

WILGE POWER STATION

Although only planned in 1951, such progress has been made at Wilge that the first 30,000 kW set is expected to be running during 1954.

[Photo: R. H. Scrimgeour (Pty.) Ltd.]

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Electricity Supply Commission

Escom House,

Rissik Street,

Johannesburg,

5th August, 1954.

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 thirty-first Annual Report, covering its work during the year ended at 31st December, 1953, together with a brief account of the more important activities up to the 30th April, 1954.

During the year 1953 and the period up to 30th April, 1954, new plant having the following rated capacities was installed in the Commission's Undertakings:

	Generators Capacity kW	Boilers Capacity lb/hr.
Cape Western Undertaking	20,000	400,000
Cape Northern Undertaking	5,500	150,000
Durban Undertaking	—	400,000
Natal Central Undertaking	25,000	360,000
Witbank Undertaking	20,000	160,000
Rand Undertaking	160,000	2,400,000
	<hr/> 230,500	<hr/> 3,870,000

There has been substantial progress in the installation of new plant. Nevertheless, the programme of construction of new power stations and extensions to existing power stations has been retarded by unavoidable delays. These delays would have caused serious shortages had it not been for the fact that many of the Commission's consumers were similarly affected by late deliveries of their own plant. Everything is being done to speed up the construction of power stations and the erection of planned transmission and distribution systems.

On the Rand Undertaking the expansion of gold mining and the rapid development of the uranium industry, together with the requirements of associated industries and local authorities, have imposed a severe strain upon the Commission's resources. Although provision of new plant made it possible for the Commission to increase the quotas for mines and other consumers, it is not yet possible to relax the restrictions upon consumers' maximum demands or to provide new supplies without consideration of the national interests. The arrangement made with the Transvaal and Orange Free State Chamber of Mines to provide for a rapid adjustment to ease the loading on the system is still in force.

A re-assessment of the requirements of the gold mining industry, including uranium production, for the next few years has shown the urgency for the erection of a new power station. Steps are accordingly being taken to site and plan this new station.

To meet the load growth of the Durban Undertaking, it has been decided to provide an additional 30,000-kW turbo-generator and additional boiler plant at Umgeni Power Station.

In 1953, 9,441,977,327 units were generated in the Commission's power stations, and over 8,000,000 tons of coal were consumed. The total sales of electricity, steam and compressed air were 8,732,200,018 units, an increase of 8 per cent. over the total for the previous year.

Rural Supplies. During the four year ended 31st December, 1953, the Commission connected 2,882 rural consumers of whom 1,094 were farmers.

In the Cape Western Undertaking, farmers' schemes were developed during 1949 at Elgin, Klipheuwel, Stellenbosch, Franschhoek and Bottellary.

During 1950 to 1952, bulk supplies were given to Bonnievale, Kleinmond, Montagu, Moorreesburg, Vredenburg, Wolseley, Saldanha Bay, Swellendam, Somerset West, Villiersdorp and Tulbagh, and in these areas 750 farmers have been supplied.

In 1953, 143 farms were connected.

Extensions to farmers' schemes have also been made in Natal Central Undertaking, Cape Northern Undertaking, Witbank Supply System and Rand Undertaking.

It has been found uneconomic to supply large farms. The best farming schemes are applicable in areas where there are numbers of small farms and where power is needed for farming purposes in addition to domestic purposes.

Escom's policy has always been, and will continue to be, to supply farmers in all cases where funds and technicians are available, and the supply is economically and technically practicable.

Growth of Supplies to Local Authorities

Nearly 80 per cent. of the Commission's output was sold to large users such as the South African Railways, mines and industries. The balance of 20 per cent. of output was used to meet the requirements of over 100 cities, towns, villages, farmers and smallholders.

The sum of the maximum demands of the local authorities supplied in 1953 was about 400,000 kW. The comparative figure for the year 1945 is about 160,000 kW. Over the immediate post-war period, additional demands of local authorities of about 240,000 kW have been met. Most of this increase has necessitated the raising of new capital for the purchase of new plant.

