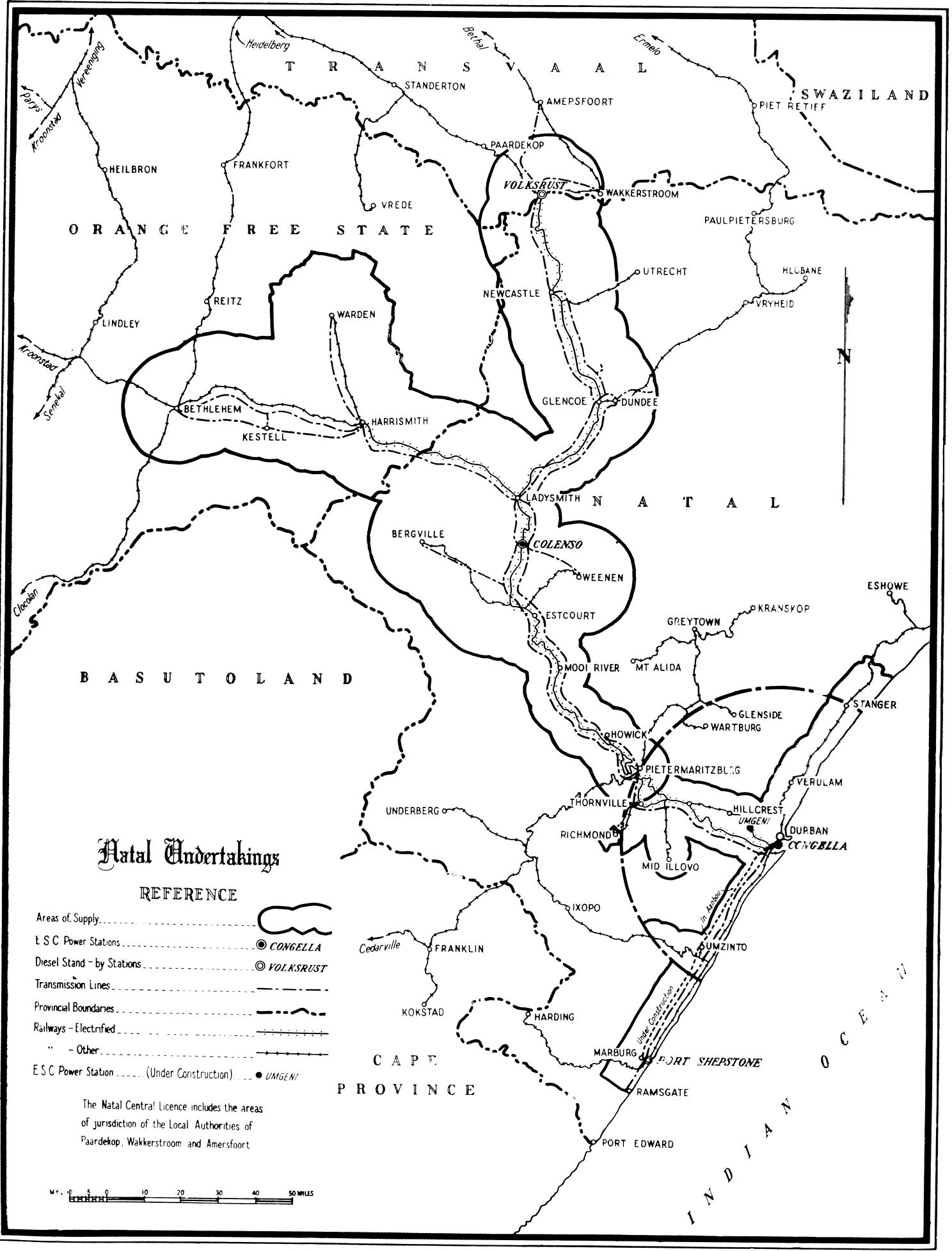
Europeans	...	...	...	...	...	...	...	...	3,081
Non-Europeans	...	...	...	...	...	...	...	...	5,683
									<hr/>
									8,764
									<hr/>

The Commission desires to express to all members of the staff its appreciation of their loyal and conscientious efforts, which have contributed so largely to the achievements recorded herein.

COMMISSION'S UNDERTAKINGS

The operations and developments of the individual Undertakings are reviewed in detail in the following pages.

General Note applicable to all Undertakings:
The expression "Working Costs" includes Interest charges and Redemption Fund contributions on loan capital and amounts set aside to Reserve Fund.

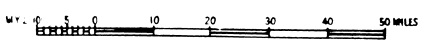


Natal Undertakings

REFERENCE

- Areas of Supply
- E.S.C. Power Stations CONGELLA
- Diesel Stand-by Stations VOLKSRUST
- Transmission Lines
- Provincial Boundaries
- Railways - Electrified
- " - Other
- E.S.C. Power Station (Under Construction) UMGENI

The Natal Central licence includes the areas of jurisdiction of the Local Authorities of Paardekop, Wakkerstroom and Amersfoort.



NATAL CENTRAL UNDERTAKING

Operating Statistics

CONSUMERS.		SALES.			Revenue.	Average Price per Unit Sold.	
Class.	Number.	Units.	Increase or Decrease.	1949.		1948.	
			%	£	d.	d.	
Traction	1	240,588,358	- 8.268	407,882	0.4069	0.3887	
Bulk	11	93,389,444	+31.178	199,366	0.5123	0.5095	
Mining	7	12,657,055	+20.157	30,883	0.5856	0.5680	
Industrial	322	18,736,107	+ 3.530	58,015	0.7432	0.7298	
Domestic and Lighting	2,942	6,433,982	+11.710	48,118	1.7949	1.7401	
	3,283	371,804,946	+ 1.073	744,264	0.4804	0.4552	

	1949.	1948.	To 31/12/49.
Revenue	£755,593	£706,045	
Working Costs	£757,627	£718,638	
Deficit	£2,034	£12,593	£11,219
Capital Expenditure	£312,602	£539,302	£6,247,962
Units Sent Out	394,546,610	390,508,680	
Maximum half-hour Demand kW }	70,480	65,780	
Station Peak kW	85,000	82,500	
Load Factor %	63.9	67.6	
Thermal Efficiency %	18.19	17.66	
COAL:			
Consumption tons	302,869	309,291	
Average per unit sent out—lb	1.535	1.584	
Calorific Value B.Th.U./lb	12,220	12,200	
Total Cost	£193,057	£177,768	
Cost per ton	12s. 9d.	11s. 6d.	

Operating Conditions.—Although operating conditions at Colenso Power Station continued to be difficult during 1949, continuity of supply was satisfactory, except on one occasion when supply was completely interrupted due to a fault on the 88-kV busbars. The decrease in demand for traction purposes, following the transfer to Congella Power Station at the end of 1948 of traction load for the main line from Durban to Cato Ridge, was more than offset by increased demand from other sources, with the result that sales and output both record increases exceeding 1 per cent. The maximum half-hour demand, 70,480 kW, constitutes a record for the power station.

The commissioning of a new 25,000-kW turbo-generator in February and two new boilers in June and August did much to relieve the previous strain on the available plant, and these new installations have presented an opportunity for much-needed overhauls of older equipment.

Shortages of coal continue to cause grave anxiety. On one occasion the complete closing down of the station was narrowly avoided, and from time to time the Commission is obliged to crush coal at the power station.

Distribution System.—The 88-kV line from Glencoe to Newcastle has been energised, and construction of the transmission line from Newcastle to Utrecht is well advanced. Supply to Utrecht will probably be given by the end of 1950.

Survey of the routes for the 132-kV transmission lines between Colenso and Springfield, Durban, has been completed, and work continued throughout the year on obtaining the necessary servitudes. It was expected that construction of foundations for the tower structures would begin early in 1950.

Supply was given to the townships of Winterton and Bergville in March, and applications for supply have been received from the townships of Greytown, Vryheid, Reitz, Memel, Paulpietersburg and Ixopo.

Two of the three new 9,000-kVA transformers have been installed and are in commission at Pietermaritzburg. The load at Estcourt has risen to an extent which necessitated installing there two of the 2,400-kVA transformers released from Pietermaritzburg instead of one as originally planned. Plant ordered for the 88-kV substation at Wessels Nek has arrived, but that for Cedara is still awaited. The construction of additional motor-generator substations, to meet the increase in traction loading, is under consideration.

Rural Supplies.—Unfortunately shortages of material and other difficulties have rendered it impossible to keep pace with the very keen demand for supplies in rural areas, but every effort has been made to deal with outstanding applications. Plans are under consideration for substantial rural development in the Bethlehem, Winterton, Bergville and Umlaas Road areas.

125·74 miles of medium-voltage line were erected during the year, and about 120 new rural consumers were connected.

Housing.—Twenty houses ordered during the previous year were completed and occupied in 1949. This completes the Colenso housing programme for the time being, but more houses will be required and suitable building plots have already been purchased. The water-borne sewage system has not yet been completed.

Financial.—The year's working resulted in a small deficit of £2,034, compared with £12,593 in the previous year. The accumulated deficit at the year's end amounted to £11,219, against £9,185 at the end of 1948.

WITBANK UNDERTAKING

Operating Statistics

CONSUMERS.		SALES.		Revenue.	Average Price per Unit Sold.	
Class.	Number.	Units.	Increase or Decrease.		1949.	1948.
			%	£	d.	d.
Traction	1	166,812,063	+ 9.450	233,618	0.3361	0.3489
Bulk	3	3,816,280*	—†	6,572	0.4133	0.1133
Mining	32	65,676,683	+10.135	111,416	0.4071	0.4149
Industrial	97	118,324,187	+10.009	103,442	0.2098	0.2108
Domestic and Lighting	1,418	3,610,914	+18.353	16,549	1.1000	1.0843
	1,551	358,240,127*	—†	471,597	0.3159	0.2196

	1949.	1948.	To 31/12/49.
Revenue	£746,047	£719,437	
Working Costs	£755,182	£711,459	
Deficit	£9,135	—	
Surplus	—	£7,978	£1,470
Capital Expenditure	£155,712	£71,723	£3,096,905
Units Sent Out	740,783,488	738,593,299	
Maximum one hour } Demand kW }	102,636	108,042	
Load Factor %	82.4	77.8	
Thermal Efficiency %	16.60	17.04	
COAL:			
Consumption tons	693,802	671,243	
Average per unit sent out—lb	1.873	1.818	
Calorific Value B.Th.U./lb	10,970	11,010	
Total Cost	£129,159	£131,902	
Cost per ton	3s. 9d.	4s. 0d.	

* 546,123,467 units sent to Rand Undertaking are not included.



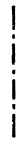




† Not comparable.

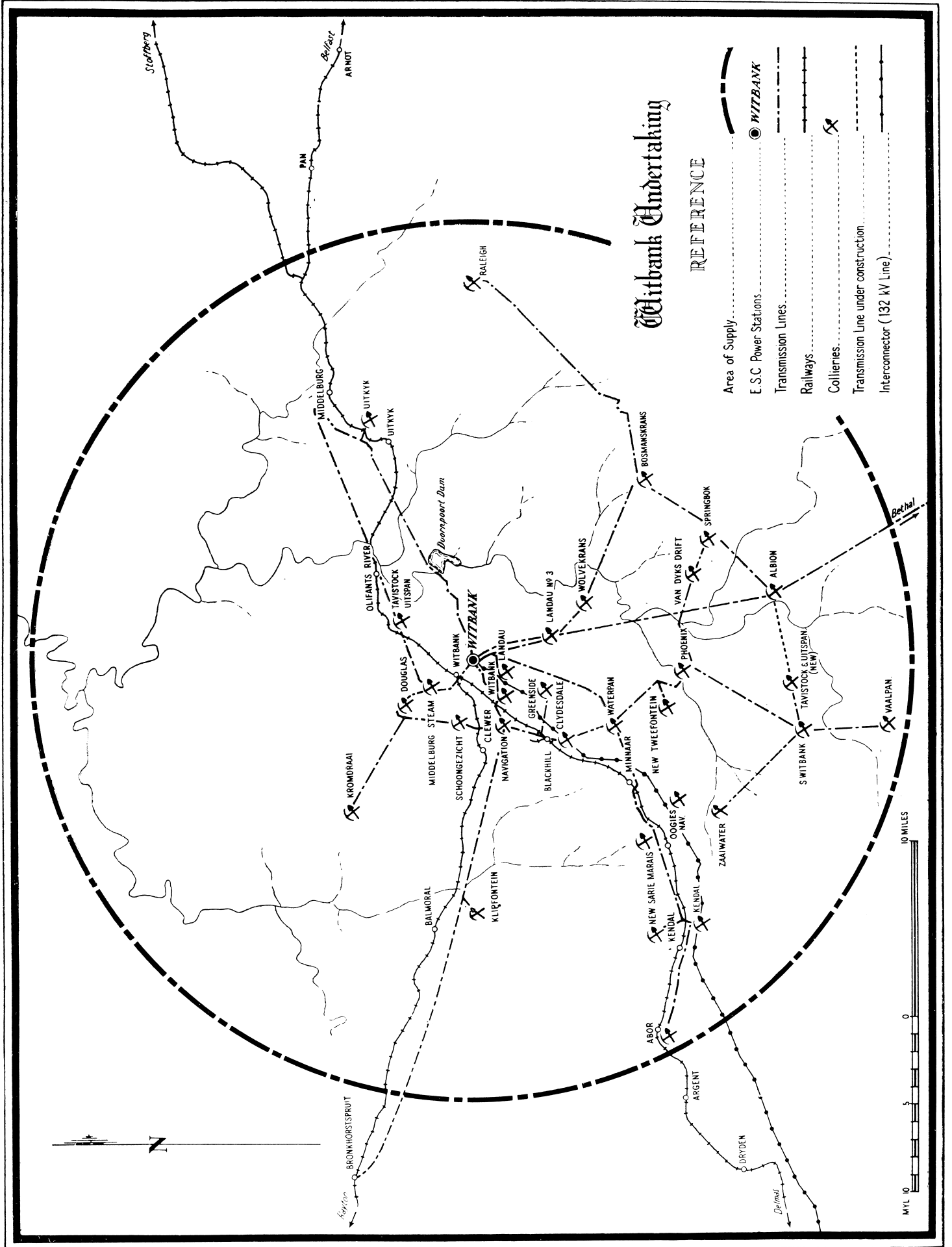
Output and Sales.—The decrease in sales by this Undertaking (the previous year's figure was 633,245,570 units), is due to reorganisation following the purchase by the Commission, in July, 1948, of the V.F.P. Co.'s Undertaking. During 1949 Witbank Power Station supplied 546,123,467 units into the Rand Undertaking System. As will be seen from the Operating Statistics, units sent out from Witbank Power Station in 1949 show a small increase over the 1948 figure.

The number of consumers increased from 1,388 in 1948 to 1,551 in 1949.

Witbank Undertaking

REFERENCE

- Area of Supply: 
- E.S.C. Power Stations:  WITBANK
- Transmission Lines: 
- Railways: 
- Collieries: 
- Transmission Line under construction: 
- Interconnector (132 kV Line): 



Distribution System.—The erection of conductors over $27\frac{3}{4}$ route miles completed the $41\frac{3}{4}$ -mile 88-kV line, on reinforced-concrete structures, from Witbank via Middeldrift to Bethal. The line was energised at 21 kV and supply, on this temporary basis, was given to Bethal in July. This work entailed the construction of $1\frac{1}{2}$ miles of 11-kV line in Bethal on behalf of the Municipality and laying about a mile of 11-kV cable. At Witbank about one mile of 21-kV cable was laid to connect the power station to the step-up substation, and temporary substation arrangements were made at Witbank, Middeldrift and Bethal. Although late delivery of the necessary equipment considerably delayed the construction of the three substations, much work was completed, including steelwork, foundations and fencing, and the erection of the available electrical gear, such as 88-kV and 21-kV disconnects, busbars and connections. It was expected that undelivered materials would arrive in time to put the substations into commission during May, 1950. With the completion of the scheme supply to Bethal and to collieries around Middeldrift will be greatly improved.

The 21-kV network was extended by a $10\frac{3}{4}$ -mile line supplying Raleigh Colliery in the Middelburg district, and by completion of the $6\frac{1}{2}$ -mile tie-line from Middeldrift to New Tavistock Colliery, the 1·9-mile line between Klippoortje and Witbank Consolidated Coal Mines, and the short line from Middeldrift to Albion Colliery.

Incomplete deliveries of materials, and especially lack of switchgear, hampered the progress of work on the permanent colliery substations at Albion, New Clydesdale, Transvaal, Blesbok, New Tavistock, Klippoortje, Witbank Consolidated and Raleigh, but it was expected that these substations would be completed by the end of April, 1950.

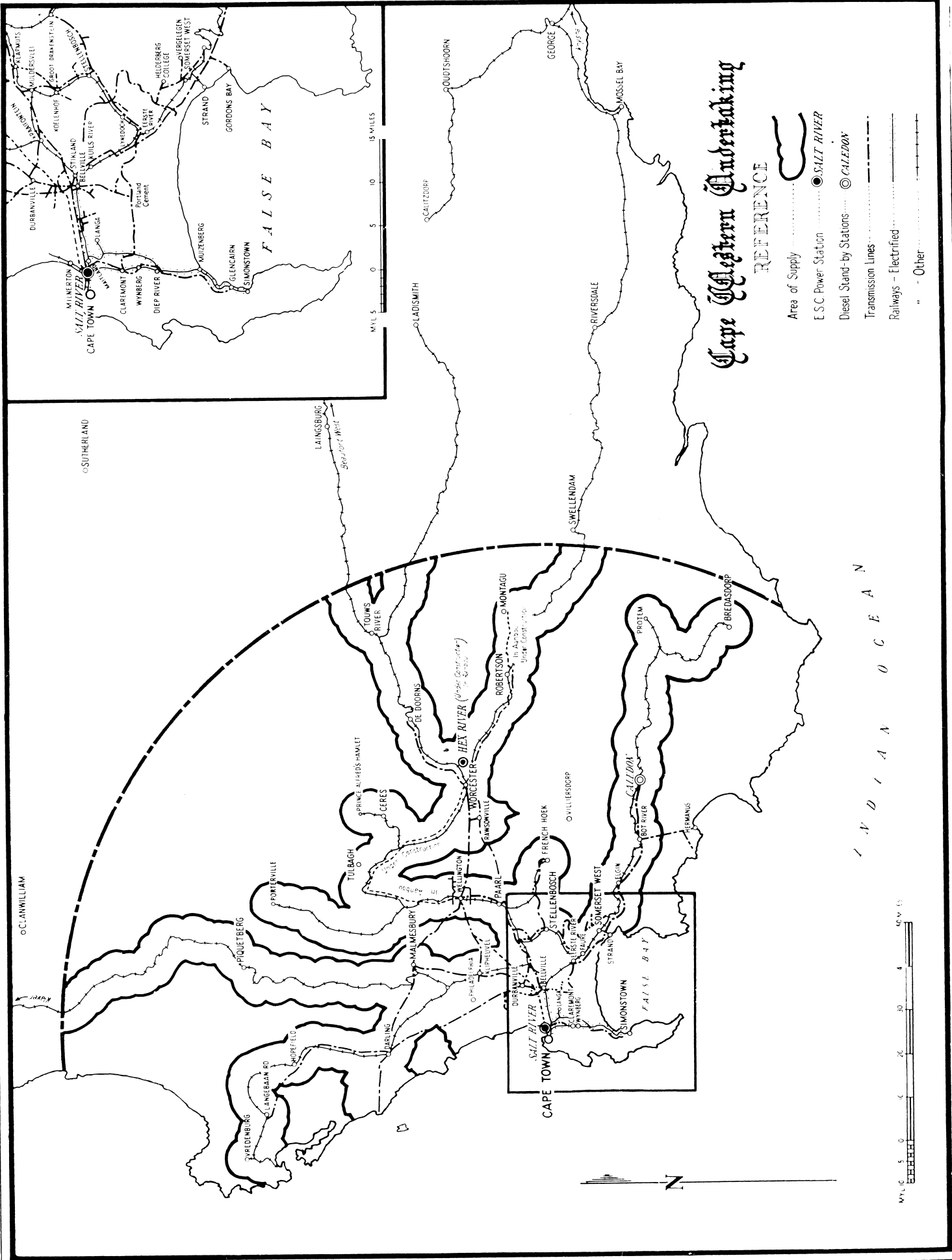
In Witbank and Bronkhorstspuit townships minor extensions were made to the reticulation systems, with a number of new service connections and additional street lights. Several miles of 2·2-kV lines were erected in the district, to supply small groups of consumers, including farmers.