The Commission has, during this period, incurred capital expenditure of between £10,000,000 and £12,000,000 to meet the needs of the local authorities connected to its systems; and, if the rate of growth of municipal undertakings be taken at 8 per cent. per annum, the Commission's contingent responsibility is calculated at more than £1½ million per annum for additional generating plant. This does not take into account the capital expenditure on the Swartkops Power Station or the new West Bank Power Station which are not in operation.

UNITS SOLD
(kWh)
1925-1953

Millions

8000

7000

6000

5000

4000

3000

2000

1000

- A MINING (including Air and Steam)
- B TRACTION
- C MUNICIPAL-BULK
- D INDUSTRIAL
- E DOMESTIC AND STREET LIGHTING

A

B

C

D

E

1925

1930

1935

1940

1945

1950

1953



PLANT CAPACITY

The aggregate installed capacity of the Commission's power stations on the 31st December, 1953, was 1,899,055 kW, an increase of 200,475 kW over the corresponding figure for the previous year.

Details of the plant and equipment installed in the Commission's power stations at the 31st December, 1953, are given in Annexure B.

NEW POWER STATIONS AND EXTENSIONS TO EXISTING POWER STATIONS

The work proceeding in new power stations, extensions to power stations and a record of the major units of plant installed and taken into service during the period under review, was as follows:

Cape Western Undertaking

Hex River Power Station, Worcester: The initial installation for this power station, comprising four 200,000-lb/hr boilers and three 20,000-kW turbo-generators, was completed and brought into commercial service in April, 1953. The capital cost of the Hex River Power Station, as shown in the Commission's books at the 31st December, 1953, was £3,826,895 4s.

Salt River No. 2 Power Station, Cape Town: During 1953 satisfactory progress was made with all sections of Salt River No. 2 Power Station; but the first two boilers, which will be used to augment the steam supply at Salt River No. 1 Power Station, are not expected to be steaming until after the winter of 1954. The construction programme envisages that the first turbo-generator in the new station will be in service early in 1955.

Cape Northern Undertaking

Central Power Station, Kimberley: Two of the four 75,000-lb/hr boilers were installed, the first in November, 1953, and the second in March, 1954. One turbo-generator of 5,500-kW capacity (No. 5) was commissioned in December, 1953, whilst the second turbo-generator of the same capacity is expected to be in service in July, 1954. Progress of the work on the remaining two boilers is satisfactory; these boilers are expected to be in service at the beginning of 1955.

Border Undertaking

West Bank No. 2 Power Station, at East London: There have been unavoidable delays in the construction of this new power station. Progress in the fabrication and erection of structural steelwork was delayed due to late deliveries of raw materials; a shortage of Native labour in the area increased the difficulties. Completion of the initial installation, which comprises two 170,000-lb/hr boilers and two 15,000-kW turbo-generators, will therefore be later than planned. It is now estimated that the first of the two boilers and the first turbo-generator will not be ready, as a combined unit, before the last quarter of 1955. The first boiler, however, may be commissioned before the winter of 1955, to assist the No. 1 power station.

Swartkops Undertaking

Swartkops Power Station, Port Elizabeth: Steady progress has been maintained in the initial installation, which will consist of two 210,000-lb/hr boilers and two 20,000-kW turbo-generators. The first boiler and its associated turbo-

generator were tested in April, 1954, and were in operation in May, 1954. The second boiler is expected to be ready for steaming in July, and the second turbo-generator will be on load in August, 1954. The revised estimated cost of this station is £4,400,000.

Durban Undertaking

Congella Power Station, Durban: Two of the three new boilers are now in commission. The third boiler is expected to be in service in June, 1954. This will complete the extensions planned for Congella Power Station.

Umgeni Power Station, near Pinetown, Natal: At Umgeni, the programme has been retarded by delays in the manufacture and delivery of plant and in construction on the site; nevertheless, it was possible to carry out running tests with the first two boilers and the first 30,000-kW turbo-generator in April, 1954, and it is expected that the station will be brought into commercial operation in June, 1954. The second two boilers will be installed in about July, 1954. Advice has been received that a further delay has unfortunately occurred in the manufacture of No. 2 turbo-generator, and it is unlikely that this machine will be in service earlier than February, 1955.