Preparations are in hand for extending the 88-kV system to Standerton, for supplying additional power for the new furnaces of Rand Carbide Ltd., and for furnishing supply to a large industrial concern near Witbank.

The portable radio-telephone apparatus has continued to prove its great value in connection with the work carried out in extending the distribution system.

General.—The increased activities of the Undertaking have necessitated additional office accommodation, which has been provided, and a new outdoor store yard has also been completed. Extension of the network and the erection of new substations have considerably increased repair and maintenance work. At the power station a number of cables were taken up and relaid, joints and end boxes made, and alterations effected to some overhead lines.

Financial.—Whereas revenue in 1949 rose by £26,610 to £746,047, working costs rose by £43,723 to £755,182, resulting in a deficit of £9,135 on the year's working. The accumulated surplus at the end of 1949 amounted to £1,470.

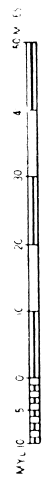
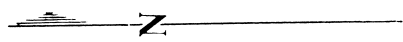


Cape Western Undertaking

REFERENCE

- Area of Supply
- E.S.C. Power Station ● SALT RIVER
- Diesel Stand-by Stations ● CALLEDON
- Transmission Lines
- Railways - Electrified
- Other

INDIAN OCEAN



MILES 0 5 10 15

FALSE BAY

o SUTHERLAND

CAPE TOWN

SALT RIVER

WORCESTER

HEX RIVER

TOUWS RIVER

o SUTHERLAND

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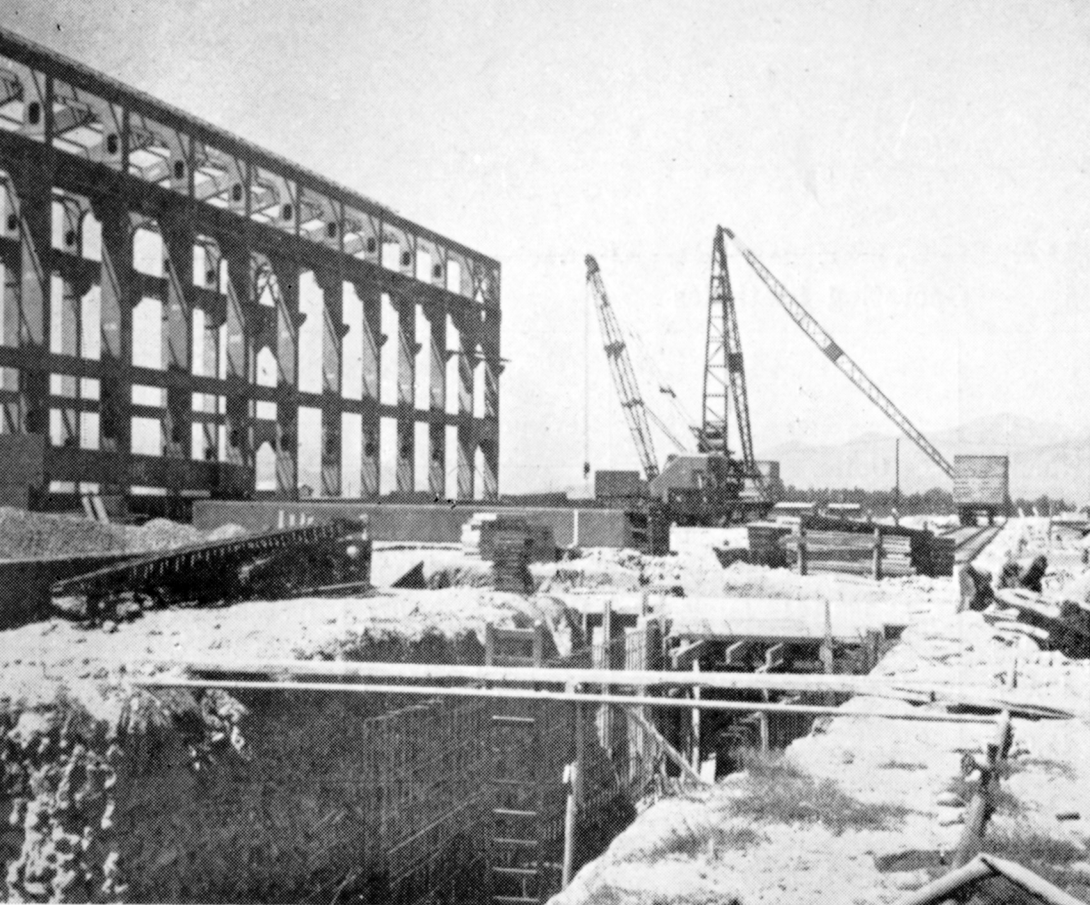
o SUTHERLAND

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CAPE WESTERN UNDERTAKING
Operating Statistics

CONSUMERS.		SALES.		Revenue.	Average Price per Unit Sold.	
Class.	Number.	Units.	Increase or Decrease.		1949.	1948.
			%	£	d.	d.
Traction	1	67,513,601	+ 4.386	172,288	0.6125	0.6904
Bulk	10	55,188,164	+ 15.901	139,752	0.6077	0.5986
Industrial	1,108	84,156,628	+ 11.232	287,589	0.8202	0.7868
Domestic and Lighting	13,947	42,640,463	+ 23.642	218,616	1.2305	1.2290
	15,066	249,498,856	+ 12.165	818,245	0.7871	0.7870
		1949.		1948.	To 31/12/49.	
Revenue		£820,399		£731,349		
Working Costs		£835,334		£722,505		
Surplus		—		£8,844	£66,195	
Deficit		£14,935		—	—	
Capital Expenditure		£1,406,895		£362,221	£5,251,124	
		Salt River Power Station		Worcester Power Station		
		1949.		1948.	1949.	
Units Sent Out		214,664,641		200,398,234	354,481	
Maximum half-hour Demand kW }		58,410		59,300	—	
Station Peak kW		66,000		63,800	—	
Load Factor %		41.7		38.5	—	
Thermal Efficiency %		17.42		17.44	—	
FUEL:						
Coal Consumed—tons		173,195		157,052	—	
Average per unit sent out—lb		1.614		1.567	—	
Calorific Value B.Th.U./lb		12,140		12,480	—	
Total Cost		£255,065		£222,830	—	
Cost per ton		29s. 6d.		28s. 5d.	—	
Oil consumed—lb		—		—	206,620	
Oil per unit sent out—lb		—		—	0.583	

The former Cape Town Undertaking became the Cape Western Undertaking on 1st January, 1949. The new designation better describes the Undertaking's scope, and will tend to avoid confusion with the Cape Town Municipal Undertaking.



HEX RIVER POWER STATION (under construction):
Boiler house area; coal staithe tunnel in foreground.

[Photo Fricker's Photo Service.]

Arrangements between the Commission and the Cape Town City Council for the operation of the Salt River and Table Bay Power Stations continued to operate in terms of the Pooling Agreement of 1933. The fourth 40,000-kW turbo-generator at the municipal Table Bay Station was commissioned in time to relieve the previous strain on the pooled stations during winter load conditions.

The total number of units sent out from the Pooled Power Stations during 1949 was 811,488,697, compared with 738,415,143 in 1948. Of the 1949 total the Commission's Salt River Station sent out 214,664,641 units, representing an increase of 14,266,407 units or 7 per cent. over the previous year.

Power Station Developments.—Developments in connection with the Commission's new major power stations, Hex River and Salt River No. 2, are reported in pages 8 and 9.

The two 1,000-kW diesel sets installed in a temporary building at Worcester were available for service throughout the year and they proved a very valuable asset in the stabilisation of the system in the northern area. The 1,000-kW diesel unit ordered for Caledon has not yet been delivered, and a decision regarding its installation has been deferred as it may be decided to transfer to Caledon one of the diesel sets now operating at Worcester when the second transmission line between Wellington and Worcester via Tulbagh is commissioned in 1951.

Coal.—Irregular and inadequate supplies of coal have continued to cause grave anxiety at the power stations. Deliveries have included large quantities of round coal, which must be crushed before use, and much of it was of a size which had to be broken down by manual labour before being fed to the crushers.

It seems anomalous that the Commission and the City Council should, in effect, be penalised for their foresight in installing crushers by being supplied with coal which entails so much expense before it can be used. Moreover the railage per ton of coal delivered has risen from 261·6d. in 1948 to 280·9d. in 1949. Thus it is not surprising that the additional charge per unit under the Coal Clause Adjustment rose from 0·0471705d. in 1948 to 0·0680234d. in 1949, and the total amount of adjustment from £36,376 to £57,466.

Electricity Demand.—Operating statistics for the Undertaking again reflect the continued steep increase in demand for electricity. Sales in 1949 show an increase of 12 per cent. over 1948, and the number of consumers rose from 13,156 to 15,066. At the year's end industrial connections numbered 1,108 compared with 891, and the figure for Domestic and Lighting was 13,947 against 12,255. 195 new farm connections brought their total to 940, and agreements were completed for a further 230.

Last year's Report mentioned the difficulty of reconciling a rapidly increasing demand from consumers with slow deliveries of new plant and equipment, and it is pleasing to record that 1949 saw a greater measure of progress and development than seemed possible a year ago. There have been some anxious periods, but it is felt that the efforts made have now brought the goal of system stability and consolidation within sight.

Another year of continued expansion in demand, as indicated by the figures already given, passed with operational continuity satisfactorily maintained and with no major stoppages of supplies.

Distribution System.—Considerable progress was achieved with the cable laying programme during the year. Oakdale No. 1 cable was energised on 20th January, 1950, and the second Oakdale and one of the two Elsie River cables

CAPE WESTERN UNDERTAKING:
Oakdale substation structure under
construction.



were expected to be ready by March. With these feeders in service the rural system will be satisfactorily set up, so far as main outgoing feeds from Cape Town are concerned, for at least twelve months, and in the interim it is intended to lay and commission the third Oakdale and the second Elsie's River cables.

The Wellington/Worcester transmission line via Tulbagh is expected to be commissioned early in 1951, although the mountainous and rocky nature of the route makes excavation a slow process. The present Bellville/Paarl (later to become Oakdale/Paarl), and the Paarl/Wellington 33-kV lines are to be converted to 66 kV, and some re-routing of the lines will be necessary. It is hoped that servitudes for the 66-kV line from Oakdale to Somerset West will be negotiated in time for construction to begin by the middle of 1950; this transmission line is required for electrification of the line to Eerste River and the Stellenbosch loop railway line.

After some delays, chiefly caused by difficulties in obtaining insulators, supply of electricity to the Robertson Municipality was made available on 12th December, 1949. Supply to Montagu Municipality was also delayed by shortage of insulators but it is hoped to give supply by May, 1950.

An agreement was completed for supplying the town of Moorreesburg and it is planned to have the supply available in April, 1950. Towards the latter part of 1950 work will begin on an 11-kV line from Ashton via Bonnievale to Swellendam, where the Municipality has accepted terms for bulk supply, and on the extension of the Oakdale/Langebaanweg line, to supply a number of consumers including canning and fishing companies, Vredenburg Municipality and the Saldanha Bay Village Management Board.

During the year the 11-kV system was extended by 122 miles, the 6.6-kV system by 39 miles, and 52 miles were added to the low-voltage network. In the three years 1946 to 1949 the number of consumers supplied under reticulation schemes has risen from 9,513 to 14,275.

The Railways Administration has applied for a bulk supply to meet an initial demand of 500 kVA for its construction depot at Eerste River, and the South African Broadcasting Corporation has made enquiries regarding power for its proposed transmitting station at Brackenfel.

The remarkable expansion of industry in the Goodwood, Elsie's River, Parow and Bellville areas necessitated a further programme of substation construction. Three additional substation buildings were completed and commissioned in 1949, with a fourth almost ready at the end of the year. It was also necessary to increase local transformer capacity at a number of substations, bringing the total to 14,400 kVA, compared with 10,500 kVA at the end of 1948.

Farmers' Schemes.—Rural electrification continues to receive every attention within the limits imposed by financial stringency and the equipment obtainable; as already mentioned, 940 farms were connected to the system by the end of 1949, an increase of 195 over the previous year.

The Bottelary A scheme was completed during the year and 22 consumers were connected. The main network was completed for the Bottelary B scheme and 20 consumers connected. The Klipheuwel and Elgin schemes were also complete by the year's end, supplying 38 and 16 consumers respectively. The Philadelphia scheme was supplying 13 consumers with another 35 to be connected early in 1950, and the scheme taken over from the Worcester Municipality in 1947 supplies 51 consumers.



CAPE WESTERN UNDERTAKING:

Excavating trenches for Salt River/Oakdale 33 kV cables.

Office Accommodation.—New offices at Grand Parade Centre, which will provide for the expansion of staff which must follow the expansion of the Undertaking's activities, were occupied in June, 1949. A new cash office was opened at Worcester in May, 1949, and others, at Goodwood and Parow, will be ready for occupation early in 1950.

Native Quarters.—New native quarters were constructed and occupied during the year at Bot River, Eerste River and Hex River and another small block of quarters is to be built at Paarl.

Financial.—The year's working resulted in a deficit of £14,935, compared with surpluses of £8,844 in 1948 and £26,734 in 1947, reducing the accumulated surplus from £81,131 at the end of 1948 to £66,195 at 31st December, 1949. Last year's Report forecast that heavy expenditure on plant and equipment, repairs and renewals, would increase charges to Revenue Account. Capital Expenditure in 1949 amounted to no less than £1,406,895, and the capital charges on additional expenditure will still further increase costs, to an extent which may necessitate an increase in charges to consumers.

DURBAN UNDERTAKING

Operating Statistics

CONSUMERS.		SALES.		Revenue.	Average Price per Unit Sold.	
Class.	Number.	Units.	Increase or Decrease.		1949.	1948.
			%	£	d.	d.
Traction	1	42,592,168	—	71,427	0·4025	—
Bulk	2	439,948,995	+ 4·433	736,060	0·4015	0·3612
Industrial	171	22,621,937	+ 5·528	47,951	0·5087	0·4628
Domestic and Lighting	2,352	7,815,143	+31·084	54,095	1·6612	1·7418
	2,526	512,978,243	+14·333	909,533	0·4255	0·3844

	1949.	1948.	To 31/12/49.
Revenue	£912,052	£726,821	
Working Costs	£910,935	£731,405	
Deficit	—	£4,584	£54,391
Surplus	£1,117	—	—
Capital Expenditure	£819,924	£455,243	£5,028,409

	Congella Power Station Nos. 1 and 2.		Port Shepstone Power Station.	
	1949	1948.	1949.	1948.
Units Sent Out ...	505,357,750	449,443,477	1,810,647	821,260
Maximum half-hour Demand kW)	115,200	102,267	3,268	1,656
Station Peak kW ...	129,400	114,000	3,400	1,680
Load Factor % ...	50·1	50·0	6·3	5·6
Thermal Efficiency %	20·55	19·81	—	—
FUEL:				
Coal Consumed — tons	343,891	314,600	—	—
Average per unit sent out—lb	1·361	1·400	—	—
Calorific Value B.Th.U./lb	12,200	12,300	—	—
Total Cost	£309,956	£256,682	—	—
Cost per ton	18s. 0d.	16s. 4d.	—	—
Oil consumer—lb ...	—	—	1,053,029	444,040
Oil per unit sent out—lb	—	—	0·582	0·541

Units sold in 1949 show an increase of 14 per cent. over the figure for the previous year, and the following figures illustrate post-war expansion at Durban Undertaking:

Units sold, 1944	...	...	...	...	...	321,583,537
Units sold, 1949	...	...	...	...	...	512,978,243

Demand was increased by the transfer from Colenso to Congella, at the end of 1948, of the traction load for the main line from Durban to Cato Ridge, but on the other hand the closing down of the large water-pumps, which had for a number of years provided temporary water supply for the Durban Corporation, reduced consumption by some 8,000,000 units.

Unfortunately there were some failures of, and interruptions to, supplies during 1949. On 17th May supplies to the South Coast were interrupted when a mast on the 33-kV line collapsed during a gale. Port Shepstone Power Station, where the capacity has recently been expanded, proved its utility on this occasion by coming into operation to maintain supplies in the affected area. On 17th November railway traffic on the South Coast was interfered with for three hours due to a 33-kV conductor falling from its mast and blocking the passage of trains. The work of repair was made difficult by floods.

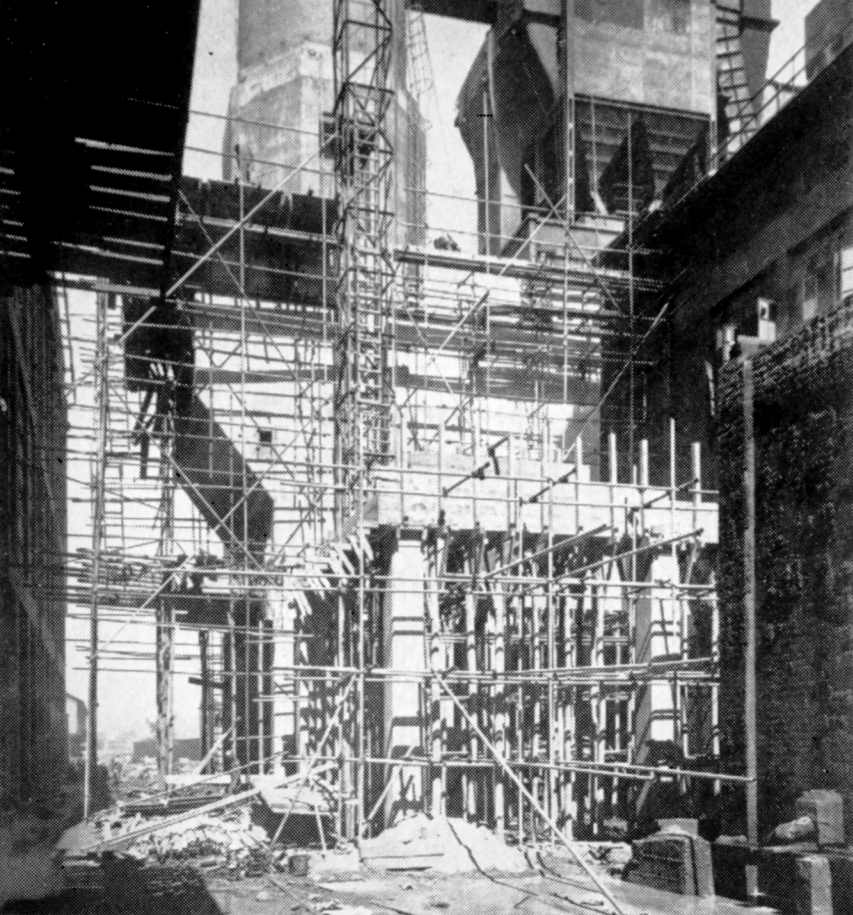
On 30th June and on 1st July there were two complete failures of supply from Congella. On the first occasion switchgear failed to operate, and on the second the main 6.6-kV metalclad compound-filled busbars faulted and burnt away a portion of the busbars. It is considered possible that the first fault produced transient electrical conditions which overstressed the equipment which failed on the second occasion. On 10th August there was a brief partial interruption late at night, and on 2nd December there was a complete shut-down at Congella for about half an hour, following a serious fault on the S.A. Railways distribution system, the protection on which did not function. Railway traffic was not interrupted and inconvenience to other consumers was comparatively small, as the failure occurred between one and two o'clock in the morning.

Power Station.—Strain on plant at Congella has been eased by the commissioning of two new boilers, but much boiler plant will have to be out of commission from time to time on account of the installation of new precipitators in No. 1 Station. Work on the installation of new precipitators in No. 1 boiler house has progressed; that for No. 7 boiler has been placed in commission and work is proceeding on Nos. 5, 6 and 8. When the installation of the equipment is complete it is expected that the long-standing dust nuisance at Congella will be eliminated.

The third 40,000-kW turbo-generator, No. 6, was delivered and was under erection at the year's end. Two of the 6,000 kW sets which were at Congella have been transferred to Kimberley Power Station.

Work was begun on the pneumatic ash disposal plant, to be ready by the end of 1950. Screening plant for the intake was to be commissioned early in 1950, and extensions to workshops, stores and native compound were almost complete at the end of 1949.

At Congella, as at Colenso, shortage of coal continued to cause grave anxiety; indeed, on one occasion it became necessary to shut down Congella Power Station for some hours as supplies of coal were exhausted, and the supply position showed no improvement during the first weeks of 1950.



**CONGELLA POWER STATION:
Electrostatic precipitators Nos. 6
and 8 under construction.**

[Photo Ballance Studios.]

South Coast.—On the South Coast, 10,950,989 units were sold in 1949, an increase of 20 per cent. over the 1948 figure. 11,663,975 units were purchased at Warner Beach from the Durban Corporation for supply to this area, and 1,810,647 units were sent out from the expanded Port Shepstone Power Station, against 821,260 units in 1948.

Great difficulty was experienced in giving reliable supplies to the South Coast. Deterioration of the 33-kV line necessitated constant work in order to maintain supplies and ensure safety for the railway traffic which passes along the route of the transmission line. The whole of the line between Warner Beach and Scottburgh has been reconstructed on wooden poles, and much work was done on repair and maintenance south of Scottburgh. It is the intention to retain the 33-kV line from Warner Beach to Scottburgh for some years, but the 33-kV line south of Scottburgh will be demolished as soon as the new 88-kV line is in satisfactory operation. In the meantime much of the 6.6-kV distribution around Scottburgh is being changed to 11 kV in preparation for the supply coming from the 88-kV step-down substation at Umzinto. The 11-kV line has already been built between Umzinto and Scottburgh. It has become necessary to install voltage regulators at Port Shepstone, and these will be operating in March, 1950. The two new 1,000-kW diesel sets have been placed in commission at Port Shepstone, but demand on the South Coast has already outstripped the total installed capacity of this power station.

The situation on the South Coast cannot be entirely satisfactory until the new 88-kV line, from Durban to Marburg beyond Port Shepstone, is completed and operating. By the end of the year about seven miles of reinforced-concrete towers had been erected, and although the line may not be completed as anticipated by August, 1950, everything possible is being done to speed the work. This line, estimated to cost £400,000, follows a 74-mile route about two miles

inland, where it will not be subject to the corrosive atmosphere which has from time to time caused flashovers and consequent interruption of supply on the 33-kV line, which follows the coast. The two major step-down substations will be at Umzinto and Marburg.

North Coast.—The arrangements referred to in the previous Report for effecting a supply to Tongaat Sugar Mill were completed during the year and a reticulation network is being established at the Mill and in Maidstone village. These supplies are the first to be given by the Commission on the North Coast.

Umgeni Power Station.—This new power station, to be erected near Pinetown, is referred to in page 8.

Office Accommodation.—Work on the new building commenced, as scheduled, early in 1949, and it will be occupied in May, 1950. It will provide adequately for the increased staff necessitated by expansion of the Undertakings controlled from Durban, and accommodation not at present required has been let to others.

Financial.—The previous Report forecast that some financial improvement might be expected in 1949 as a result of the greater output available from the additional plant installed at Congella Power Station, but that an adjustment in tariffs might be required in view of the accumulated deficit, which amounted to £48,762 at the end of 1948. It will be seen from the Operating Statistics that units sold in 1949 increased by 14 per cent. compared with 1948. Tariff charges to the Durban Corporation and the Railways Administration were increased by 7s. 9d. per kW of maximum demand with effect from September, 1949, with a further 5s. per kW to be charged from the beginning of 1950. To other consumers the increase amounted to 10 per cent. on former rates, effective November, 1949, onwards. The year's accounts show a surplus of £1,117 against a deficit of £4,584 in 1948.

ELECTRON HOUSE, DURBAN:
New premises containing the offices
of Natal Undertakings.



SABIE UNDERTAKING

Operating Statistics

CONSUMERS.				SALES.		Revenue.	Average Price per Unit Sold.		
Class.	Number.			Units.	Decrease.		1949.	1948.	
					%	£	d.	d.	
Mining	2			7,030,797	3.337	8,020	0.2738	0.2634	
				1949.	1948.		To 31/12/49.		
Revenue				£8,020	£7,984				
Working Costs				£8,003	£8,044				
Surplus				£17	—		£79		
Deficit				—	£60				
Capital Expenditure				—	—		£96,170		
Units Sent Out				7,351,700	7,587,300				
Maximum half-hour Demand kW }				1,300	1,340				
Station Peak kW				1,475	1,500				
Load Factor %				64.6	64.5				
RAINFALL:									
Inches at Power Station				48.56	41.14				

The 1,350-kW hydro-electric station at Sabie continued throughout 1949 to supply efficiently the two gold mines which take the whole of the output.

Sales and output for 1949 show a slight decrease compared with 1948, and the year's operations resulted in a small surplus of £17.

BORDER UNDERTAKING Operating Statistics

CONSUMERS.		SALES.				Average Price per Unit Sold.				
		Class.	Number.	Increase or Decrease.				Revenue.	1949.	1948.
				Units.	%					
Bulk	...	1	60,952,690	- 3.116	£152,180	d. 0.5992	d. 0.5580			
Industrial	...	119	2,457,560	+ 85.536	15,854	1.5483	1.7715			
Domestic and Lighting	...	1,764	5,280,970	+ 6.059	35,831	1.6284	1.6849			
		1,884	68,691,220	- 0.760	203,865	0.7123	0.6623			
			1949.		1948		To 31/12/49.			
Revenue	...	...	£204,566		£191,762			
Working Costs	...	...	£204,068		£181,285			
Surplus	...	...	£498		£10,477		£10,474	
Capital Expenditure	...	...	£126,596		£76,207		£433,956	
			K.W.T.		Alice.					
Units Sent Out	...	1949.	1948.		1949.	1948.				
Maximum Half-hour	...	7,852,102	6,458,929		537,075	554,291				
Demand kW	...	2,600	1,984		187	172				
Load Factor %	...	34.5	37.3		32.8	36.7				
Thermal Efficiency %	...	12.23	12.25		—	—				
			East London.		K.W.T.					
Units Sent Out	...	1949.	1948.		1949.	1948.				
Maximum Half-hour	...	63,240,600	63,240,600		8,275	6,919				
Demand kW	...	16,190	16,190		2,108	2,142				
Load Factor %	...	41.5	44.2		13,240	13,020				
Thermal Efficiency %	...	15.37	16.07		£12,215	£9,629				
FUEL:					29s. 6d.	27s. 10d.				
Coal Consumed—tons	...	54,237	53,503		—	—				
Average per unit sent out—lb	...	1.780	1.692		—	—				
Calorific Value B.Th.U./lb	...	12,470	12,550		—	—				
Total Cost	...	£77,212	£71,867		—	—				
Cost per ton	...	28s. 6d.	26s. 11d.		—	—				
Oil consumed—lb	...	—	—		—	—				
Oil per unit sent out—lb	...	—	—		499,454	472,194				
					0.93	0.85				

Good progress was made during the year with the extensions and improvements planned for the Commission's three centres of supply in the Border area. The small recorded decrease in consumption was due to the severe drought conditions prevailing in East London during 1949.

East London.—Satisfactory progress has been made with the final extensions to the existing (Westbank No. 1) power station. Erection has begun of the structural framework for the housing of the additional 7,500-kW turbo-generator and two 55,000-lb/hr boilers. The ducting to augment the circulating water supply, and the extensions to the pumphouse for a new 10,000-g.p.m. pump were nearing completion at the end of the year. The progress of work on Westbank No. 2 Station is reported in page 9.

The increasing demand from outside the municipal area was mentioned last year, and during 1949 a start was made with plans for a 11-kV line for the Gonubie area. Supply will be purchased from the Municipality at their Wyse Avenue substation and delivered to Gonubie Brickfields Ltd., about four miles away. Initially the line will operate at 6.6 kV and it will be changed to 11 kV when the municipal system is changed. As soon as practicable after the change-over supply will be given to consumers in the vicinity of the line and at Gonubie Mouth Township.

King William's Town.—An additional 12,000-lb/hr boiler was commissioned in May, 1949, and the new 1,000-kW diesel set was erected during the year, but its commissioning had to be delayed until March, 1950, pending the arrival of step-up transformers. Satisfactory progress was made with the changeover of the power station and the distribution system to 11 kV. The contract was placed for the power station switchgear, and an annexe building to house it was designed and ordered. All the remaining cabling, switchgear, transformers and substations for the distribution system were ordered, and a considerable amount of preparatory construction work was carried out.

New offices were purchased and occupied, and a start was made on the construction of a stores block adjacent to the power station, to be ready for occupation early in 1950.

Alice.—Work carried out at Alice during the year included the installation and commissioning of new 3.3-kV switchgear for the power station. The power station building was renovated, and the re-organisation of the workshop and stores section is proceeding. Installation of the 230-kW a.c. diesel set, mentioned in last year's Report, was begun, an old 60-kW d.c. set being removed to make room for it. A second 230-kW diesel set will replace another small set during 1950.

A start was made with the change over from direct to alternating current working of the d.c. section of the reticulation system, and the refurbishing of the present a.c. system into one integrated system operating at 3.3 kV, which will result in greatly improved service to consumers.

An application from the Fort Beaufort Municipality for the Commission to take over their electricity supply scheme is under consideration.

RAND UNDERTAKING—OPERATING STATISTICS

CONSUMERS.		SALES.			Average Price per Unit Sold.	
Class.	Number.	Units.		Revenue.		
		1949.	From 1/7/48 to 31/12/48.			
ELECTRICITY:						
Bulk	30	267,047,406	137,433,725	£	d.	d.
Mining	86	3,478,505,735	1,636,733,844	3,462,936	0.2389	0.2367
Industrial	596	600,480,024	263,492,144	674,970	0.2698	0.2850
Domestic and Lighting	10,219	29,287,765	12,388,355	146,699	1.2021	1.2336
AIR AND STEAM:						
Bulk	1	2,761,547	—	—	—	—
Mining	12	264,636,894	135,652,175	508,001	0.4376	0.4344
Industrial	22	11,199,555				
	10,966	4,653,918,926	2,185,700,243	5,111,836	0.2636	0.2629
From 1/7/48 to 31/12/49.						
Revenue ... ..	...	...	£5,352,809	£2,508,060		
Working Costs ... ..	...	...	£5,349,738	£2,451,074		
Surplus ... ..	...	...	£3,071	£56,986	£60,057	
Capital Expenditure ... ..	...	...	£1,882,141	£27,680,936	£29,563,077	

RAND UNDERTAKING—OPERATING STATISTICS—(continued).

	Brakpan Power Station.		Klip Power Station.	
	1949.	From 1/7/48 to 31/12/48.	1949.	1948.
	ELECTRICITY:			
Units Sent Out	109,543,727	45,414,453	2,479,939,016	2,398,089,705
Maximum one-hour	44,578	40,549	355,890	378,180
Demand kW	28.1	25.8	79.5	72.2
Load Factor %	12.40	11.86	19.93	19.94
Thermal Efficiency %				
COAL:				
Consumption—tons	165,779	70,501	2,374,892	2,306,121
Average per unit sent out—lb	3.027	3.105	1.915	1.923
Calorific Value B.Th.U./lb	9,090	9,270	8,940	8,900
Total Cost	£75,514*	£33,256	£550,193	£475,405
Cost per Ton	7s. 8d.	7s. 9d.	4s. 7d.	4s. 1d.

* Includes cost of additional 31,863 tons—see Compressed Air section.

	Rosherville Power Station.		Simmerpan Power Station.	
	1949.	From 1/7/48 to 31/12/48.	1949.	From 1/7/48 to 31/12/48.
	ELECTRICITY:			
Units Sent Out	90,982,650	40,293,921	49,876,686	19,975,990
Maximum one-hour	49,245	47,718	38,839	36,427
Demand kW	21.1	19.4	14.7	12.6
Load Factor %	10.94	10.63	9.35	9.04
Thermal Efficiency %				
COAL:				
Consumption—tons	154,666	68,137	103,474	42,283
Average per unit sent out—lb	3.400	3.382	4.149	4.233
Calorific Value B.Th.U./lb	9,170	9,490	8,800	8,920
Total Cost	£156,586†	£71,454	£42,661	£17,610
Cost per Ton	8s. 5d.	8s. 3d.	8s. 3d.	8s. 4d.

† Includes cost of additional 216,914 tons—see Compressed Air section.

RAND UNDERTAKING—OPERATING STATISTICS—(continued)

	Vaal Power Station.		Vereniging Power Station.	
	1949.	1948.	1949.	From 1/7/48 to 31/12/48.
ELECTRICITY:				
Units Sent Out	981,656,528	869,694,442	821,954,050	414,877,946
Maximum one-hour	162,456	128,610	136,485	134,527
Demand kW	69.0	77.0	68.7	71.0
Load Factor %	22.51	22.51	16.42	16.39
Thermal Efficiency %				
COAL:				
Consumption—tons	791,865	694,383	950,351	472,024
Average per unit sent out—lb	1.613	1.597	2.312	2.275
Calorific Value B.Th.U./lb	9,400	9,490	8,990	9,150
Total Cost	£187,326	£169,521	£228,689	£116,917
Cost per Ton	4s. 9d.	4s. 11d.	4s. 10d.	4s. 11d.
COMPRESSED AIR:				
Units Sent Out	17,066,280	8,356,721	147,188,000	71,567,400
Coal Consumed—tons	31,363	15,495	216,914	104,649
Average Coal per unit sent out—lb	3.675	3.708	2.947	2.924
Coal Calorific Value B.Th.U./lb	9,090	9,270	9,170	9,490
COMPRESSED AIR:				
Units Sent Out	52,415,600	25,510,200	61,485,900	28,646,000
Electric Input—kWh	61,600,212	29,449,509	76,920,650	35,900,585
Air Units Sent Out kWh per cent.	85.11	86.66	79.94	79.81
COMPRESSED AIR:				
Canada Dam Compressor Station.				
Robinson Compressor Station.				
Rosherville Power Station.				
Brakpan Power Station.				
Rosherville Power Station.				
Canada Dam Compressor Station.				
Robinson Compressor Station.				
Rosherville Power Station.				
Brakpan Power Station.				
Rosherville Power Station.				

RAND UNDERTAKING—OPERATING STATISTICS—(continued)

	Modder B and New Modder Compressor Stations.	
	1949.	From 1/7/48 to 31/12/48.
COMPRESSED AIR:		
Units Sent Out	10,086,585	5,573,386
Electric Input kWh	11,785,891	6,495,604
Air Units Sent Out kWh per cent.	85.62	85.84

Licences.—During the year under review negotiations were concluded in regard to two projects for which extensions of the licensed area of supply of the Rand Undertaking will be necessary. It is proposed to extend the Rand Undertaking system northwards from Rustenburg to provide supplies of electricity to the South African Iron and Steel Industrial Corporation, Limited, at Thabazimbi, and eastwards in the second project to provide a supply of electricity in bulk to the Municipality of Standerton. Preliminary intimation of these projects has been given to the Electricity Control Board and applications for amendment of the relevant licences are being prepared for submission to the Board.

Plant Capacity.—The operating statistics set out above emphasise again the very large increase in the demand for power to meet the expansion of mining, industrial and municipal enterprise, and the provision of additional generating plant to meet these and future forecast loads continues to demand close and urgent attention.

As a general statement it may be said that during 1949 the demand on the system reached the critical point where the loading on the system during the peak period from 9.30 a.m. to 1.30 p.m. approximated to the total plant capacity of the Undertaking, with all plant in use. It was therefore considered prudent in June, 1949, to appeal to all consumers to economise in the use of power during the peak period. Cordial co-operation from the gold mining industry and other consumers resulted in a voluntary reduction of about 30,000 kW of the peak load, and at the same time arrangements were made with consumers to enable a rapid easement of the load on the system to be effected in the event of a breakdown of any major item of plant.

No additions to the generator plant capacity of the Rand Undertaking were made during 1949, but three of the four 190,000-lb/hr boilers for Vaal Power Station, mentioned in the last Annual Report, were erected and placed in commission during the year and the fourth of these boilers will be commissioned during 1950 so that the full generator capacity of the station, 172,000 kW, will then become available to the system. In addition to these extensions a second 7,000-kW generator (house set) was placed in service at Vaal Power Station at the end of February, 1950, and it is expected that the erection at this station of No. 6 turbo-generator set, of a capacity of 33,000 kW, will be completed about June, 1950.

On the demand side, however, it must be reported that, in spite of the voluntary reduction of the peak load taken by the mining industry referred to above, the maximum demand on the system during 1949 showed an increase of approximately 55,000 kW as compared with the peak demand of 1948, and that during the early months of 1950 a further increase of nearly 40,000 kW has been recorded. These increases have been met only in part by the commissioning of the additional plant at Vaal Power Station referred to above, and the Undertaking has had to call, under the interchange arrangements with the Johannesburg and Pretoria Municipalities, for increased supplies from these sources to the extent of some 20,000 kW in 1949, and to an even greater extent during the early months of 1950. On balance therefore the position as regards the capacity of generating plant in relation to demand has deteriorated, and, with comparatively little additional plant coming forward during the next year or more, this position is likely to become even more serious than at present.

Nor has there been any easement of the long-term aspect of this problem. Devaluation of South African currency has had the immediate effect of prolonging the working life of the older mines as well as improving the prospects of the new gold mines in the Orange Free State, and the increased price of gold will also enhance the prospects of ultra-deep level mining on the Witwatersrand. The policy of the Government, designed to take advantage of these conditions to promote expansion of mining and industrial activity, indicates that abnormally large extensions of generating plant capacity must be undertaken to keep pace with the very large increases in the demand for power. During the year under review orders were placed, in addition to the orders mentioned in the last Annual Report, for a further 240,000 kW of generating plant for the Undertaking, and the matter is again under review.

Distribution System.—Among the major works completed and under construction during 1949 were the following:

In order that larger supplies might be taken from the Johannesburg Municipal System, an additional coupling transformer of 45,000 kVA capacity (transferred from Blyvooruitzicht Substation) was installed at Bantjes Distribution Station.

West Wits Distribution Station, which is designed to serve the developing mines on the Far West Rand was equipped with one 45,000-kVA 88/40-kV coupling transformer and one 20,000-kVA synchronous condenser; and in carrying out the rearrangement of the 40-kV distribution network based upon this distribution station an additional 17 miles of 40-kV distribution lines were erected.

Work has also been commenced on the Dunnottar Distribution Station, which is planned to reinforce the distribution system in the south-eastern Witwatersrand area.

O.F.S. Goldfields.—At the end of the year 1949 supplies of electricity were being furnished to five gold mines in the O.F.S. goldfields, to two cement factories and also to the Municipality of Odendaalsrus. The second 88-kV transmission line was completed and placed in service on 6th November, 1949, and at the end of the year the load furnished to the O.F.S. goldfields had risen to approximately 15,000 kW. Two additional gold mines were connected during the early months of 1950 and it is expected that during 1950 supplies will be given to a further four mines.

In January, 1950, line construction was completed on an 88-kV overhead power line from a point near Klerksdorp to Balkfontein, for the supply required by the Irrigation Department for the pumping station which will provide the water supplies for the mines and municipalities in the O.F.S. goldfields.



**RAND UNDERTAKING:
Vereeniging Power Station.**

[Photo Aircraft Operating Co.]

During 1949 a start was made with the civil works at Alma Distribution Station, the first of the distribution stations which will serve the O.F.S. goldfields. Abnormal civil engineering difficulties have been experienced in the work at Alma, but this work is proceeding as rapidly as possible and it is expected that the distribution station will be in commission during the second half of 1950. Further distribution lines for the supplies to the additional mines and to complete the initial 40-kV networks are also under construction and the work of equipping some 16 permanent 40-kV substations on these mines is being pressed forward as rapidly as the deliveries of equipment will allow.

While the Undertaking has been able, up to the present, to keep pace with the development of the O.F.S. goldfields, delay in the deliveries of certain materials and equipment continue to make the position extremely difficult, and with a serious position arising in the near future as regards generating plant capacity it is increasingly evident that some method of staggering load on the system will have to be resorted to in the period before Vierfontein Power Station is established.