In view of the estimate of load growth of the Durban Undertaking, it has been decided to extend the Umgeni Power Station by the addition of a third 30,000-kW turbo-generator with corresponding boiler plant.

Rand Undertaking

Taaibos Power Station, near Coalbrook, district Heilbron, O.F.S.: Good progress has been maintained in the construction of Taaibos Power Station, which is designed to comprise seven boiler and turbo-generator units each of a capacity of 60,000 kW, and every effort is being made to adhere to the steaming date of October, 1954. The 132-kV switchyard at Taaibos Power Station was brought into use in March, 1954.

Vaal Power Station, O.F.S.: The following items of plant at Vaal Power Station were brought into commercial operation on the dates shown:

Boiler No. 13	190,000 lb/hr	23-3-53
Boiler No. 14	190,000 lb/hr	27-4-53
Boiler No. 15	190,000 lb/hr	29-6-53
Boiler No. 16	190,000 lb/hr	17-8-53
Boiler No. 17	190,000 lb/hr	10-11-53
Boiler No. 18	190,000 lb/hr	2-2-54
Turbo-generator No. 9	33,000 kW	15-4-53
House Set "C"	7,000 kW	30-6-53

This plant completes the extensions at this power station, and there remains only a small amount of work to be done on the boilerhouse structure.

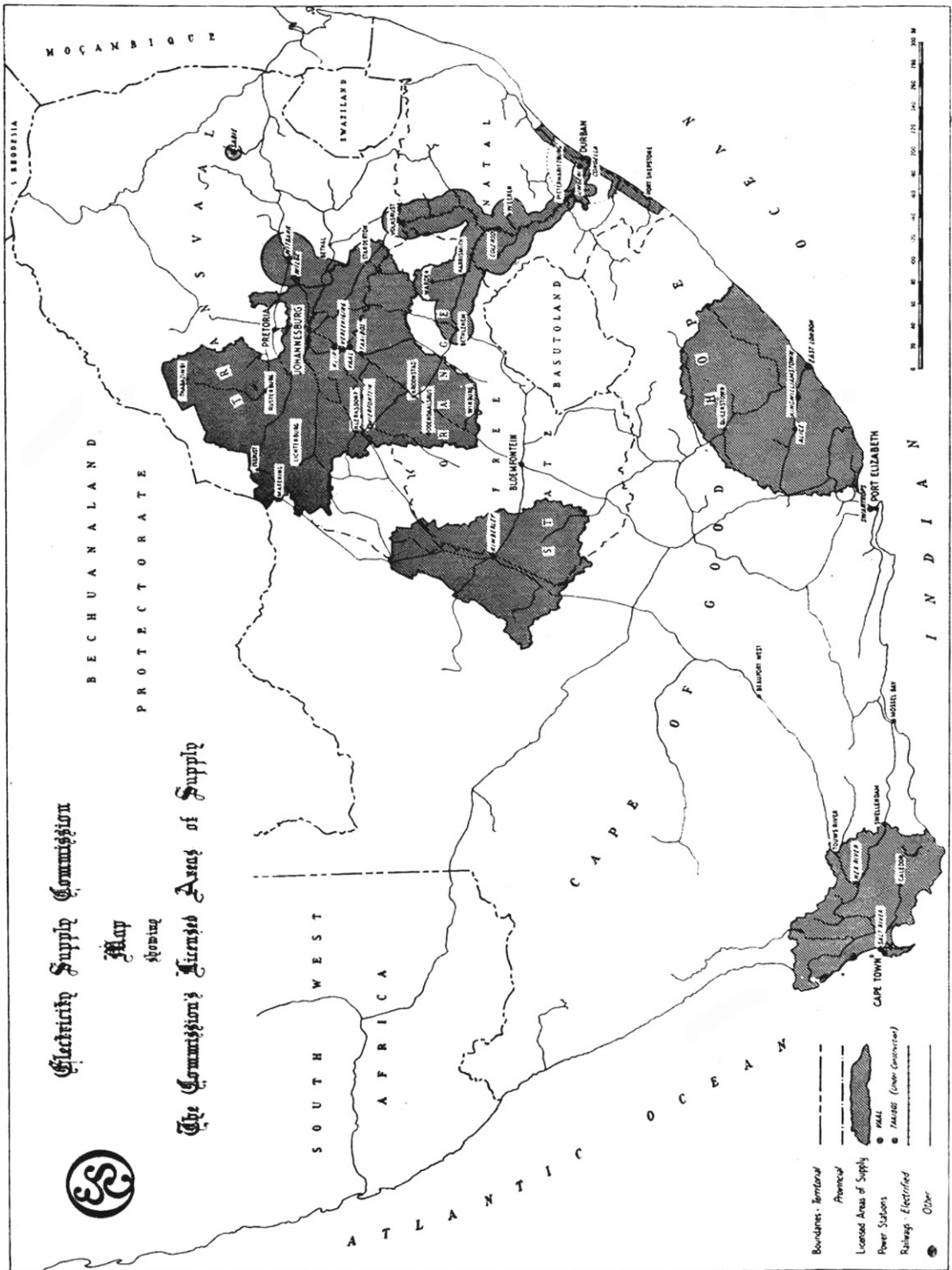
Vereeniging Power Station, Vereeniging, Transvaal: It is expected that the additional boiler for this station will be ready for steaming in July, 1954.