Western and Northern Transvaal.—During 1949 the 88-kV transmission line from West Wits Distribution Station to Mafeking, via Lichtenburg and Slurry, was completed and placed in commission. Supplies were given to the cement factories at Lichtenburg and Slurry and to the Municipalities of Lichtenburg and Mafeking. On account of the shortage of steel, it has been decided that the

proposed branch line Slurry/Zeerust shall be of wood-pole construction, and orders were placed with the Forestry Department for suitable wood poles.

In April, 1949, an 88-kV transmission line was completed from West Wits Distribution Station to Rustenburg and the Rustenburg Platinum Mines, Limited, and supplies were given to these consumers. As reported earlier, it is proposed that this line be extended to supply the South African Iron and Steel Industrial Corporation, Limited, at Thabazimbi.

Summary.—Summarising the work completed during the year 1949 the statistics are as follows:

There were constructed about 300 miles of 88-kV transmission lines and 20 miles of distribution lines, 40-kV, 20-kV and 11-kV.

176 substation installations, involving the installation of an additional 105,773 kVA and withdrawal of 22,770 kVA of transformers, were completed. There were 68 new supplies given and 16 terminations of supply: a net increase of 52 new points of supply and 83,003 kVA of transformers installed in consumers' substations.

Additional cable installations exceeded 24 route miles. Two 45,000-kVA 88/40-kV coupling transformers were installed, one (ex Blyvooruitzicht substation) at Bantjes Distribution Station, one at West Wits Distribution Station; a booster transformer was installed at the end of the 88-kV transmission line to Alma Distribution Station; one 20,000-kVA rotary condenser was installed at West Wits Distribution Station, one 6,000-kVA rotary condenser at Premier Mine Substation, and an additional capacity of about 3,000 kVA of static condensers was installed at various points on the system.

**RAND UNDERTAKING:
Simmerpan Power Station.**

[Photo Aircraft Operating Co.]



MUNICIPAL ELECTRICITY SUPPLY SCHEMES—1949

Reports submitted during the year by the Commission, in terms of Section 38 of the Electricity Act, to the Administrators of the various Provinces on the proposals of urban local authorities to establish electricity undertakings or to enlarge existing undertakings, were as follows:

TRANSVAAL :

New Schemes:

Groblersdal

Machadodorp

Extensions:

Barberton

Coligny

Lichtenburg

Pretoria

Schweizer Reneke

Ventersdorp

Tenders:

Ermelo

Kempton Park

Louis Trichardt

Rensburg

Standerton

Zeerust

ORANGE FREE STATE :

Extensions:

Bethulie

Bloemfontein

Bothaville

Edenburg

Ficksburg

Heilbron

Tenders:

Hennenman

Petrusburg

Springfontein

Vredefort

NATAL :

Extensions:

Dundee

Eshowe

Stanger

CAPE :

New Schemes:

Philipstown

Vredendal

Extensions:

Bredasdorp

Cathcart (2)

Colesberg

Fraserburg

George

Grahamstown

Kokstad

Laingsburg

Mossel Bay

Port Alfred

Queenstown

Richmond

Riversdale

Uniondale

Upington

Warrenton

Wolseley

Tenders:

Keimoes

Middelburg (3)

Mossel Bay

Stutterheim (2)

Upington

Warrenton

SOUTH-WEST AFRICA :

Tenders:

Otjiwarongo

Up to the 31st December, 1949, 707 reports on Municipal Electricity Supply Schemes, of which 207 were in respect of new schemes, had been submitted by the Commission. In addition the Commission had issued at that date 352 supplementary reports on tenders.

ANNEXURES

The Commission submits for the year 1949 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 and Expenditure Accounts in respect of:—

Account No. 3.—Natal Central Undertaking

Account No. 4—Witbank Undertaking

Account No. 5—Cape Western Undertaking

Statement of Pooled Costs, Cape Town

Account No. 6—Durban Undertaking

Account No. 7—Sabie Undertaking

Account No. 8—Border Undertaking

Account No. 9—Rand 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, 1949.

Statement No. 2—Summary of principal plant and equipment in course of installation or on order as at 31st December, 1949.

Statement No. 3—Units sold to all consumers during the past twenty-five years.

Statement No. 4—Distribution of units sold during 1949 as between the various classes of consumers.

Statement No. 5—Power Station Statistics, 1949.

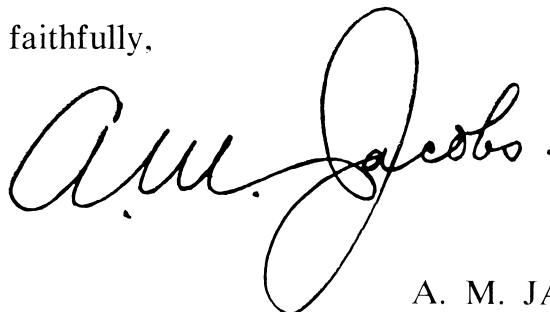
Statement No. 6—Showing the price or rent of land or rights or interests in or over land or other property acquired or hired by the Commission during the year 1949.

Statement No. 7—Coal used at the Commission's Steam-raising Power Stations.

ANNEXURE "C"—UNION STATISTICS

Union Statistics relating to the production and distribution of electricity. This information, which was extracted from the 1947/48 Industrial Census, is published in this Report by the courtesy of the Department of Census and Statistics (Pretoria).

Yours faithfully,



A. M. JACOBS,

Chairman.

ANNEXURE "A"

THE REPORT OF THE AUDITORS

Johannesburg.

5th June, 1950.

*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, 1949.

REDEMPTION FUND

In the course of our audit we have investigated 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.

In valuing the Fund at the 31st December, 1949, we have taken into account the market value of investments at that date.

We find that in the aggregate the value of the Fund at 31st December, 1949, was materially in excess of the sum required to provide for the redemption of the respective loans over the maximum periods laid down in the terms of issue.

In accordance with previous practice the Commission has, in certain cases, calculated provisions to be made for the redemption of the loans over shorter periods than the maximum periods laid down in the terms of issue, but in consequence of the depreciation in the market value of the investments, the value of certain sections of the Fund at 31st December, 1949, fell short of the amount required to redeem the loans over the shorter periods fixed by the Commission. In order to avoid large increases in Redemption Fund contributions being levied on the consumers, it may be necessary for the Commission to continue provision for redemption, beyond the dates originally fixed by them, but not beyond the date fixed in the terms of issue for the redemption of the loans.

The Minister has fixed the date from which provision for redemption of Loan No. 13 commenced at 1st September, 1949, and application has been made to the Minister to fix the date from which redemption of Loan No. 14 shall commence at 1st April, 1950.

ACQUISITION OF THE UNDERTAKINGS OF THE VICTORIA FALLS AND TRANSVAAL POWER COMPANY LIMITED

We have examined the documents of Title relative to Fixed Assets acquired from the Victoria Falls and Transvaal Power Company Limited as at 1st July, 1948, with the exception of those documents which we are informed are in the hands of the Commission's Solicitors or with the relative Deeds Offices for registration.

SALE OF TRACTION SUB-STATIONS TO THE SOUTH AFRICAN RAILWAYS AND HARBOURS ADMINISTRATION

The Commission has agreed to reduce the sale price of these Assets, sold during 1948, by the amount calculated to have been accumulated in the Commission's Reserve Fund in respect of these Assets.

Provision has been made for the necessary adjustment in the accounts for the year under review.

HEAD OFFICE ADMINISTRATION, ENGINEERING AND GENERAL EXPENSES, INCLUDING PUBLICITY

The continued expansion of the activities of the Commission and the fact that the undertakings formerly operated by the Victoria Falls and Transvaal Power Company Limited have been operated by the Commission for a full year as compared with six months in the previous year, together with the general rising trend of costs, have been mainly responsible for the substantial increase in the total expenditure under this heading.

Against the total expenditure has been set off or credited:

- (1) Amounts transferred to cost of Capital and Reserve Fund Expenditure at Undertakings for services of Head Office Staff.
- (2) Fees for reporting on Power Schemes of Local Authorities.
- (3) Amounts chargeable to Revenue Accounts under other headings.

The amount remaining has been apportioned by the Commission against the Revenue Accounts of all the Undertakings in commercial operation. We have no reason to disagree with the apportionment so made.

REVENUE ACCOUNTS

Natal Central Undertaking.—The year's operations at this undertaking resulted in a deficit of £2,033 7s. 7d. which increased the accumulated deficit carried forward to £11,218 16s. 5d. The amount set aside to Reserve Fund was £22,000 as compared with an amount of £20,000 in the year 1948. It is anticipated that the working for the current year will result in a further deficit and the Commission is taking steps to increase the charges to consumers.

Witbank Undertaking.—The result of the year's operations at this undertaking showed a deficit of £9,135 2s. 10d. reducing the accumulated surplus carried forward to £1,469 10s. 6d. No amount was set aside to Reserve Fund.

Cape Western Undertaking.—The Revenue Account for this undertaking reflects a deficit on the year's operations of £14,935 8s. 8d., reducing the accumulated surplus carried forward to £66,195 5s. 7d.

Durban Undertaking.—After setting aside £12,500 to Reserve Fund, as against £10,000 in 1948, the surplus on the year's operations of this undertaking amounted to £1,116 17s. 10d. Notwithstanding this, the accumulated deficit carried forward increased to £54,390 19s. 10d. by the item "Adjustment of Stores" £6,745 16s. 10d. The keeping of Stores Records has been hampered during recent years by the lack of adequate storage accommodation at the Congella Power Station and the fact that storage facilities were greatly overtaxed in consequence of the large

Capital Works which were in progress. The new store became available towards the end of 1949 and at stocktaking numerous discrepancies with the relative book records were disclosed. These discrepancies were investigated and certain items traced as having been issued during the year for construction purposes or for maintenance.

There remained a balance of £6,745 16s. 10d. in respect of which it was not possible to trace the date of issue. This balance has, consequently, been charged separately in the Revenue Account for the year.

Arising out of this we have made certain recommendations to the Commission regarding the control of Stores and Stores Records.

Sabie Undertaking.—The position at this Undertaking calls for no special comment.

Border Undertaking.—While the result of this Undertaking, as a whole, reflected a small surplus of £497 19s. 5d., increasing the accumulated surplus carried forward to £10,474 2s., the Alice section of the undertaking showed a deficit. The accumulated deficit of the Alice section is now material in relation to the Revenue and an upward revision of tariffs appears necessary.

Rand Undertaking.—The result of the operation of this undertaking was a surplus of £3,070 19s. 3d., after setting aside to Reserve Fund £282,648 4s. 7d.

No comparison can be made of the results for 1949 with those for 1948 as the Commission operated the Undertaking for only six months in the 1948 year.

GENERAL

As the result of our audit of the books and accounts of the Commission for the year 1949, 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 of 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. This expenditure is being amortised over a period not exceeding the currency of the loans by the operation of the Redemption Fund. 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 and recommendations as Auditors have been complied with and carried out.

ALEX. AIKEN & CARTER.

HALSEY, BUTTON & PERRY.

Electricity Supply

Incorporated under the

BALANCE SHEET at

Loan Capital (as per Schedule No. 3)	£50,503,330 0 0
Interest Accrued on Loan Capital	206,026 2 1
Sundry Loans and Amounts Outstanding for Rights Acquired (as per Schedule No. 3)	214,412 13 9
Sundry Creditors and Credit Balances Current Liabilities and Provisions.	2,061,382 1 9
Barclays Bank (Dominion, Colonial and Overseas) Temporary Advances, less Cash on Current Account.	908,321 10 3
Advances at Call	805,000 0 0
Pension Fund	415,649 10 2
Redemption Fund (as per Account No. 1)	11,885,624 1 4
Sinking Fund (Umkomaas Town Board Loans)	4,536 10 5
Sundry Loans Repaid	152,190 12 5
Reserve Fund (as per Account No. 2)	2,263,310 12 7
Balance on Revenue Accounts (as per Accounts Nos. 3 to 9)	72,665 2 7
Natal Central Undertaking Dr. £11,218 16 5	
Witbank Undertaking 1,469 10 6	
Cape Western Undertaking 66,195 5 7	
Durban Undertaking Dr. 54,390 19 10	
Sabie Undertaking 78 13 7	
Border Undertaking 10,474 2 0	
Rand Undertaking 60,057 7 2	

Note.—In addition to the liabilities shown above, the Commission is committed to the extent of approximately £34,216,000 for expenditure on Capital Account and £653,000 chargeable against Reserve Fund.

The Commission is committed to purchase £3,750,000 Electricity Supply Commission 3¼ per cent. Local Registered Stock, 1968/73, from a stockholder at par at the rate of £1,250,000 per annum.

£69,492,448 17 4

A. M. JACOBS, Chairman.

J. VAN NIEKERK, Chief Accountant.

Johannesburg,
25th April, 1950.

Commission.

Electricity Act, 1922.

31st DECEMBER, 1949.

Expenditure on Capital Account (at Cost) (as per Schedule No. 1)	£50,117,041 12 11
Land and Rights	£589,750 9 10
Buildings and Civil Works	9,922,213 16 6
Machinery and Plant	38,203,098 17 5
	48,715,063 3 9
Assets sold to South African Railways and Harbours	1,401,978 9 2
	399,200 7 1
Movable Plant and Equipment (less depreciation)	
Workshop Equipment, Instruments, Tools and Loose Plant	187,511 12 3
Transportation Equipment	108,382 0 4
Furniture and Office Equipment	103,306 14 6
	3,126,477 0 0
Stores and Materials	
Sundry Debtors and Debit Balances	1,051,096 12 9
Current Debtors less Reserves	986,765 14 11
Entire Share Capital of the Rand Mines Power Supply Company, Limited	600 0 0
Expenditure on Investigations in terms of Section 3 (b) of the Act and Payments in Advance	63,730 17 10
	426,016 16 6
Investment of Pension Fund	
Amount invested in Stocks and Securities of Electricity Supply Commission, Municipalities and Rand Water Board and First Mortgages on Freehold Properties, less Reserve	424,123 8 5
Interest Accrued	1,893 8 1
	(Market Value £408,175)
Investment of Redemption Fund (as per Schedule No. 2) (Market Value £10,992,156)	11,933,695 9 11
Investment of Sinking Fund	4,924 6 8
Amount invested in Stocks of Electricity Supply Commission, the Government of the Union of South Africa and Municipalities	4,899 14 9
Interest Accrued	24 11 11
	(Market Value £4,631)
Investment of Reserve Fund	2,433,996 11 6
Amount invested in Stocks and Securities of Electricity Supply Commission, the Government of the Union of South Africa and Municipalities	2,421,238 18 8
Interest Accrued	12,757 12 10
	(Market Value £2,353,481)

£69,492,448 17 4

Referred to in our Report of 5th June, 1950.

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

Electricity Supply

Schedule of Expenditure on Capital

Expenditure in connection with Electricity Undertakings.	Total at 31st December, 1948.	Year ended 31st December, 1949.	Total at 31st December, 1949.
RAND UNDERTAKING:			
Rand.			
Land and Rights	£187,166 11 9	£5,397 5 6	£192,563 17 3
Buildings and Civil Works	1,652,545 1 2	78,884 0 8	1,731,429 1 10
Machinery and Plant	11,913,651 1 0	197,444 19 11	12,111,096 0 11
	£13,753,362 13 11	£281,726 6 1	£14,035,089 0 0
Klip Power Station.			
Land and Rights	£127,975 0 0	—	£127,975 0 0
Buildings and Civil Works	1,589,207 9 7	Cr. £1,187 9 6	1,588,020 0 1
Machinery and Plant	4,860,971 2 8	4,406 2 9	4,865,377 5 5
	£6,578,153 12 3	£3,218 13 3	£6,581,372 5 6
Vaal Power Station.			
Land and Rights	£5,768 2 3	—	£5,768 2 3
Buildings and Civil Works	1,202,880 15 3	£393,929 16 9	1,596,810 12 0
Machinery and Plant	3,551,055 19 3	397,976 16 0	3,949,032 15 3
	£4,759,704 16 9	£791,906 12 9	£5,551,611 9 6
Vierfontein Power Station.			
Land and Rights	—	£621 9 1	£621 9 1
Buildings and Civil Works	—	21,994 15 9	21,994 15 9
Machinery and Plant	£1,543 15 11	Cr. 1,543 15 11	—
	£1,543 15 11	£21,072 8 11	£22,616 4 10
Rand Extension.			
Land and Rights	£11,546 10 7	£410 3 0	£11,956 13 7
Buildings and Civil Works	108,029 10 11	4,089 0 9	112,118 11 8
Machinery and Plant	1,853,311 10 4	338,206 13 1	2,191,518 3 5
	£1,972,887 11 10	£342,705 16 10	£2,315,593 8 8
Greater Rand Extension.			
Land and Rights	£35 17 2	£827 18 7	£863 15 9
Buildings and Civil Works	8,192 18 7	94,120 1 6	102,313 0 1
Machinery and Plant	607,054 15 8	346,562 9 6	953,617 5 2
	£615,283 11 5	£441,510 9 7	£1,056,794 1 0
TOTAL RAND UNDERTAKING:			
Land and Rights	£332,492 1 9	£7,256 16 2	£339,748 17 11
Buildings and Civil Works	4,560,855 15 6	591,830 5 11	5,152,686 1 5
Machinery and Plant	22,787,588 4 10	1,283,053 5 4	24,070,641 10 2
	£27,680,936 2 1	£1,882,140 7 5	£29,563,076 9 6
NATAL CENTRAL UNDERTAKING:			
Land and Rights	£28,921 19 1	£1,861 19 2	£30,783 18 3
Buildings and Civil Works	1,253,596 16 3	38,913 3 8	1,292,509 19 11
Machinery and Plant	4,187,542 17 9	271,826 9 8	4,459,369 7 5
	5,470,061 13 1	312,601 12 6	5,782,663 5 7
Assets sold to S.A.R. and H. ...	465,298 2 1	—	465,298 2 1
	£5,935,359 15 2	£312,601 12 6	£6,247,961 7 8

Johannesburg,
25th April, 1950.

Commission.

SCHEDULE No. 1.

Account at 31st December, 1949.

Expenditure in connection with Electricity Undertakings.	Total at 31st December, 1948.	Year ended 31st December, 1949.	Total at 31st December, 1949.
WITBANK UNDERTAKING:			
Land and Rights	£9,986 6 7	Cr. £42 11 4	£9,943 15 3
Buildings and Civil Works	578,611 15 5	30,376 11 3	608,988 6 8
Machinery and Plant	1,879,907 15 2	125,378 7 7	2,005,286 2 9
	2,468,505 17 2	155,712 7 6	2,624,218 4 8
Assets sold to S.A.R. and H. ...	472,686 19 5	—	472,686 19 5
	£2,941,192 16 7	£155,712 7 6	£3,096,905 4 1
CAPE WESTERN UNDERTAKING:			
Land and Rights	£33,890 9 0	£4,245 16 9	£38,136 5 9
Buildings and Civil Works	971,284 9 2	272,966 0 8	1,244,250 9 10
Machinery and Plant	2,375,061 0 1	1,129,682 8 6	3,504,743 8 7
	3,380,235 18 3	1,406,894 5 11	4,787,130 4 2
Assets sold to S.A.R. and H. ...	463,993 7 8	—	463,993 7 8
	£3,844,229 5 11	£1,406,894 5 11	£5,251,123 11 10
DURBAN UNDERTAKING:			
Land and Rights	£82,222 8 10	£22,251 0 10	£104,473 9 8
Buildings and Civil Works	944,760 10 1	249,863 19 0	1,194,624 9 1
Machinery and Plant	3,181,501 18 1	547,809 2 3	3,729,311 0 4
	£4,208,484 17 0	£819,924 2 1	£5,028,408 19 1
SABIE UNDERTAKING			
Land and Rights	£510 0 0	—	£510 0 0
Buildings and Civil Works	60,490 11 3	—	60,490 11 3
Machinery and Plant	35,169 14 10	—	35,169 14 10
	£96,170 6 1	—	£96,170 6 1
BORDER UNDERTAKING			
Land and Rights	£5,600 0 0	£319 0 0	£5,919 0 0
Buildings and Civil Works	14,195 19 0	15,263 9 7	29,459 8 7
Machinery and Plant	287,563 14 10	111,013 18 6	398,577 13 4
	£307,359 13 10	£126,596 8 1	£433,956 1 11
SWARTKOPS RIVER UNDERTAKING:			
Buildings and Civil Works	—	£5,142 5 6	£5,142 5 6
HEAD OFFICE:			
Land	£60,235 3 0	—	£60,235 3 0
Buildings and Equipment	333,976 0 1	£86 4 2	334,062 4 3
	£394,211 3 1	£86 4 2	£394,297 7 3
SUMMARY:			
Land and Rights	£553,858 8 3	£35,892 1 7	£589,750 9 10
Buildings and Civil Works	8,717,771 16 9	1,204,441 19 9	9,922,213 16 6
Machinery and Plant	34,734,335 5 7	3,468,763 11 10	38,203,098 17 5
	44,005,965 10 7	4,709,097 13 2	48,715,063 3 9
Assets sold to S.A.R. and H. ...	1,401,978 9 2	—	1,401,978 9 2
	£45,407,943 19 9	£4,709,097 13 2	£50,117,041 12 11

J. VAN NIEKERK. Chief Accountant.

Schedule showing details of

Investments of the Redemption Fund at 31st December, 1949.

	Nominal Amount.	Totals.	Loan No. 3. £500,000 4½% Local Registered Stock, 1953/63.	Loan No. 4. £2,500,000 4½% Local Registered Stock, 1953.	Loan No. 5. £6,750,000 3½% Local Registered Stock, 1954/64.	Loan No. 6. £2,500,000 3½% Local Registered Stock, 1959/64.	Loan No. 7. £2,000,000 3½% Local Registered Stock, 1956/66.	Loan No. 8. £2,000,000 3½% Local Registered Stock, 1957/67.	Loan No. 9. £2,000,000 3½% Local Registered Stock, 1959/64.	Loan No. 10. £1,500,000 3½% Local Registered Stock, 1960/65.	Loan No. 11. £2,000,000 3½% Local Registered Stock, 1961/66.	Loan No. 12. £2,500,000 3½% Local Registered Stock, 1965/70.	Loan No. 13. £3,000,000 3% Local Registered Stock, 1967/73.	Loan No. 14. £3,000,000 3% Local Registered Stock, 1968/74.	Loan No. 15. £15,000,000 3½% Local Registered Stock, 1968/73.	Loan No. 16. £3,000,000 3½% Local Registered Stock, 1969/74.
Local Registered Stocks.																
Electricity Supply Commission:																
4½ per cent., 1953/63 ...	£108,275 0 0	£108,275 0 0	£42,825 0 0	—	£65,450 0 0	—	—	—	—	—	—	—	—	—	—	—
4½ per cent., 1953 ...	300,439 0 0	300,439 0 0	1,500 0 0	£278,939 0 0	15,500 0 0	£4,500 0 0	—	—	—	—	—	—	—	—	—	—
3½ per cent., 1954/64 ...	860,281 0 0	860,111 17 6	10,000 0 0	—	775,677 13 8	53,721 15 9	£17,000 0 0	£3,518 13 3	—	£193 14 10	—	—	—	—	—	—
3½ per cent., 1959/64 ...	168,597 0 0	168,597 0 0	—	—	35,000 0 0	118,297 0 0	5,600 0 0	5,400 0 0	£4,300 0 0	—	—	—	—	—	—	—
3½ per cent., 1956/66 ...	344,750 0 0	333,768 7 11	16,490 0 0	92,767 3 9	143,560 0 0	19,400 0 0	61,551 4 2	—	—	—	—	—	—	—	—	—
3½ per cent., 1957/67 ...	355,677 0 0	347,895 15 0	24,287 10 0	85,565 5 0	77,628 10 0	60,043 0 0	21,922 0 0	77,377 0 0	1,072 10 0	—	—	—	—	—	—	—
3½ per cent., 1959/64 ...	521,310 0 0	510,407 2 6	19,482 19 9	90,028 0 2	180,286 8 3	62,540 7 8	55,274 6 4	45,785 0 4	57,010 0 0	—	—	—	—	—	—	—
3½ per cent., 1960/65 ...	441,400 0 0	432,726 17 8	17,640 0 0	60,270 0 0	140,630 0 0	72,030 0 0	48,020 0 0	52,430 0 0	33,810 0 0	7,896 17 8	—	—	—	—	—	—
3½ per cent., 1961/66 ...	513,350 0 0	503,450 0 0	23,520 0 0	96,040 0 0	136,220 0 0	80,360 0 0	45,080 0 0	56,840 0 0	30,380 0 0	16,660 0 0	£18,350 0 0	—	—	—	—	—
3½ per cent., 1965/70 ...	550,500 0 0	550,500 0 0	17,000 0 0	87,000 0 0	129,700 0 0	61,000 0 0	62,000 0 0	67,000 0 0	65,000 0 0	8,000 0 0	19,000 0 0	£34,800 0 0	—	—	—	—
3 per cent., 1967/73 ...	626,500 0 0	623,367 10 0	19,402 10 0	92,037 10 0	189,050 0 0	72,137 10 0	52,237 10 0	45,272 10 0	43,780 0 0	34,327 10 0	45,272 10 0	27,362 10 0	£2,487 10 0	—	—	—
3 per cent., 1968/74 ...	1,142,000 0 0	1,142,000 0 0	13,000 0 0	94,000 0 0	334,000 0 0	26,500 0 0	215,000 0 0	73,000 0 0	55,000 0 0	93,000 0 0	91,000 0 0	127,000 0 0	20,500 0 0	—	—	—
3½ per cent., 1968/73 ...	2,877,000 0 0	2,868,865 0 0	54,820 0 0	216,375 0 0	688,870 0 0	170,500 0 0	114,650 0 0	149,485 0 0	124,625 0 0	96,710 0 0	140,075 0 0	146,050 0 0	123,175 0 0	£14,930 0 0	£828,600 0 0	—
3½ per cent., 1969/74 ...	296,300 0 0	291,891 2 10	6,896 16 5	33,498 17 1	57,145 2 1	24,631 10 2	15,074 9 8	15,764 3 4	16,749 8 6	13,793 12 11	17,734 13 9	18,719 18 11	20,690 9 5	15,764 3 4	—	—
3½ per cent., 1969/74 ...	42,700 0 0	41,846 0 0	—	—	—	—	—	—	—	—	—	—	—	41,846 0 0	—	—
The Government of the Union of South Africa:																
3½ per cent., 1950 ...	21,000 0 0	21,000 0 0	—	17,000 0 0	4,000 0 0	—	—	—	—	—	—	—	—	—	—	—
4½ per cent., 1953 ...	356,265 0 0	356,265 0 0	—	356,265 0 0	—	—	—	—	—	—	—	—	—	—	—	—
3½ per cent., 1953 ...	5,000 0 0	5,000 0 0	—	—	5,000 0 0	—	—	—	—	—	—	—	—	—	—	—
3½ per cent., 1953/58 ...	25,000 0 0	25,000 0 0	3,000 0 0	11,000 0 0	11,000 0 0	—	—	—	—	—	—	—	—	—	—	—
3½ per cent., 1955/65 ...	2,300 0 0	2,300 0 0	—	—	2,300 0 0	—	—	—	—	—	—	—	—	—	—	—
3 per cent., 1956/61 ...	40,000 0 0	40,000 0 0	—	10,000 0 0	10,000 0 0	5,000 0 0	5,000 0 0	5,000 0 0	5,000 0 0	—	—	—	—	—	—	—
3 per cent., 1957/66 ...	535,000 0 0	534,974 18 1	17,997 19 10	89,995 9 8	159,998 19 11	79,994 9 7	56,995 19 8	46,400 0 0	51,995 19 8	16,997 9 10	7,998 9 11	6,600 0 0	—	—	—	—
3 per cent., 1958/68 ...	15,000 0 0	15,000 0 0	—	1,000 0 0	11,000 0 0	—	1,000 0 0	—	—	—	—	—	—	—	—	—
3 per cent., 1959/69 ...	100,000 0 0	100,000 0 0	6,000 0 0	30,000 0 0	44,000 0 0	20,000 0 0	—	—	—	—	—	—	—	—	—	—
3 per cent., 1960/70 ...	343,700 0 0	343,700 0 0	12,000 0 0	66,000 0 0	125,600 0 0	54,000 0 0	19,900 0 0	21,100 0 0	18,600 0 0	10,700 0 0	13,100 0 0	2,700 0 0	—	—	—	—
Municipal:																
Johannesburg:																
3½ per cent., 1956/66 ...	1,600 0 0	1,600 0 0	—	—	—	—	1,600 0 0	—	—	—	—	—	—	—	—	—
3½ per cent., 1959 ...	6,200 0 0	6,200 0 0	—	—	—	—	—	1,900 0 0	4,300 0 0	—	—	—	—	—	—	—
3½ per cent., 1960/65 ...	20,000 0 0	20,000 0 0	—	8,000 0 0	12,000 0 0	—	—	—	—	—	—	—	—	—	—	—
3½ per cent., 1962/67 ...	129,000 0 0	126,531 5 10	18,620 0 0	42,140 0 0	16,660 0 0	32,424 13 11	16,686 11 11	—	—	—	—	—	—	—	—	—
3½ per cent., 1965 ...	1,200 0 0	1,200 0 0	—	—	—	—	—	—	—	1,200 0 0	—	—	—	—	—	—
3½ per cent., 1965/70 ...	294,000 0 0	294,000 0 0	8,000 0 0	44,000 0 0	86,000 0 0	29,000 0 0	26,000 0 0	26,000 0 0	26,000 0 0	21,000 0 0	22,000 0 0	6,000 0 0	—	—	—	—
3 per cent., 1967/77 ...	30,000 0 0	30,000 0 0	—	—	—	—	—	5,000 0 0	5,000 0 0	5,000 0 0	5,000 0 0	5,000 0 0	5,000 0 0	5,000 0 0	—	—
Cape Town:																
3½ per cent., 1960/65 ...	2,000 0 0	2,000 0 0	—	—	—	—	—	—	—	2,000 0 0	—	—	—	—	—	—
3½ per cent., 1962/67 ...	225,000 0 0	222,567 15 8	—	—	—	—	—	—	—	40,122 11 11	27,000 0 0	11,500 0 0	—	—	—	—
3 per cent., 1976 ...	100,000 0 0	99,750 0 0	2,992 10 0	14,962 10 0	30,423 15 0	11,471 5 0	8,478 15 0	6,982 10 0	6,982 10 0	5,486 5 0	7,481 5 0	4,488 15 0	—	—	—	—
Durban:																
3½ per cent., 1962/72 ...	115,500 0 0	115,211 5 0	—	115,211 5 0	—	—	—	—	—	—	—	—	—	—	—	—
3½ per cent., 1965/75 ...	45,000 0 0	45,000 0 0	2,500 0 0	14,500 0 0	28,000 0 0	—	—	—	—	—	—	—	—	—	—	—
3½ per cent., 1966/76 ...	50,000 0 0	50,000 0 0	—	—	—	—	—	10,000 0 0	10,000 0 0	10,000 0 0	10,000 0 0	10,000 0 0	—	—	—	—
3 per cent., 1967/77 ...	334,000 0 0	334,000 0 0	10,000 0 0	48,000 0 0	96,000 0 0	35,000 0 0	25,000 0 0	24,000 0 0	23,000 0 0	19,000 0 0	14,000 0 0	30,000 0 0	10,000 0 0	—	—	—
Interest Accrued ...	£11,945,844 0 0	£11,875,440 18 0	£347,975 6 0	£2,094,595 0 8	£3,610,700 8 11	£1,092,551 12 1	£913,069 4 8	£785,093 4 10	£640,713 16 1	£402,088 2 2	£440,011 18 8	£430,221 3 11	£181,852 19 5	£72,540 3 4	£828,600 0 0	£35,427 17 3
	—	58,254 11 11	1,963 17 10	10,364 5 2	19,389 9 8	6,254 9 4	5,390 18 2	4,268 11 10	4,187 2 1	2,011 15 11	2,046 12 4	1,515 1 3	313 11 2	230 7 11	—	318 9 3
	£11,945,844 0 0	£11,933,695 9 11	£349,939 3 10	£2,104,959 5 10	£3,630,089 18 7	£1,098,806 1 5	£918,460 2 10	£789,361 16 8	£644,900 18 2	£404,099 18 1	£442,058 11 0	£431,736 5 2	£182,166 10 7	£72,770 11 3	£828,600 0 0	£35,746 6 6
Market Values ...	£10,992,156	—	£327,894	£2,005,576	£3,367,222	£1,020,080	£836,893	£722,532	£587,356	£359,073	£390,792	£379,087	£161,041	£70,235	£730,400	£33,975

Electricity Supply Commission.

SCHEDULE No. 3.

LOAN CAPITAL AT 31st DECEMBER, 1949.

Loan No. 1:	Government of the Union of South Africa	...	£3,000,000	0	0
Loan No. 2:	Government of the Union of South Africa	...	5,000,000	0	0
			8,000,000	0	0
	<i>Less</i> —Repaid during 1933 and 1934	...	8,000,000	0	0

LOCAL REGISTERED STOCKS.

Loan No. 3:	£500,000	4 $\frac{3}{4}$	per cent., 1953/63	...	...	£500,000	0	0
Loan No. 4:	£2,500,000	4 $\frac{1}{2}$	per cent., 1953	...	...	2,500,000	0	0
Loan No. 5:	£6,750,000	3 $\frac{3}{4}$	per cent., 1954/64	...	...	6,750,000	0	0
Loan No. 6:	£2,500,000	3 $\frac{1}{2}$	per cent., 1959/64	...	...	2,500,000	0	0
Loan No. 7:	£2,000,000	3 $\frac{1}{4}$	per cent., 1956/66	...	...	2,000,000	0	0
Loan No. 8:	£2,000,000	3 $\frac{1}{2}$	per cent., 1957/67	...	...	2,000,000	0	0
Loan No. 9:	£2,000,000	3 $\frac{3}{4}$	per cent., 1959/64	...	...	2,000,000	0	0
Loan No. 10:	£1,500,000	3 $\frac{3}{4}$	per cent., 1960/65	...	...	1,500,000	0	0
Loan No. 11:	£2,000,000	3 $\frac{1}{4}$	per cent., 1961/66	...	...	2,000,000	0	0
Loan No. 12:	£2,500,000	3 $\frac{1}{4}$	per cent., 1965/70	...	...	2,500,000	0	0
Loan No. 13:	£3,000,000	3	per cent., 1967/73	...	...	3,000,000	0	0
Loan No. 14:	£3,000,000	3	per cent., 1968/74	...	...	3,000,000	0	0
Loan No. 15:	£15,000,000	3 $\frac{1}{4}$	per cent., 1968/73	...	...	15,000,000	0	0
Loan No. 16:	£3,000,000	3 $\frac{1}{2}$	per cent., 1969/74	...	...	3,000,000	0	0
Loan No. 17:	£3,000,000	3 $\frac{3}{4}$	per cent., 1969/74	...	...	3,000,000	0	0
	(Payable in full not later than the 31st January, 1950, in terms of the Prospectus)	...	...	...	...	2,253,330	0	0
	Partly Paid: Deposits due and Payments in Advance	...	...	...	...	£1,529,330		
	Fully Paid	...	...	...	...	724,000		

£51,250,000

£50,503,330 0 0

SUNDRY LOANS AND AMOUNTS OUTSTANDING FOR RIGHTS ACQUIRED AT 31st DECEMBER, 1949.

Umkomaas Town Board	...	...	...	...	...	£7,780	0	0
Volkstrust Municipality	...	...	...	...	...	8,335	5	3
Rand Water Board	...	...	...	...	...	43,358	3	3
Caledon Municipality	...	...	...	...	...	3,046	19	4
Rawsonville Village Management Board	...	...	...	...	...	4,065	5	2
East London Municipality	...	...	...	...	...	143,561	12	0
Alice Municipality	...	...	...	...	...	4,265	8	9
						£214,412	13	9

J. VAN NIEKERK,
Chief Accountant.

Johannesburg
25th April, 1950.

Electricity Supply Commission.

ACCOUNT No. 1.

Redemption Fund Account for the Year ended 31st December, 1949.