Vierfontein Power Station, district Viljoenskroon, O.F.S.: The Vierfontein Power Station was brought into commercial operation on the 4th May, 1953, and in the first year a total of 245 million units was sent out from the station. The operating statistics are given in the table on page 47.

Electricity Supply Commission

Map showing

The Commission's Licensed Areas of Supply



- Boundaries - Territorial
- Provincial
- Licensed Areas of Supply
- Power Stations
- Railings - Electrified
- Other

The individual items of plant taken into commercial service up to the end of April, 1954, were as follows

Boiler No. 1	210,000 lb/hr	5-5-53
Boiler No. 2	210,000 lb/hr	7-5-53
Boiler No. 3	210,000 lb/hr	22-7-53
Boiler No. 4	210,000 lb/hr	26-9-53
Boiler No. 5	210,000 lb/hr	8-1-54
Boiler No. 6	210,000 lb/hr	16-3-54
Turbo-generator No. 1	30,000 kW	4-5-53
Turbo-generator No. 2	30,000 kW	8-8-53
Turbo-generator No. 3	30,000 kW	9-11-53
Turbo-generator No. 4	30,000 kW	3-2-54

The station is designed for 17 boilers and 10 30,000-kW turbo-generators.

Wilge Power Station, near Kendal, district Witbank: Construction at this new power station has advanced at a rapid rate, and will provide appreciable assistance to the Rand system towards the end of 1954.

AREAS OF SUPPLY AND TRANSMISSION SYSTEMS

There was no change in the Commission's licensed areas of supply, and the total licensed area remains at 104,240 square miles.

A number of major extensions to the transmission systems in the various undertakings was completed during the year, and the total circuit miles of transmission and distribution lines was increased from 7,692 circuit miles in 1952 to 8,472 circuit miles at the end of 1953. The following list describes some of the major transmission lines completed during 1953, and under construction or projected at the end of the year:

Completed in 1953:

	kV	Circuit Miles
Alma to Virginia	132	19
Line to Central West Co-operative, Viljoens- kroon	88	13
Vaal to Taaibos (two lines)	88	24
Klerksdorp Area Extension	88	13
Klip to E.R.P.M.	88	45
Marburg to Margate	88	9
Hex River Power Station to Hugo (Touws River Line)	66	44
Oakdale Substation to Stellenbosch	66*	15
Virginia to Merriespruit Ring	40	24
King William's Town to Fort Beaufort	33	45
Cedara to Greytown	33	60

*Operating at 33 kV for an interim period.