	Totals.	Loan No. 3. £500,000 4½% Local Registered Stock, 1953/63.	Loan No. 4. £2,500,000 4½% Local Registered Stock, 1953.	Loan No. 5. £6,750,000 3½% Local Registered Stock, 1951/61.	Loan No. 6. £2,500,000 3½% Local Registered Stock, 1959/61.	Loan No. 7. £2,000,000 3½% Local Registered Stock, 1956/66.	Loan No. 8. £2,000,000 3½% Local Registered Stock, 1957/67.	Loan No. 9. £2,000,000 3½% Local Registered Stock, 1959/61.	Loan No. 10. £1,500,000 3½% Local Registered Stock, 1960/65.	Loan No. 11. £2,000,000 3½% Local Registered Stock, 1961/66.	Loan No. 12. £2,500,000 3½% Local Registered Stock, 1965/70.	Loan No. 13. £3,000,000 3½% Local Registered Stock, 1967/73.	Loan No. 14. £3,000,000 3½% Local Registered Stock, 1968/74.	Loan No. 15. £15,000,000 3½% Local Registered Stock, 1968/73.	Loan No. 16. £3,000,000 3½% Local Registered Stock, 1969/74.	Loan No. 17. £3,000,000 3½% Local Registered Stock, 1969/74.
Cr.																
By Balance at 31st December, 1948, brought forward—																
Natal Central Undertaking	£2,029,748 9 11	£1,393 11 7	£76,969 19 4	£1,611,488 11 7	—	£92,586 16 11	£18,327 13 2	£18,579 17 1	£38,279 17 7	£95,736 1 11	£39,378 4 6	£5,220 0 3	£1,787 16 0	—	—	—
Witbank Undertaking	2,161,625 0 6	1,844 10 6	1,187,707 17 7	170,211 19 10	—	204,069 8 2	96,880 9 4	28,652 16 6	63,430 19 0	1,194 16 7	102,882 18 7	1,792 1 3	1,609 13 5	£1,314 9 9	—	—
Cape Western Undertaking	1,628,801 12 0	229,372 7 3	119,109 2 4	1,009,912 13 8	—	16,149 5 1	12,531 13 6	92,418 4 2	33,763 10 2	56,023 14 6	17,281 8 11	8,447 14 10	3,431 17 7	—	—	—
Durban Undertaking	1,043,838 0 3	90,233 13 9	509,974 7 11	183,692 13 2	—	5,662 17 10	95,091 9 7	23,431 0 11	30,370 13 10	12,940 9 0	41,536 8 4	19,363 13 2	1,540 12 9	—	—	—
Sabie Undertaking	99,470 6 1	—	73,833 9 11	21,611 3 4	—	—	—	—	—	1,025 12 10	—	—	—	—	—	—
Border Undertaking	3,236 18 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rand Undertaking	3,149,094 16 9	—	—	—	—	£997,485 5 3	149,569 9 7	466,093 18 5	408,310 4 8	180,151 19 10	148,750 6 5	2,101 2 10	1,135 16 0	—	—	—
Head Office	133,873 18 0	—	3,964 13 9	13,411 17 0	—	84,273 13 3	—	1,041 6 9	785 19 0	195,314 12 4	98 11 4	29,939 1 6	5,626 12 2	267,553 6 7	—	—
	£10,249,689 2 4	£322,844 3 1	£1,971,859 10 10	£3,373,394 18 7	£997,485 5 3	£852,311 10 10	£718,925 4 0	£572,463 10 1	£317,082 19 5	£362,339 19 7	£349,927 18 1	£97,000 12 4	£15,155 13 11	£268,897 16 4	—	—
„ Amounts contributed during the year out of Revenue—																
Natal Central Undertaking	£98,288 19 8	£46 3 2	Dr. £510 0 6	£78,691 0 10	—	£1,704 2 3	£1,453 19 11	£1,086 16 5	£539 15 10	£3,768 12 6	£1,917 18 1	£4,534 2 4	£3,569 9 6	—	£1,485 9 0	£1 10 4
Witbank Undertaking	51,652 3 5	90 11 7	37,194 5 8	18,301 13 1	—	Dr. 5,837 12 4	Dr. 2,765 3 8	Dr. 424 19 4	Dr. 881 2 3	£1,117 16 9	Dr. 1,193 7 11	1,154 4 9	2,131 6 7	—	1,106 0 0	6 8 10
Cape Western Undertaking	154,570 18 9	10,429 0 2	5,793 13 11	97,613 17 0	—	1,147 18 0	Dr. 722 7 10	9,085 7 5	2,247 1 8	8,110 8 11	4,577 14 6	5,513 12 11	4,822 8 5	£2,652 1 8	5,359 14 11	592 8 9
Durban Undertaking	115,910 16 7	4,460 3 10	17,998 5 0	8,695 19 11	—	457 17 5	8,109 14 9	3,031 14 9	3,587 12 8	2,354 7 1	16,732 4 11	22,147 6 5	26,902 9 3	—	1,433 0 7	—
Sabie Undertaking	Dr. 3,619 3 6	—	Dr. 2,735 15 0	Dr. 851 10 11	—	—	—	—	—	Dr. 31 17 7	—	—	—	—	—	—
Border Undertaking	3,614 7 5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rand Undertaking	912,067 13 6	—	—	—	—	£65,749 9 0	32,828 6 3	39,127 7 6	39,385 5 5	37,957 2 1	49,659 3 2	45,254 11 7	1,780 11 3	1,345 16 0	478 0 2	—
Head Office	10,284 9 9	—	159 6 11	3,442 9 3	—	6,134 5 9	—	—	98 14 0	13 4 5	28 15 2	85 17 6	238 18 9	527,759 1 6	12,579 1 10	1,931 2 11
	£1,342,760 5 7	£15,025 18 9	£57,899 16 0	£205,893 9 2	£65,749 9 0	£36,434 17 4	£45,203 10 8	£52,262 18 8	£43,533 8 0	£63,991 15 3	£67,317 16 4	£81,792 9 5	£52,270 16 6	£530,411 3 2	£22,441 6 6	£2,531 10 10
„ Adjustment in respect of transfer of Assets from Natal Central Undertaking to Durban Undertaking—																
Natal Central Undertaking	Dr. £22,838 8 9	Dr. £137 4 9	—	Dr. £13,616 14 0	—	Dr. £80 10 8	Dr. £83 15 6	Dr. £7,658 3 3	Dr. £315 14 7	Dr. £621 18 11	Dr. £104 11 6	Dr. £56 13 4	Dr. £153 10 11	—	Dr. £9 11 4	—
Durban Undertaking	22,838 8 9	137 4 9	—	13,616 14 0	—	80 10 8	83 15 6	7,658 3 3	315 14 7	621 18 11	104 11 6	56 13 4	153 10 11	—	9 11 4	—
„ Net Proceeds of Sales of Fixed Property—																
Natal Central Undertaking	£1,789 19 7	£30 0 0	—	£1,759 19 7	—	—	—	—	—	—	—	—	—	—	—	—
Witbank Undertaking	244 2 7	—	£45 0 5	199 2 2	—	—	—	—	—	—	—	—	—	—	—	—
Cape Western Undertaking	Dr. 70,698 16 10	—	—	Dr. 70,698 16 10	—	—	—	—	—	—	—	—	—	—	—	—
Durban Undertaking	400 0 0	—	400 0 0	—	—	—	—	—	—	—	—	—	—	—	—	—
	Dr. £68,264 14 8	£30 0 0	£445 0 5	Dr. £68,739 15 1	—	—	—	—	—	—	—	—	—	—	—	—
„ Net Interest Earned on Investments after deducting amounts appropriated in writing off premiums on investments purchased—																
Natal Central Undertaking	£69,141 0 6	£38 14 9	£2,739 19 1	£56,815 6 5	—	£2,993 17 0	£624 8 0	£418 4 11	£1,152 7 2	£2,972 2 5	£1,217 16 2	£197 11 1	Dr. £28 5 6	—	Dr. £1 1 0	—
Witbank Undertaking	76,518 9 9	66 10 3	44,467 15 10	16,538 0 11	—	6,288 10 11	2,990 13 9	887 7 1	1,935 19 6	39 1 5	3,115 15 7	71 11 3	54 1 2	£56 5 9	6 16 4	—
Cape Western Undertaking	56,653 12 1	8,238 14 7	4,508 17 11	34,695 0 10	—	555 2 6	1,372 18 0	3,151 13 6	1,111 3 11	1,875 17 4	609 5 4	335 7 4	128 11 1	—	70 19 9	—
Durban Undertaking	39,154 11 8	3,267 17 10	19,133 14 0	6,901 17 7	—	202 17 1	3,301 10 1	1,014 0 3	1,056 5 4	466 11 2	1,557 7 5	1,862 3 10	367 11 2	—	22 15 11	—
Sabie Undertaking	3,619 3 6	—	2,735 15 0	851 10 11	—	—	—	—	—	31 17 7	—	—	—	—	—	—
Border Undertaking	130 3 7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rand Undertaking	111,546 9 7	—	—	—	—	£34,405 5 11	15,464 14 10	16,136 11 6	13,910 9 0	6,251 17 0	5,907 18 3	89 7 7	37 17 4	—	2 18 8	—
Head Office	4,675 17 5	—	148 17 11	1,552 3 10	—	2,898 2 8	—	—	35 8 11	6,843 10 9	3 9 6	1,499 4 1	219 16 1	11,461 10 9	75 11 5	—
	£361,439 8 1	£11,611 17 5	£73,734 19 9	£117,354 0 6	£34,405 5 11	£28,403 5 0	£24,426 1 1	£19,417 3 8	£11,533 17 0	£12,202 10 2	£11,811 11 6	£1,060 13 6	£782 4 9	£11,517 16 6	£178 1 1	—
Grand Total	£11,885,624 1 4	£349,511 19 3	£2,103,939 7 0	£3,627,992 13 2	£1,097,640 0 2	£917,149 13 2	£788,554 16 0	£644,143 12 5	£402,150 4 5	£438,534 5 0	£429,057 5 11	£182,853 15 3	£68,208 15 2	£810,826 16 0	£22,619 7 7	£2,531 10 10
Dr.																
To Balance as per Balance Sheet—																
Natal Central Undertaking	£2,176,130 0 11	£1,371 4 9	£79,199 17 11	£1,765,138 4 5	—	£97,201 5 6	£20,322 5 7	£12,426 15 2	£39,656 6 0	£101,854 17 11	£12,409 7 3	£9,895 0 4	£5,175 9 1	—	£1,474 16 8	£1 10 4
Witbank Undertaking	2,290,939 16 3	2,004 12 1	1,269,114 19 6	505,253 16 0	—	201,520 6 9	97,105 19 5	29,115 4 3	61,485 16 3	1,351 11 9	101,805 6 3	3,017 17 3	3,795 4 2	£1,052 17 2	1,142 16 4	6 8 10
Cape Western Undertaking	1,769,327 6 0	218,010 2 0	1,297,711 11 2	1,071,552 14 8	—	17,852 5 7	13,182 3 8	104,685 5 1	37,121 15 9	66,010 0 9	22,468 8 9	11,296 15 1	8,382 17 1	—	5,430 11 8	592 8 9
Durban Undertaking	1,222,111 17 3	98,089 0 2	517,506 6 11	212,907 4 8	—	6,104 3 0	106,586 9 11	35,431 19 2	35,330 6 5	16,383 6 2	59,930 12 2	73,429 16 9	28,964 4 1	—	1,165 7 10	—
Sabie Undertaking	99,470 6 1	—	73,833 9 11	21,611 3 4	—	—	—	—	—	1,025 12 10	—	—	—	—	—	—
Border Undertaking	6,971 9 10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rand Undertaking	4,172,708 19 10	—	—	—	—	£1,097,640 0 2	497,862 10 8	521,357 17 5	461,605 19 1	224,660 18 11	199,312 16 3	3,971 4 8	2,519 9 1	—	480 18 10	—
Head Office	148,834 5 2	—	1,272 18 7	48,439 10 4	—	93,306 4 8	—	—	1,175 9 8	251,787 6 3	121 6 4	78,011 19 10	19,106 16 3	806,773 18 10	12,654 13 3	1,931 2 11
	£11,885,624 1 4	£349,511 19 3	£2,103,939 7 0	£3,627,992 13 2	£1,097,640 0 2	£917,149 13 2	£788,554 16 0	£644,143 12 5	£402,150 4 5	£438,534 5 0	£429,057 5 11	£182,853 15 3	£68,208 15 2	£810,826 16 0	£22,619 7 7	£2,531 10 10

J. VAN NIEKERK, Chief Accountant.

Johannesburg.

25th April, 1950.

We hereby certify that we are satisfied, both 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 5th June, 1950.

HAILEY, BUTTON & PERRY,
ALEX. AIKEN & CARTER, Auditors.

Electricity Supply

Dr. Reserve Fund Account for the

To	Expenditure during the year on Replacements and Betterment		£524,234 9 10
	Natal Central Undertaking	£9,057 3 1	
	Witbank Undertaking	35,360 14 5	
	Cape Western Undertaking	169,840 15 1	
	Durban Undertaking	54,955 11 3	
	Sabie Undertaking	2,159 10 7	
	Border Undertaking	2,987 7 9	
	Rand Undertaking	249,873 7 8	
„	Balance as per Balance Sheet		2,263,310 12 7
	Natal Central Undertaking	479,906 11 10	
	Witbank Undertaking	249,750 13 11	
	Cape Western Undertaking	358,726 9 6	
	Durban Undertaking	112,741 8 11	
	Sabie Undertaking	10,992 12 1	
	Border Undertaking	38,575 19 2	
	Rand Undertaking	1,012,616 17 2	

£2,787,545 2 5

Commission.

Year ended 31st December, 1949.

Cr.

By	Balance at 31st December, 1948, brought forward		£2,356,588 18 3
	Natal Central Undertaking	£406,364 16 0	
	Witbank Undertaking	319,372 7 7	
	Cape Western Undertaking	484,056 11 0	
	Durban Undertaking	150,303 18 5	
	Sabie Undertaking	12,713 0 1	
	Border Undertaking	40,128 0 0	
	Rand Undertaking	943,650 5 2	
„	Amounts set aside during the year as per Revenue Accounts		344,784 19 4
	Natal Central Undertaking	22,000 0 0	
	Cape Western Undertaking	27,636 14 9	
	Durban Undertaking	12,500 0 0	
	Rand Undertaking	282,648 4 7	
„	Transfer from Witbank Undertaking to Natal Central Undertaking in connection with Assets sold to South African Railways and Harbours in 1948		
	Natal Central Undertaking	45,648 8 5	
	Witbank Undertaking ... ..	...Dr. 45,648 8 5	
„	Interest Earned on Investments		86,171 4 10

£2,787,545 2 5

Electricity Supply

NATAL CENTRAL

Dr.	Revenue Account for the Year				
	Generation of Electricity.				
To Operation—					
Fuel	£193,084	4	11		
Water, Oil, Waste and Stores	3,317	5	5		
Salaries and Wages	48,166	13	3		
Other Expenses	449	3	5		
„ Maintenance—					
Stores	16,644	18	8		
Salaries and Wages	30,521	1	2		
Other Expenses	3,734	10	9		
				£295,917	17 7
„ Electricity supplied by Durban Undertaking				1,847	19 5
	Distribution of Electricity.				
„ Operation and Maintenance—					
Stores	11,528	8	10		
Salaries and Wages	48,813	8	1		
Other Expenses	7,754	8	10		
				68,096	5 9
	General Expenses.				
„ Local Administration and Technical Management	26,079	2	4		
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	31,719	6	1		
„ Head Office Administration and General Expenses, including Publicity	21,364	8	11		
„ Engineering Expenses	11,515	1	3		
				90,677	18 7
„ Deferred Payment Scheme, including Propaganda and Showroom Expenses				120	0 0
				456,660	1 4
„ Interest				178,596	14 2
„ Redemption Fund				98,288	19 8
„ Instalments paid on Volksrust Municipality Loan				2,080	16 5
„ Amount set aside to Reserve Fund				22,000	0 0
				£757,626	11 7
				£9,185	8 10
To Balance at 31st December, 1948, brought forward				2,033	7 7
„ Balance brought down				£11,218	16 5

J. VAN NIEKERK, Chief Accountant⁺

Johannesburg,
25th April, 1950.

Commission.

UNDERTAKING.

ended 31st December, 1949.

	Cr.
By Sales of Electricity—	
Traction Supplies	£407,881 16 2
Bulk Supplies	199,365 14 8
Mining Supplies	30,882 11 10
Industrial Supplies	58,015 13 1
Domestic and Lighting Supplies	48,117 18 0
	£744,263 13 9
„ Electricity supplied to Durban Undertaking	2,033 0 11
„ Other Revenue	9,296 9 4
„ Balance carried down	2,033 7 7
	£757,626 11 7
	£11,218 16 5
By Balance as per Balance Sheet	£11,218 16 5
	£11,218 16 5

Referred to in our Report of 5th June, 1950.

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

Electricity Supply

WITBANK

Dr.	Revenue Account for the Year				
	Generation of Electricity				
To Operation—					
Fuel	£129,159	7	6		
Water, Oil, Waste and Stores	10,360	9	0		
Salaries and Wages	54,034	3	9		
Other Expenses	1,280	0	0		
„ Maintenance—					
Stores	19,058	9	3		
Salaries and Wages	34,666	0	6		
Other Expenses	15,147	18	3		
				£263,706	8 3
„ Electricity Purchased	19,856	3	9		
„ Electricity supplied by Rand Undertaking	213,761	17	2		
				233,618	0 11
	Distribution of Electricity.				
„ Operation and Maintenance—					
Stores	6,210	17	0		
Salaries and Wages	11,783	17	0		
Other Expenses	1,731	5	3		
				19,725	19 3
	General Expenses.				
„ Local Administration and Technical Management	22,821	18	0		
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	17,958	14	6		
„ Head Office Administration and General Expenses, including Publicity	17,210	4	11		
„ Engineering Expenses	9,276	0	5		
				67,266	17 10
„ Deferred Payment Scheme, including Propaganda and Showroom Expenses				70	0 11
				584,387	7 2
„ Interest				119,143	2 2
„ Redemption Fund				51,652	3 5
				£755,182	12 9
To Balance brought down	£9,135	2	10		
.. Balance as per Balance Sheet	1,469	10	6		
				£10,604	13 4

J. VAN NIEKERK, Chief Accountant.

Johannesburg,
25th April, 1950.

Commission.

UNDERTAKING.

ended 31st December, 1949.

	Cr.
By Sales of Electricity—	
Traction Supplies	£233,618 0 11
Bulk Supplies	6,572 2 7
Mining Supplies	111,416 5 7
Industrial Supplies	103,441 17 11
Domestic and Lighting Supplies	16,549 6 5
	£471,597 13 5
„ Electricity Supplied to Rand Undertaking	264,579 16 6
„ Other Revenue	9,870 0 0
.. Balance carried down	9,135 2 10
	£755,182 12 9
By Balance at 31st December, 1948, brought forward	£10,604 13 4
	£10,604 13 4

Referred to in our Report of 5th June, 1950.

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

Electricity Supply

CAPE WESTERN

Dr. Revenue Account for the Year

Generation of Electricity.			
To Proportion of Pooled Costs (as per attached Statement)	£402,161 13 3		
„ Other Operation and Maintenance Costs	2,049 16 5		
		£404,211 9 8	
Distribution of Electricity.			
„ Operation and Maintenance—			
Stores	13,059 18 10		
Salaries and Wages	63,405 9 0		
Other Expenses	14,946 11 11		
		91,411 19 9	
General Expenses.			
„ Local Administration and Technical Management ...	42,608 19 11		
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	30,744 0 4		
„ Head Office Administration and General Expenses, including Publicity	18,397 3 3		
„ Engineering Expenses	9,915 14 11		
	101,665 18 5		
<i>Less—Charged to Pooled Costs</i>	6,377 9 2		
		95,288 9 3	
		590,911 18 8	
„ Interest	144,265 1 9		
„ Redemption Fund	154,570 18 9		
„ Instalments on Caledon Municipality and Rawsonville Village Management Board Loans	982 3 7		
„ Amount set aside to Reserve Fund	27,636 14 9		
	327,454 18 10		
<i>Less—Charged to Pooled Costs</i>	83,032 13 4		
		244,422 5 6	
		£835,334 4 2	
To Balance brought down		£14,935 8 8	
„ Balance as per Balance Sheet		66,195 5 7	
		£81,130 14 3	

J. VAN NIEKERK, Chief Accountant.

Johannesburg,
25th April, 1950.

Commission.

UNDERTAKING.

ended 31st December, 1949.

Cr.

By Sales of Electricity—					
Traction Supplies	£172,288 5 2				
Bulk Supplies	139,751 19 11				
Industrial Supplies	287,589 0 4				
Domestic and Lighting Supplies	218,616 1 4				
		£818,245 6 9			
„ Other Revenue	3,911 2 7				
<i>Less—Credited to Pooled Costs</i>	1,757 13 10				
		2,153 8 9			
„ Balance carried down				14,935 8 8	

By Balance at 31st December, 1948, brought forward ...		£81,130 14 3	
		£81,130 14 3	

Referred to in our Report of 5th June, 1950.

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

Electricity Supply Commission

Dr. Statement of Pooled Costs for the Year ended

Pooled Generation of Electricity.	
To Operation and Maintenance—	
Fuel	£796,941 12 7
Water, Oil, Waste and Stores	50,332 5 1
Salaries, Wages and Other Expenses	198,289 0 7
	£1,045,562 18 3
„ General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	23,560 3 0
„ Interest	136,072 15 0
„ Redemption Fund	113,955 17 7
„ Reserve Fund	20,926 3 4
	£1,340,077 17 2

Cape Town,
25th April, 1950.

and City of Cape Town.

31st December, 1949, and Allocation thereof. Cr.

By Allocation of Pooled Costs in terms of Agreement—

Electricity Supply Commission	£402,161 13 3
City of Cape Town	934,055 14 7
	£1,336,217 7 10
„ Sundry Revenue	3,860 9 4

£1,340,077 17 2

H. A. EASTMAN,
Manager of the Pooled Stations.

Electricity Supply

DURBAN

Dr. Revenue Account for the Year

Generation of Electricity.			
To Operation—			
Fuel	£316,928 18 1		
Water, Oil, Waste and Stores ..	17,672 3 0		
Salaries and Wages	58,747 14 2		
Other Expenses	13,843 0 3		
„ Maintenance—			
Stores	26,264 9 0		
Salaries and Wages	62,083 19 11		
Other Expenses	2,164 14 10		
„ Electricity Purchased		£497,704 19 3	
„ Electricity supplied by Natal Central Undertaking ...		26,791 17 10	
		2,033 0 11	
		44,863 11 2	
Distribution of Electricity.			
„ Operation and Maintenance—			
Stores	19,351 1 7		
Salaries and Wages	21,032 2 5		
Other Expenses	4,480 7 2		
		44,863 11 2	
General Expenses.			
„ Local Administration and Technical Management ...	14,530 13 8		
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	26,160 19 1		
„ Head Office Administration and General Expenses, including Publicity	14,539 13 10		
„ Engineering Expenses	7,836 12 10		
		63,067 19 5	
„ Interest		634,461 8 7	
„ Redemption Fund		147,941 17 6	
„ Sinking Fund		115,910 16 7	
„ Amount set aside to Reserve Fund		120 0 0	
„ Balance carried down		12,500 0 0	
		1,116 17 10	
		£912,051 0 6	
To Balance at 31st December, 1948, brought forward ...		£48,762 0 10	
„ Adjustment of Stores		6,745 16 10	
		£55,507 17 8	

J. VAN NIEKERK, Chief Accountant.

Johannesburg,
25th April, 1950.

Commission.

UNDERTAKING.

ended 31st December, 1949.

By Sales of Electricity—			
Traction Supplies	£71,427 5 8		
Bulk Supplies	736,060 0 3		
Industrial Supplies	47,950 3 10		
Domestic and Lighting Supplies	54,094 6 5		
	£909,531 16 2		
„ Electricity supplied to Natal Central Undertaking ...		1,847 19 5	
„ Other Revenue		671 4 11	
		£912,051 0 6	
By Balance brought down		£1,116 17 10	
„ Balance as per Balance Sheet		54,390 19 10	
		£55,507 17 8	

Referred to in our Report of 5th June, 1950.

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

Electricity Supply

BORDER

Dr.	Revenue Account for the Year						
	Generation of Electricity.						
To Operation—							
Fuel	£92,608	3	9				
Water, Oil, Waste and Stores	2,645	7	4				
Salaries and Wages	25,978	17	2				
Other Expenses	793	18	2				
„ Maintenance—							
Stores	5,264	2	5				
Salaries and Wages	11,305	12	6				
Other Expenses	1,887	9	11				
				£140,483	11	3	
	Distribution of Electricity.						
„ Operation and Maintenance—							
Stores	395	2	3				
Salaries and Wages	5,687	11	4				
Other Expenses	605	13	11				
				6,688	7	6	
	General Expenses.						
„ Local Administration and Technical Management ...	12,086	8	2				
„ General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.) ...	9,236	18	2				
„ Investigations and Development Expenses ...	97	16	1				
„ Head Office Administration and General Expenses, including Publicity ...	4,450	18	7				
„ Engineering Expenses ...	2,398	19	5				
				28,271	0	5	
„ Interest				175,442	19	2	
„ Redemption Fund				17,774	17	7	
„ Instalments paid on East London and Alice Municipalities' Loans				3,604	7	5	
„ Balance carried down				7,246	6	9	
				497	19	5	
				£204,566	10	4	
To Balance as per Balance Sheet				£10,474	2	0	
				£10,474	2	0	

J. VAN NIEKERK, Chief Accountant.

Johannesburg,
25th April, 1950.

Commission.

UNDERTAKING.

	ended 31st December, 1949.						Cr.
	By Sales of Electricity—						
Bulk Supplies	£152,180	1	8				
Industrial Supplies	15,853	17	7				
Domestic and Lighting Supplies	35,831	8	9				
				£203,865	8	0	
„ Other Revenue						701 2 4	
						£204,566 10 4	
By Balance at 31st December, 1948, brought forward ...				£9,976	2	7	
„ Balance brought down						497 19 5	
						£10,474 2 0	

Referred to in our Report of 5th June, 1950.

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

Electricity Supply

RAND

Dr.	Revenue Account for the Year	
	Generation.	
To Operation—		
Fuel	£1,240,969 3 0	
Water, Oil, Waste and Stores	50,598 2 9	
Salaries and Wages	362,967 16 9	
Other Expenses	21,221 16 6	
„ Maintenance—		
Stores	123,533 5 10	
Salaries and Wages	293,335 2 2	
Other Expenses	44,737 7 9	
„ Electricity Purchased	£2,137,362 14 9	
„ Electricity supplied by Witbank Undertaking	92,638 5 9	
	264,579 16 6	
	Distribution.	
„ Operation and Maintenance—		
Stores	66,716 10 3	
Salaries and Wages	292,115 14 10	
Other Expenses	37,251 10 2	
	396,083 15 3	
	General Expenses.	
„ Local Administration and Technical Management	126,034 8 10	
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	153,625 2 5	
„ Investigations and Development Expenses	15 15 9	
„ Head Office Administration and General Expenses, including Publicity	41,793 4 3	
„ Engineering Expenses	22,525 16 1	
	343,994 7 4	
	3,234,658 19 7	
„ Interest	911,865 9 0	
„ Redemption Fund	912,067 13 6	
„ Provision for Repayment of Amounts Outstanding (Rand Water Board)	8,497 16 5	
„ Amount set aside to Reserve Fund	282,648 4 7	
„ Balance carried down	3,070 19 3	
	£5,352,809 2 4	
To Balance as per Balance Sheet	£60,057 7 2	
	£60,057 7 2	

J. VAN NIEKERK, Chief Accountant.

Johannesburg,
25th April, 1950.

Commission.

UNDERTAKING.

ended 31st December, 1949.

	Cr.
By Sales of Electricity—	
Bulk Supplies	£319,230 7 9
Mining Supplies	3,462,935 17 2
Industrial Supplies	674,970 3 8
Domestic and Lighting Supplies	146,698 17 4
	£4,603,835 5 11
„ Sales of Air and Steam	508,000 18 3
„ Electricity supplied to Witbank Undertaking	213,761 17 2
„ Other Revenue	27,211 1 0
By Balance at 31st December, 1948, brought forward	£56,986 7 11
„ Balance brought down	3,070 19 3
	£60,057 7 2

Referred to in our Report of 5th June, 1950.

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

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ANNEXURE " B "

Electricity Supply Commission

STATEMENT No. 1

SUMMARY OF PRINCIPAL PLANT AND EQUIPMENT INSTALLED AT THE COMMISSION'S SEVERAL UNDERTAKINGS AS AT 31st DECEMBER, 1949

Undertaking.	Electric Power Stations.					Type.
	CAPE					
BORDER (21,500 square miles)	Alice	...	...	...	...	Oil
	East London	...	...	...	...	Steam
	King William's Town	...	...	...	...	Steam
CAPE WESTERN (5,600 square miles)	Caledon	...	...	...	...	Oil
	Salt River "A"	...	...	...	...	Steam
	Worcester	...	...	...	...	Oil
	NATAL					
DURBAN (1,900 square miles)	Congella No. 1 and No. 2		...	...	...	Steam (Pulverised Fuel)
	Port Shepstone	...	...	...	...	Oil
NATAL CENTRAL (11,300 square miles)	Colenso No. 1 and No. 2		...	...	...	Steam
	Volkstrust	...	...	...	...	Oil
	O.F.S.					
RAND (28,100 square miles)	Vaal	...	...	...	...	Steam
	TRANSVAAL					
RAND (28,100 square miles)	Brakpan	...	...	...	...	Steam
	Klip	...	...	...	...	Steam
	Rosherville	...	...	...	...	Steam
	Simmerpan	...	...	...	...	Steam
	Vereeniging	...	...	...	...	Steam
SABIE (200 square miles)	Sabie Gorge	...	...	...	...	Hydro
WITBANK (4,600 square miles)	Witbank	...	...	...	...	Steam

Compressed Air Power Stations

TRANSVAAL					
Brakpan	...	...	...	...	Steam
Canada Dam	...	...	...	...	Electric
Robinson	...	...	...	...	Electric
Rosherville	...	...	...	...	Steam

(1) STEAM STATIONS

Name of Station.	BOILER HOUSE.			TURBINE			
	Number of Boilers.	Rating.		lb/sq. in.	Number of Generators.	Normal Rating each	
		Each.	Total.			MW	p.f.
		lb of Steam per Hour.					
Brakpan* ...	8 10 1	28,000 45,000 70,000	744,000	200 200 240	1 2 1	3.0 12.5 20.0	0.80 0.69 0.50
Colenso ...	8 4 2	70,000 80,000 180,000	1,240,000	280 280 290	5 1 1	12.0 25.0 25.0	0.9 0.9 0.9
Congella ...	6 4 5	60,000 100,000 200,000	1,760,000	270 270 625	3 1 1 2	12.0 20.0 30.0 40.0	0.8 0.8 0.8 0.85
East London ...	4 2 2	21,500 27,500 55,000	251,000	220 220 220	1 2 2	1.5 4.0 7.5	0.8 0.85 0.85
King William's Town	1 3	10,000 12,000	46,000	200 200	2 1	1.5 0.5	0.8 0.8
Klip ...	24	180,000	4,320,000	355	12	33.0	0.825
Rosherville*	32 8	38,000 48,000	1,600,000	200 200	5 1	9.6 12.5	0.80 0.83
Salt River ...	2 6	60,000 100,000	720,000	270 425	3 3	10.0 20.0	0.90 0.80
Simmerpan ...	4 12 8	20,000 25,000 48,000	764,000	200 200 200	1 5 2	3.0 3.0 11.0	0.80 0.80 0.73
Vaal ...	9	190,000	1,710,000	360	5	33.0	0.825
Vereeniging ...	20 2 5	45,000 60,000 180,000	1,920,000	210 210 230	3 3	20.0 32.5	1.00 0.81
Witbank ...	20	70,000	1,400,000	255	5	20.0	0.85
Total Steam Stations	212	—	16,475,000	—	74	—	—

* Note.—Brakpan and Rosherville Boiler Houses also

(2) HYDRO STATION

Sabie ...	—	—	—	—	3	0.45	0.75
-----------	---	---	---	---	---	------	------

Statement No. 1—(continued)

Name of Station.	HOUSE.			HOUSE SETS.			Station Capacity (Including House Sets).	
	Generator.	Total Rating.		Voltage of Generation.	Number.	Rating. Each.		Total House Sets.
		MVA	MW						MVA	MW
				kV			MW	
Brakpan* ...	3.75 18.0 20.0 20.0	48.0	79.75	10.0 5.0 5.0	—	—	48.0	
Colenso ...	13.33 27.80 27.80	110.0	122.25	6.6 6.6 13.2	—	—	110.0	
Congella ...	15.0 25.0 37.5 47.0	166.0	201.5	6.6 6.6 33.0 33.0	—	—	166.0	
East London ...	1.875 4.7 8.825	24.5	28.925	6.6 6.6 6.6	—	—	24.5	
King William's Town	1.875 0.625	3.5	4.375	3.8	—	—	3.5	
Klip ...	40.0	396.0	480.0	10.5	4	7.0	28.0	
Rosherville*	12.0 15.0	60.5	75.0	5.0	—	—	60.5	
Salt River ...	11.0 25.0	90.0	108.0	12.0 33.0	1	0.3	0.3	
Simmerpan ...	3.75 3.75 15.0	40.0	52.5	10.0 2.25 5.0	—	—	40.0	
Vaal ...	40.0	165.0	200.0	10.5	1	7.0	7.0	
Vereeniging ...	20.0 40.0	157.5	180.0	5.0 10.5	—	—	157.5	
Witbank ...	23.5	100.0	117.5	6.6	1	8.0	8.0	
Total Steam Stations	—	1,361.0	1,649.8	—	7	—	1,404.3	

supply steam to steam-driven Compressors listed on next page.

0.6	1.35	1.80	3.3	—	—	—	1.35
-----	------	------	-----	---	---	---	------

Statement No. 1—(continued)

(3) DIESEL STATIONS

Name of Station.	Number of Sets.	RATING OF GENERATORS.				Voltage of Generation A.C. or D.C.
		Each.		Total.		
		kW	kVA	kW	kVA	
Alice	1	25	—	170	—	440/220 D.C.
	1	55	—			
	1	90	—	125	140	
	1	125	140			
Caledon*	1	140	—	140	—	500/250 D.C.
Port Shepstone ...	2	700	875	3,400	4,100	380/220 A.C. 11,000 A.C.
	2	1,000	1,175			
Volkstrust*	2	250	300	500	600	3,300 A.C.
Worcester	2	1,000	1,175	2,000	2,350	11,000 A.C.
Total Diesel Stations	13	—	—	6,335	7,190	—

* Stand-by Plant.

(4) COMPRESSED AIR POWER STATIONS

Name of Station.	Number of Sets.	Type.	Compressor Output, h.p.		Drive.
			Each.	Total.	
Electric Driven.					
Canada Dam Compressor Station	1	Turbo	3,000	22,200	Electric Motor Electric Motor
	4	Turbo	4,800		
Robinson Compressor Station	3	Turbo	2,000	14,000	Electric Motor Electric Motor Electric Motor Electric Motor
	1	Turbo	2,150		
	1	Turbo	2,850		
	1	Turbo	3,000		
At New Modder Mine ...	1	Recip.	380	1,080	Electric Motor Electric Motor
	1	Recip.	700		
At Modder B Mine	1	Recip.	270	5,500	Electric Motor Electric Motor Electric Motor Electric Motor Electric Motor
	1	Recip.	380		
	2	Recip.	700		
	1	Recip.	1,300		
	1	Turbo	2,150		
Steam Driven.					
Brakpan Power Station ...	3	Recip.	800	7,600	Recip. Steam Engine Steam Turbine Steam Turbine
	1	Turbo	2,550		
	1	Turbo	2,650		
Rosherville Power Station ...	1	Turbo	2,500	48,800	Steam Turbine Steam Turbine Steam Turbine Steam Turbine Steam Turbine
	1	Turbo	4,400		
	3	Turbo	6,000		
	2	Turbo	7,100		
	1	Turbo	9,700		
Total Compressed Air Power Stations ...	32	—	—	99,180 = 73,990 kW	

Statement No. 1—(continued)

STEP-UP AND STEP-DOWN TRANSFORMERS

(Excludes earthing compensators and transformers used exclusively for earthing; also Petersen Coils, reactors and series boosters)

Undertaking.	AT POWER STATIONS.				ON TRANSMISSION AND DISTRIBUTION.				TOTAL TRANSFORMERS.	
	Number.		kVA		Number.		kVA		Working and Spare.	Number.
	Working.	Spare.	Working.	Spare.	Working.	Spare.	Working.	Spare.		
Border ...	6	—	1,775	—	52	4	4,280	290	62	6,315
Cape Western ...	16	—	65,950	—	1,029	293	95,583	24,583	1,338	186,116
Durban ...	26	3	67,275	1,325	140	54	7,885	1,425	223	77,910
Natal Central ...	31*	3*	133,550	43,500	577	201	123,330	44,272	812	344,652
Rand ...	369	25	1,981,416	139,272	1,650	34	2,698,092	93,139	2,078	4,911,919
Sabie ...	3	2	1,225	410	5	1	1,250	255	11	3,140
Witbank ...	59	6	158,925	21,949	133	110	33,955	55,895	308	270,724
At Compressor Stations:										
Rand ...	17	1	320,620	18,333	—	—	—	—	48	338,953
Totals	557	40	2,730,736	224,789	3,586	697	2,961,375	219,859	4,880	6,139,759

* Includes Interconnector.

POWER FACTOR CORRECTIVE PLANT

	Working		kVA	CONVERTING SUBSTATIONS		Total Rating.
	Number	Number		Type.	Number of Units.	
Synchronous Condensers ...	18	18	318,000	Motor Generators ...	15	48,150 kW
Static Condensers ...	7,176	7,176	112,505	Rotary Converters ...	1	150 kW
Totals	7,194	7,194	430,505	Totals ...	16	48,300 kW

(1) Transmission Lines and Cables: Circuit Miles (excludes
 (2) Telephone and Pilot Cables: Circuit Miles

(1) TRANSMISSION LINES

Undertaking	132 kV	88 kV	66 kV	40 kV	33 kV	22 kV	21 kV
Border	—	—	—	—	—	—	—
Cape Western	—	—	32.46	—	352.29	—	—
Durban	—	—	—	—	56.87	—	—
Natal Central	—	636.06	—	—	28.10	69.81	—
Rand	127.05	1,359.88	—	572.73	—	—	—
Sabie	—	—	—	—	—	7.20	—
Witbank	—	41.75	—	—	—	—	197.75
Totals	127.05	2,037.69	32.46	572.73	437.26	77.01	197.75

A includes 3.8 kV.

UNDERGROUND CABLES

Border	—	—	—	—	—	—	—
Cape Western	—	—	—	—	9.19	—	—
Durban	—	—	—	—	—	—	—
Natal Central	—	—	—	—	—	—	—
Rand	—	—	—	—	—	—	—
Witbank	—	—	—	—	—	—	15.00
Totals	—	—	—	—	9.19	—	15.00

(2) TELEPHONE AND PILOT CABLES

Cape Town	88.42	} 774.09 circuit miles
Rand	677.57	
Witbank	8.10	

Statement No. 1—(continued)

Service Connections on Reticulation Systems)

20 kV	11 kV	10 kV	6.6 kV	3.3 kV	2.0 kV 2.1 kV 2.2 kV	525 V	380/220V	Street Lighting (Series).	Totals.
—	—	—	—	20.70A	—	—	38.51	—	59.21
—	321.39	—	204.17	—	0.30	—	307.62	—	1,218.23
—	52.07	—	36.23	0.99	—	—	81.76	—	227.92
—	310.57	—	203.55	5.75	0.95	—	118.53	—	1,373.32
110.26	—	30.05	64.37	35.22	13.77	125.94B	38.63	123.11	2,601.01
—	—	—	—	—	—	—	1.00	—	8.20
—	—	—	8.9	0.4	23.30	—	43.90	—	316.00
110.26	684.03	30.05	517.22	63.06	38.32	125.94	629.95	123.11	5,803.89

B includes some 380/220 V.

—	—	—	—	13.30	—	—	—	—	13.30
—	31.21	—	6.07	0.34	—	—	4.47	—	51.28
—	0.71	—	1.11	—	—	—	—	—	1.82
—	0.55	—	4.37	1.89	—	—	2.67	—	9.48
79.88	—	8.08	22.16	2.35	34.42	1.58	2.06	46.13	196.66
—	0.96	—	9.33	0.20	4.50	—	1.36	—	31.35
79.88	33.43	8.08	43.04	18.08	38.92	1.58	10.56	46.13	303.89

SUMMARY OF PRINCIPAL PLANT AND EQUIPMENT IN COURSE
(1) STEAM STATIONS

Name of Station.	BOILER HOUSE.				TURBINE		
	Number of Boilers.	Rating.		lb/sq. in.	Number of Generators.	Normal Rating Each	
		Each.	Total.			MW	p.f.
		lb of Steam per Hour					
Colenso	3	180,000	540,000	300	1	25.0	0.9
Congella	3	200,000	600,000	625	1	40.0	0.85
East London ...	2	55,000	110,000	220	1	7.5	0.85
Hex River	4	200,000	800,000	625	3	20.0	0.80
Salt River No. 2	4	260,000	1,040,000	635	2	30.0	0.8
Umgeni	4	180,000	720,000	625	2	30.0	0.80
Vaal	9	190,000	1,710,000	360	4	33.0	0.825
Vereeniging ...	1	180,000	180,000	230	—	—	—
Vierfontein ...	9	210,000	1,890,000	630	5	30.0	0.85
Witbank	2	80,000	160,000	225	1	20.0	0.8
Taaibos	2	580,000	1,160,000	630	2	60.0	0.85
On Hand	—	—	—	—	2	6.0	0.8
Totals	43		8,910,000		24		

(2) DIESEL STATIONS

Name of Station	Number of Sets.	RATING OF GENERATORS.				Voltage of Generation A.C. or D.C.
		Each.		Total.		
		kW	kVA	kW	kVA	
Alice	2	230	288	460	576	440/400 A.C.
King William's Town	1	1,000	1,175	1,000	1,175	11,000 A.C.
Totals	3			1,460	1,751	

STATEMENT No. 2
OF INSTALLATION OR ON ORDER AT 31st DECEMBER, 1949

HOUSE.				HOUSE SETS.			Station Capacity (including House Sets).
Generator.	Total Rating.		Voltage of Generation.	Number.	Rating. Each.	Total House Sets.	
	kVA	MW					
27.8	25.0	27.8	13.2	—	—	—	25.0
47.0	40.0	47.0	33.0	—	—	—	40.0
8.825	7.5	8.825	11.0	—	—	—	7.5
25.0	60.0	75.0	11.0	—	—	—	60.0
37.5	60.0	75.0	11.0	—	—	—	60.0
37.6	60.0	75.0	11.0	—	—	—	60.0
40.0	132.0	160.0	10.5	2	7	14	146.0
—	—	—	—	—	—	—	—
35.3	150.0	176.5	11.0	—	—	—	150.0
25.0	20.0	25.0	6.6	—	—	—	20.0
70.6	120.0	141.2	11.0	—	—	—	120.0
7.5	12.0	15.0	6.6	—	—	—	12.0
	686.5	826.325		2		14	700.5

Statement No. 2—(continued)

TRANSMISSION LINES

(Circuit Miles)

Undertaking	132 kV	88 kV	66 kV	40 kV	33 kV	21 kV	20 kV	11 kV	6·6 kV	Totals
Cape Western	—	—	83·00	—	46·74	—	—	3·23	—	132·97
Durban ...	—	72·00	—	—	—	—	—	—	—	72·00
Natal Central	128·00	—	—	—	—	—	—	—	—	128·00
Rand	—	47·13	—	3·84	—	—	3·85	—	6·16	60·98
Witbank ...	—	—	—	—	—	6·72	—	—	—	6·72
Totals	128·00	119·13	83·00	3·84	46·74	6·72	3·85	3·23	6·16	400·67

STEP-UP AND STEP-DOWN TRANSFORMERS

Undertaking	AT POWER STATIONS.		ON TRANSMISSION AND DISTRIBUTION.		TOTAL TRANSFORMERS.	
	On Order or under Construction.		On Order or under Construction.		On Order or under Construction.	
	Number.	kVA	Number.	kVA	Number.	kVA
Cape Western	23	22,550	510	88,210	533	110,760
Durban	12	166,250	19	4,200	31	170,450
Natal Central	4	29,500	96	29,010	100	58,510
Rand	88	631,088	466	985,407	554	1,616,495
Witbank	11	43,228	—	—	11	43,228
Totals	138	892,616	1,091	1,106,827	1,229	1,999,443