Under Construction:

Vaal to Vierfontein (turn-in to Taaibos) ...	132	13
Taaibos to Libanon	132	54
Taaibos to West Wits (two lines)	132	110
Taaibos to Doornfontein Line	132	56
Alma to Grootkop	132	20
Grootkop to Balkfontein	132	25
Taaibos to Virginia (two lines)	132	230
Turn-in to Wilge from Witbank/Brakpan Lines	132	38 (double circuit)
Colenso to Umgeni	132	114
Umgeni to Springfield	132	8 (double circuit)
Thornville to Richmond	88	12
Gouda-Moorreesburg-Koperfontein	66	22
Two Cable Feeders from Salt River Power Station to Oakdale Substation	66	24
Fort Beaufort to Adelaide	33	25
Harrismith to Warden, Vrede, Reitz	33	100

Projected:

Wilge to Struben Distribution Station	132	41
Vierfontein to Balkfontein	132	25
Line to Wolmaransstad	88	36
Balance of Klerksdorp Area Extensions (includes lines from Vierfontein to Western Reefs) ...	88	40
Bethal to Ermelo	88	34
Northam to Rooiberg	88	32
Bot River to Hermanus	66	16
Lourens River to Bot River	66	30
Hex River Power Station to Hugo (Touws River Line) Second North Line	66	44
East London to King William's Town	66	36
Bucleuch via Lombardy to Rietfontein Consolidated	40	10
Ringling sundry Distribution Stations	40	130
Kimberley to Tadcaster	33/66	70

Wayleaves

The surveying of power line routes and negotiating wayleave servitudes has become a major task. Negotiation of wayleave servitudes is undertaken with tact and consideration, the main object being to place the right of way so as to cause the least possible inconvenience to land-owners.

Notwithstanding the adoption of this policy, the Commission has on a few occasions met with such opposition that it has been compelled to expropriate the right of way. The acquisition of these servitudes is essential for national development, and owners who co-operate with the Commission, in this matter are performing a very much appreciated public service.

OUTPUT AND SALES

Units generated in the Commission's power stations increased by 7.565 per cent, and the total units sold by all undertakings increased by 8.064 per cent. Units purchased, including repurchases, totalled over 550 million units, an increase of 126 million units over the figure for 1952; but assistance from outside sources is expected to decline in the next few years.

Aggregate figures for all undertakings were:

		1953	1952	Increase
Units generated		9,441,977,327	8,777,956,146	7.565%
Units purchased		550,408,980	423,872,232	29.852%
Units sold		8,732,200,018	8,080,560,814	8.064%

The following figures record units sold by individual undertakings:

		1953	1952
Border		107,769,924	97,722,672
Cape Northern		67,093,059	61,337,571
Cape Western		375,545,917	341,237,981
Durban		713,213,325	655,609,675
Natal Central		492,298,444	453,973,018
Rand		6,559,943,424	6,039,553,121
Sabie		6,398,798	6,081,087
Witbank		409,937,127*	425,006,849
		8,732,200,018	8,080,560,814

*This decrease is explained on page 41.

Analysis of sales according to classes of consumers shows:

		1953	1952
Bulk Supplies:			
Municipal		1,642,779,009	1,462,127,066
Direct Supplies:			
Traction		584,498,083	554,830,254
Mining		4,957,742,321	4,585,333,615
Industrial		1,412,245,775	1,347,317,033
Domestic		132,191,588	128,137,815
Street Lighting		2,743,242	2,815,031
		8,732,200,018	8,080,560,814

A chart showing annual sales of electricity appears on page 7. Statement No. 3 of Annexure B gives units sold to all consumers for the past 29 years, and the distribution of units sold is shown in Statement No. 4.

COSTS AND TARIFFS

Upward adjustment of the Commission's tariffs will have to follow upon the commissioning of new plant which was installed at the high prices ruling at the time. This also applies to new transmission and distribution lines. The cost of coal, railage and handling charges continues to rise, as is illustrated in the following table:

	Cost of coal per ton			
	Average 1939-43	1951	1952	1953
Cape Western Undertaking (Salt River Power Station)	25/5	33/10	35/3	37/5
Durban Undertaking (Congella Power Station)	15/1	20/-	23/6	25/4
Natal Central Undertaking (Colenso Power Station)	10/11	14/3	18/6	19/11
Rand Undertaking (Average all power stations) ...	4/4	7/3	8/10	9/9