STATEMENT No. 3
UNITS SOLD TO ALL CONSUMERS DURING THE PAST TWENTY-FIVE YEARS

Year	Border Undertaking	Cape Western Undertaking	Durban Undertaking	Klip Undertaking	Natal Central Undertaking	Rand Undertaking (inc. Air and Steam)	Sabie Undertaking	Vaal Undertaking	Witbank Undertaking	Totals (inc. Air and Steam)
1925	—	—	—	—	—	—	75,943	—	—	75,943
1926	—	280,242	—	—	719,666	—	651,458	—	160,031,213	161,682,579
1927	—	5,811,836	—	—	104,206,235	—	1,938,940	—	439,061,722	551,018,733
1928	—	31,038,697	15,563,460	—	114,213,037	—	2,829,888	—	464,267,213	627,912,295
1929	—	47,945,690	78,873,576	—	123,911,774	—	3,176,173	—	543,091,138	796,998,351
1930	—	49,772,016	99,228,000	—	117,075,484	—	4,585,060	—	618,951,364	889,611,924
1931	—	52,109,958	103,899,765	—	101,131,880	—	6,585,553	—	603,359,113	867,086,269
1932	—	64,268,873	109,808,223	—	100,292,933	—	6,080,010	—	610,285,125	890,735,162
1933	—	100,685,629	118,538,312	—	109,186,538	—	6,349,651	—	639,368,114	974,128,244
1934	—	73,583,974	131,104,182	—	124,898,129	—	7,329,679	—	648,245,530	985,161,494
1935	—	80,020,511	149,874,024	—	154,278,600	—	7,181,282	—	727,888,529	1,119,242,946
1936	—	85,840,383	170,493,987	556,997,155	171,476,131	—	6,863,253	—	696,376,199	1,688,047,108
1937	—	94,038,449	189,412,691	1,349,853,464	210,632,827	—	7,166,684	—	684,516,633	2,535,620,748
1938	—	98,801,619	209,495,780	1,666,852,594	234,948,157	—	7,240,167	—	768,114,272	2,985,452,589
1939	—	106,451,848	233,677,491	2,193,206,661	266,238,056	—	6,380,657	—	767,741,727	3,573,696,440
1940	—	119,770,941	242,741,129	2,566,536,197	281,121,807	—	6,669,552	—	853,317,743	4,070,157,369
1941	—	136,240,415	270,316,419	2,675,943,959	302,395,900	—	6,565,110	—	862,562,248	4,254,024,051
1942	—	151,769,902	273,748,608	2,707,829,911	307,724,141	—	6,335,396	—	873,440,460	4,320,848,418
1943	—	145,739,820	293,366,350	2,669,086,704	312,387,660	—	5,930,089	—	849,119,231	4,275,629,854
1944	—	158,673,418	321,583,537	2,703,638,629	335,977,438	—	6,723,791	—	889,205,914	4,415,802,727
1945	—	165,857,610	348,740,929	2,648,039,705	333,192,760	—	6,596,859	377,902,035	830,734,606	4,706,064,504
1946	—	184,618,905	369,659,142	2,614,328,036	347,006,541	—	7,408,010	582,485,354	896,892,060	5,002,398,048
1947	56,170,900	198,640,259	402,561,103	2,547,186,151	345,993,124	—	7,604,777	668,587,275	887,731,135	5,114,474,724
1948	69,217,120	222,439,123	448,671,496	1,207,359,067	367,858,108	2,185,700,243	7,273,534	435,094,620	633,245,570	5,576,858,881
1949	68,691,220	249,498,856	512,978,243	—	371,804,946	4,653,918,926	7,030,797	—	358,240,127	6,222,163,115

Notes.—The Units sold by Cape Western do not include the Units supplied to Cape Town Corporation under the Pooling Agreement. The decreases of Klip, Vaal and Witbank are due to the Electricity Supply Commission taking over The Victoria Falls and Transvaal Power Co., Ltd., at 00-00 hours on 1st July, 1948, since when Klip and Vaal became part of the Rand Undertaking, whilst Witbank now interchanges to Rand Undertaking.

DISTRIBUTION OF THE UNITS SOLD DURING 1949

ELECTRICITY

Undertaking	TRACTION			BULK			MINING	
	Units	Per cent. Traction	No. Cons.	Units	Per cent. Bulk	No. Cons.	Units	Per cent. Mining
Border	—	—	—	60,952,690	6.623	1	—	—
Cape Western ...	67,513,601	13.046	1	55,188,164	5.996	10	—	—
Durban	42,592,168	8.230	1	439,948,995	47.803	2	—	—
Natal Central ...	240,588,358	46.490	1	93,389,444	10.147	11	12,657,055	0.355
Rand	—	—	—	267,047,406	29.016	30	3,478,505,735	97.605
Sabie	—	—	—	—	—	—	7,030,797	0.197
Witbank	166,812,063	32.234	1	3,816,280	0.415	3	65,676,683	1.843
Total Electricity ...	517,506,190	100.000	4	920,342,979	100.000	57	3,563,870,270	100.000
Per cent. ...	8.707			15.485			59.962	

AIR AND STEAM

Rand:								
Air	—	—	—	2,761,547	—	1	247,570,614	93.551
Steam	—	—	—	—	—	—	17,066,280	6.449
Total Air and Steam	—	—	—	2,761,547	—	1	264,636,894	100.000
Per cent. ...	—			0.991			94.989	

ELECTRICITY, AIR AND STEAM

Grand Totals ...	517,506,190	—	4	923,104,526	—	58	3,828,507,164	—
Per cent. ...	8.317			14.836			61.530	

BY PROVINCE

Cape	67,513,601	13.046	1	117,451,825	12.724	12	—	—
Natal	276,067,596	53.346	1	522,958,919	56.652	11	12,657,055	0.330
O.F.S.	7,112,930	1.374	1	12,406,790	1.344	4	66,179,635	1.729
Transvaal ...	166,812,063	32.234	1	270,286,992	29.280	31	3,749,670,474	97.941

* Electricity—95.522 per cent. of total sales.

AS BETWEEN THE VARIOUS CLASSES OF CONSUMERS

STATEMENT No. 4

No. Cons.	INDUSTRIAL			DOMESTIC AND STREET LIGHTING			TOTAL UNITS SOLD		Total Number Consumers
	Units	Per cent. Industrial	No. Cons.	Units	Per cent. Domestic and Lighting	No. Cons.	Units	Per cent. Total Units Sold	
—	2,457,560	0.290	119	5,280,970	5.555	1,764	68,691,220	1.156	1,884
—	84,156,628	9.938	1,108	42,640,463	44.852	13,947	249,498,856	4.198	15,066
—	22,621,937	2.672	171	7,815,143	8.220	2,352	512,978,243	8.631	2,526
7	18,736,107	2.213	322	6,433,982	6.768	2,942	371,804,946	6.256	3,283
86	600,480,024	70.914	596	29,287,765	30.807	10,219	4,375,320,930	73.614	10,931
2	—	—	—	—	—	—	7,030,797	0.118	2
32	118,324,187	13.973	97	3,610,914	3.798	1,418	358,240,127	6.027	1,551
127	846,776,443	100.000	2,413	95,069,237	100.000	32,642	5,943,565,119*	100.000	35,243
	14.247			1.599			100.000		

11	11,119,555	—	22	—	—	—	261,531,716	93.874	34
1	—	—	—	—	—	—	17,066,280	6.126	1
12	11,119,555	—	22	—	—	—	278,597,996†	100.00	35
	4.020			—			100.000		

139	857,975,998	—	2,435	95,069,237	—	32,642	6,222,163,115	—	35,278
	13.789			1.528			100.000		

—	86,614,188	10.095	1,227	47,921,433	50.407	15,711	319,501,047	5.135	16,951
7	40,244,791	4.691	411	12,188,247	12.820	3,951	864,116,608	13.888	4,381
6	23,791,589	2.773	40	372,609	0.392	337	109,863,553	1.765	388
126	707,325,430	82.441	757	34,586,948	36.381	12,643	4,928,681,907	79.212	13,558

† Air and Steam—4.478 per cent. of total sales.

POWER STATION OPERATING

STEAM ELECTRIC:

Power Station.	Units Generated.	Units Sent Out	MAXIMUM DEMANDS.		Station Load Factor Sent Out.
			$\frac{1}{2}$ Hour (or Hour) Sent Out kW	Peak kW	
Brakpan	119,295,254	109,543,727	Hour 44,578	—	28·1
Colenso No. 1 and No. 2 ...	417,338,370	394,546,610	70,480	85,000	63·9
Congella No. 1 and No. 2 ...	543,372,900	505,357,750	115,200	129,400	50·1
East London	63,996,920	60,952,690	16,760	17,800	41·5
King William's Town ...	8,395,410	7,852,102	2,600	2,800	34·5
Klip	2,653,508,098	2,479,939,016	Hour 355,890	—	79·5
Rosherville	106,697,550	90,982,650	Hour 49,245	—	21·1
Salt River "A"	230,972,590	214,664,641	58,410	66,000	41·7
Simmerpan	52,477,095	49,876,686	Hour 38,839	—	14·7
Vaal	1,039,055,381	981,656,528	Hour 162,456	—	69·0
Vereeniging	875,949,478	821,954,050	Hour 136,485	—	68·7
Witbank	789,312,233	740,783,488	Hour 102,636	—	82·4
Totals	6,900,371,279	6,458,109,938			

STATISTICS, 1949

Coal Burned Tons (2,000 lb.)	LB. OF COAL.		Calorific Value of Coal B.Th.U. (Weighted Average)	B.Th.U. PER UNIT.		OVERALL THERMAL EFFICIENCY %	
	Per Unit Generated.	Per Unit Sent Out.		Generated.	Sent Out.	Generated.	Sent Out.
165,779	2·779	3·027	9,090	25,260	27,520	13·51	12·40
302,869	1·451	1·535	12,220	17,730	18,760	19·24	18·19
343,891	1·266	1·361	12,200	15,450	16,600	22·08	20·55
54,237	1·695	1·780	12,470	21,140	22,200	16·14	15·37
8,275	1·971	2·108	13,240	26,100	27,910	13·07	12·23
2,374,892	1·790	1·915	8,940	16,000	17,120	21·33	19·93
154,666	2·899	3·400	9,170	26,580	31,180	12·84	10·94
173,195	1·500	1·614	12,140	18,210	19,590	18·74	17·42
103,474	3·944	4·149	8,800	34,710	36,510	9·83	9·35
791,865	1·524	1·613	9,400	14,330	15,160	23·81	22·51
950,351	2·170	2·312	8,990	19,510	20,780	17·49	16·42
693,802	1·758	1·873	10,970	19,290	20,550	17·69	16·60
6,117,296							

HYDRO ELECTRIC:

Power Station.	Units Generated.	Units Sent Out.	Maximum Demands kW		Station Load Factor Sent Out.	Inches Rain.
			$\frac{1}{2}$ Hr. Sent Out.	2 Min. Generated.		
Sabie ...	7,467,100	7,351,700	1,300	1,475	64·6	48·56

Statement No. 5—(continued)

POWER STATION OPERATING STATISTICS, 1949

DIESEL ELECTRIC

Power Station.	Units Generated.	Units Sent Out.	Maximum Demands kW		Load Factor $\frac{1}{2}$ Hour Sent Out.	Fuel Consumed.		Lub. Oil Galls.
			2 Mins.	$\frac{1}{2}$ Hour.		Total lb.	Per kWh Sent Out.	
Alice	644,038	537,075	205	187	32.8	499,454	0.93	1,103
Port Shepstone	1,835,770	1,810,647	3,400	3,268	6.3	1,053,029	0.582	1,294
Volkstrust	6,433	6,433	—	—	—	5,468	0.850	12
Worcester	355,605	354,481	—	—	—	206,620	0.583	232
TOTALS	2,841,846	2,708,636				1,764,571	0.651	2,641

COMPRESSOR STATIONS

Station	Air Units Generated.	Air Units Sent Out.	Coal Burned		Electrical Input		Max. Sustained Load over One Hour kW.	Load Factor per cent.
			Total Tons.	lb. Coal/Units Sent Out.	Total kWh	Units Sent Out/kWh per cent.		
Central Rand Compressed Air System								
Rosherville	147,468,000	147,188,000	216,914	2.947	—	—	} 78,240	38.1
Robinson	61,485,900	61,485,900	—	—	76,920,650	79.94		
Canada Dam	52,415,600	52,415,600	—	—	61,600,212	85.11		
Other Air Stations	261,369,500	261,089,500						
Brakpan	17,133,910	17,066,280	31,363	3.675	—	—	6.238	31.2
Modder B and New Modder	10,086,585	10,086,585	—	—	11,785,891	85.62		
TOTALS	288,589,995	288,242,365	248,277		150,306,753			

SUMMARY:

TOTAL COAL BURNED AT ALL F.S.C. STATIONS, 6,365,573 tons.
 TOTAL UNITS GENERATED

= Units Generated at Steam Electric Stations + Hydro + Diesel + Air (Brakpan and Rosherville).
 = 6,900,371,279 + 7,467,100 + 2,841,846 + (17,133,910 + 117,468,000).
 = 7,075,282,135 (increase of 968,368,026 or 15.857%).

STATEMENT No. 6

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 1949.

(See previous Annual Reports for Rights or Interests in or over land acquired prior to 1949)

Cape Western Undertaking

Immovable Property was acquired to the value of ...	...	£10,032	10	0
Servitudes were acquired for ...	...	1,002	19	8

Natal Central Undertaking

Immovable Property was acquired to the value of ...	...	2,925	0	0
Servitudes were acquired for ...	...	943	18	2

Witbank Supply System

Servitudes were acquired for ...	...	20	1	4
Servitudes were acquired for annual rentals amounting to ...	...	87	3	4
Property was hired for an annual rental of ...	...	1	0	0

Border Undertaking

Immovable Property was acquired to the value of ...	...	27,500	0	0
Property was hired for an annual rental of ...	...	45	0	0

Rand Undertaking

Immovable Property was acquired to the value of ...	...	19,270	10	6
Surface Rights, Rights of Way and other Servitudes were acquired for ...	...	230	6	7
Surface Rights, Rights of Way and other Servitudes were acquired for annual rentals amounting to ...	...	1,287	6	9
Property was hired for an annual rental of ...	...	117	15	0

COAL USED AT COMMISSION'S
Average Cost per

	1936	1937	1938	1939	1940	1941
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Brakpan	—	—	—	—	—	—
Colenso	11 0	10 10	10 9	10 11	10 11	11 0
Congella	15 5	15 2	15 0	15 3	15 2	15 3
East London	—	—	—	—	—	—
Klip	3 2	3 0	3 3	3 4	3 6	3 6
King William's Town	—	—	—	—	—	—
Rosherville	—	—	—	—	—	—
Salt River	25 4	24 8	25 1	25 6	25 7	25 7
Simmerpan	—	—	—	—	—	—
Vaal	—	—	—	—	—	—
Vereeniging	—	—	—	—	—	—
Witbank	2 2	2 2	2 1	2 1	2 0	2 0

STATEMENT No. 7

STEAM-RAISING POWER STATIONS
Ton (2,000 lb.)

1942	1943	1944	1945	1946	1947	1948	1949
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
—	—	—	—	—	—	7 9	7 8
10 11	10 10	10 4	10 8	10 11	11 4	11 6	12 9
15 2	14 9	14 6	15 4	15 7	16 4	16 4	18 0
—	—	—	—	—	26 7	26 11	28 6
3 7	3 9	3 11	4 2	4 4	4 5	4 1	4 7
—	—	—	—	—	—	27 10	29 6
—	—	—	—	—	—	8 3	8 5
25 3	25 0	23 4	25 4	25 9	28 1	28 5	29 6
—	—	—	—	—	—	8 4	8 3
—	—	—	5 10	6 0	5 7	4 11	4 9
—	—	—	—	—	—	4 11	4 10
2 1	2 1	2 4	2 4	2 9	3 4	4 0	3 9

ANNEXURE "C"

STATISTICS RELATING TO THE PRODUCTION AND SUPPLY OF ELECTRICITY IN THE UNION OF SOUTH AFRICA

Extracted from the 1947-48 Industrial Census and published by courtesy of
the Department of Census and Statistics (Pretoria)

UNITS GENERATED

Province.	Private Companies.	Local Authorities.
Cape	404,222,469	831,372,375
Natal	1,048,034,338	23,548,638
O.F.S.	951,879,433	66,329,935
Transvaal	5,248,946,315	906,383,832
Total	7,653,082,555	1,827,634,780

9,480,717,335

CONSUMERS AND SALES

	PROVINCE				Totals and Averages.
	Cape.	Natal.	O.F.S.	Transvaal.	
Total Number of Consumers	182,683	72,162	20,787	191,276	466,908
Total Units Consumed ...	1,044,043,995	888,954,046	122,566,341	6,033,668,917	8,089,233,299
Number of Domestic Consumers	153,562	55,258	17,996	163,565	390,381
Units Sold and Used for Domestic Consumption	491,029,021	211,115,868	25,650,714	533,097,768	1,260,893,371
Average Units Sold per Domestic Consumer	3,198	3,821	1,425	3,259	3,230

INSTALLED CAPACITY OF PLANTS

	Number of Power Stations.	Total Installed. Capacity-Kilowatts.
50,000 kilowatts and over	13	1,692,500
20,000 kilowatts and over, but below 50,000 kilowatts	8	281,500
10,000 kilowatts and over, but below 20,000 kilowatts	6	89,577
5,000 kilowatts and over, but below 10,000 kilowatts	4	29,750
1,000 kilowatts and over, but below 5,000 kilowatts	47	100,621
Below 1,000 kilowatts	238	57,413
	316	2,251,361

**STATISTICS RELATING TO THE PRODUCTION AND SUPPLY OF ELECTRICITY IN THE
UNION OF SOUTH AFRICA** (continued)

SIZE AND TYPE OF GENERATING UNITS

Size of Generating Units.	Steam Turbines.	Steam Reciprocating Engines.	Diesel and Heavy Oil Engines.	Petrol, Paraffin and other Light Oil Engines.	Gas Engines.	Water Wheels and Turbines.	Total Number of Generator Sets.	Division of Total.	
								Local Authorities.	Private Companies.
(1) A.C. Plant:									
Below 250 kilowatts	2	69	355	6	7	27	466	369	97
250 kilowatts and over, but below 1,000 kilowatts ...	33	67	25	—	10	13	148	39	109
1,000 kilowatts and over, but below 5,000 kilowatts ...	83	—	3	—	—	—	86	24	62
5,000 kilowatts and over ...	106	—	—	—	—	—	106	25	81
(2) D.C. Plant:									
Below 250 kilowatts	1	24	155	17	4	—	201	140	61
250 kilowatts and over, but below 1,000 kilowatts ...	1	8	—	—	3	—	12	1	11
1,000 kilowatts and over, but below 5,000 kilowatts ...	—	—	—	—	—	—	—	—	—
5,000 kilowatts and over ...	—	—	—	—	—	—	—	—	—

FUEL CONSUMED

Type of Fuel.	Quantity (Tons of 2,000 lb.)	Cost.
Coal	8,274,672	£3,749,158
Coke	16,480	7,173
Charcoal	—	—
Fuel Oils	—	331,559
Other Fuel (Woods, etc.) ...	—	1,873
Lubricating Oils	—	102,417
Total Cost		<u>£4,192,180</u>

**STATISTICS RELATING TO THE PRODUCTION AND SUPPLY OF
ELECTRICITY IN THE UNION OF SOUTH AFRICA** (continued)

COAL CONSUMPTION

Average Coal Consumption per Unit Generated.	Number of Undertakings.
Under 2 lb 	21
2 lb and over, but under 3 lb 	24
3 lb and over, but under 4 lb 	16
4 lb and over, but under 6 lb 	16
6 lb and over, but under 8 lb 	7
8 lb and over 	16

TRANSFORMERS

Total installed capacity 	7,620,923 kVA
--	---------------

Total value of land, buildings, machinery, plant and tools ...	£84,955,109
--	-------------

Total average number of persons employed in the electricity industry (generation and distribution) 	21,136
---	--------

Total salaries and wages and allowances paid for the year ...	£5,262,662
---	------------