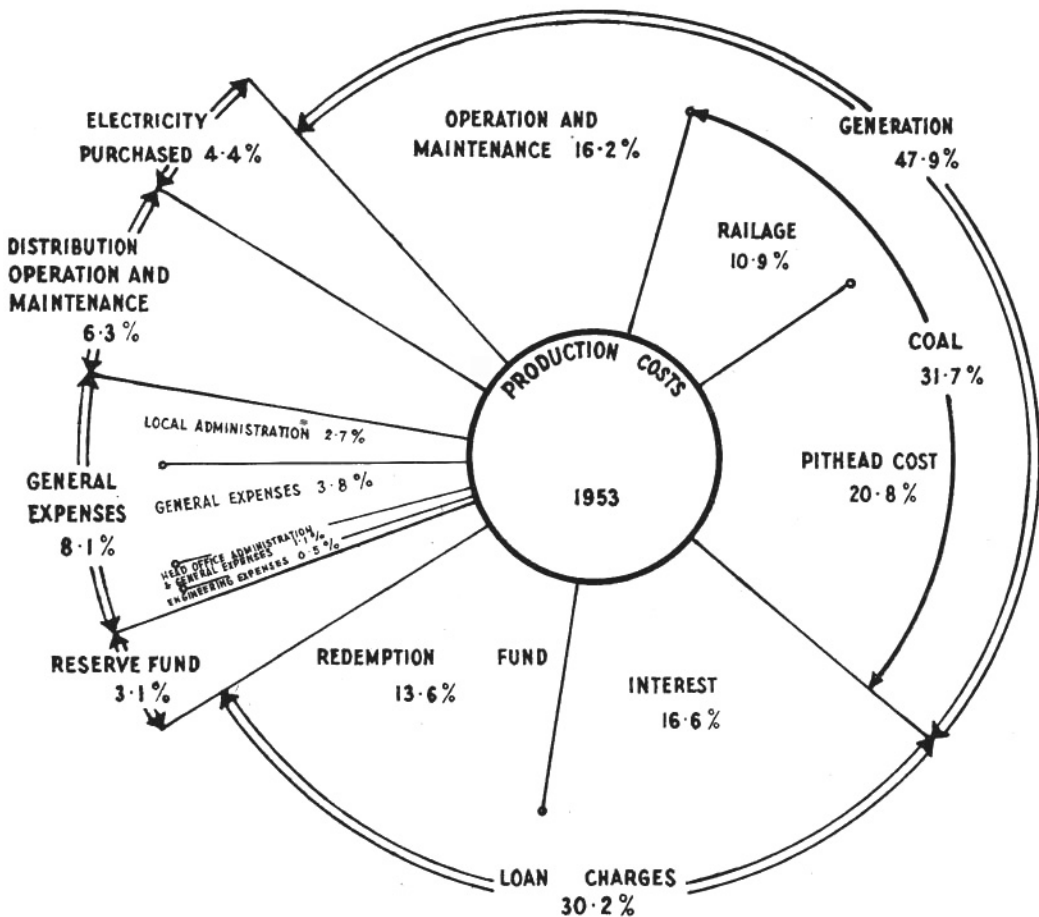
The chief causes for tariff increases during 1953 were increased cost of coal and the high cost of new plant. The following table sets out the capital spent on plant and works during the past three years:

Capital Expenditure on Plant and Works (£'s millions)

	Total at 31-12-50	1951	1952	1953	Total at 31-12-53
Cape Western Undertaking ...	6.79	2.50	2.13	*2.37	13.79
Cape Northern Undertaking ...	0.22	0.08	0.32	0.53	1.15
Border Undertaking	0.58	0.31	0.20	0.61	1.70
Durban Undertaking	5.80	1.00	2.22	2.13	11.15
Natal Central Undertaking ...	6.75	0.74	1.06	*0.73	9.28
Witbank Undertaking	3.26	0.29	0.46	*Cr. 0.10	3.91
Rand Undertaking (including Orange Free State areas) ...	33.63	5.87	12.30	*13.29	65.09
	57.03	10.79	18.69	*19.56	106.07

*Net Amounts after transferring £1.79 millions in respect of assets sold.

During the past three years capital expenditure on plant and works on the undertakings shown in the foregoing table has increased by £49 million. This increase, expressed as a percentage relative to the December, 1950, figure, is 86 per cent. The increase in total units sold—which is taken to represent the approximate increase in production—is only 26 per cent over the same period. An appreciable rise in tariffs was necessary to cover the amounts required for interest on the money raised by way of loan for these works and for redemption of the securities for the loans. The loans were obtained at a time when high rates of interest ruled.



During 1953 and at the commencement of 1954 the following tariff changes were made:

Cape Western Undertaking and Cape Northern Undertaking: The Control Board approved increased standard prices for the Cape Western Undertaking in October, 1953, and for the Cape Northern Undertaking in January, 1954.

Natal Undertakings: The tariffs for the Durban Undertaking and the Natal Central Undertaking were adjusted under Section 10 of the Act by applying a percentage surcharge of 10 per cent on the tariffs in force in the undertakings, with effect from the statistical month of August, 1953.

Witbank Undertaking: The tariffs for the Witbank Undertaking were adjusted under Section 10 of the Act by increasing the surcharge of 15 per cent to a surcharge of 25 per cent on the tariffs in force, with effect from the statistical month of August, 1953.

Rand Undertaking: The tariffs for the Rand Undertaking were adjusted for the whole year 1953, under Section 10 of the Act, by reducing the general discount rate in the established areas from the previous discount of 18 per cent to 13 per cent, and discontinuing the discount of 5½ per cent applicable in the Rand Extension Area and the Greater Rand Extension Area.

A further adjustment has been made for the year 1954.

STATISTICAL SUMMARY

Revenue, production costs, output and sales, and other figures relating to the operation of the Commission's undertakings during the year 1953, with the comparative figures for 1952, are as follows:

	1953	1952	Increase
Total Revenue	£15,546,089	£12,655,772	22·838%
Total Production Costs (including interest, redemption and reserve fund charges)	£15,545,158	13,074,054	18·901%
Difference between Revenue and Production Costs ...	£931	Dr. £418,282	£419,213
Average price per unit sold	0·4251d.	0·3738d.	13·724%
Average revenue per unit sold (including Sundry Revenue)	0·4273d.	0·3759d.	13·671%
Average cost per unit sold	0·4273d.	0·3883d.	10·028%
Units generated	9,441,977,327	8,777,956,146	7·565%
Units sent out	8,952,598,382	8,347,118,622	7·254%
Units Purchased	550,408,980	423,872,232	29·853%
Units sold	8,732,200,018	8,080,560,814	8·064%
Total cost of coal consumed (including railage) ...	£4,930,802	£4,259,823	15·751%
Railage on coal consumed	£1,695,666	1,437,922	17·925%
Coal consumed (in tons of 2,000 lb.)	8,150,339	7,841,181	3·943%

A diagram showing the subdivision of the Commission's total production costs for the year 1953 is reproduced on the preceding page.

FINANCIAL

Loan Capital.—On the 30th June, 1953, the Commission's 4½ per cent Local Registered Stock, 1953 (Loan No. 4) was repaid.

Three loans totalling £16,250,000 were raised locally during 1953, as follows:

Date issued	Amount	Interest	Issue Price	Redeemable
10th March ...	£4,000,000	5%	£100%	31/ 3/1967/69
30th June ...	£4,250,000	5%	£100%	30/ 6/1968/70
20th October ...	£8,000,000	5%	£100%	31/10/1967/70
	£16,250,000			

These loans were fully subscribed, but at the year end the amount received on account of the loan issued on the 20th October was £7,903,065. The balance of £96,935—payable not later than the 30th January, 1954, in terms of the prospectus—has since been received. The loans raised locally as Local Registered Stock totalled £93,750,000 at the year end, of which £2,500,000 had been repaid.

The loan of \$30 million U.S.A., raised in 1951 from the International Bank for Reconstruction and Development, equivalent to £10,732,422, bears interest at 4 per cent per annum, and is redeemable over 17 years by equal half-yearly instalments, including interest, from the 15th May, 1954. The loan was used for the purchase of imported materials, mainly from the United Kingdom, and was taken up during the period prior to the 31st December, 1953, as required.

The loan of \$19,600,000 U.S.A. from the Export-Import Bank of Washington, equivalent to approximately £7,000,000, bears interest at 4 per cent per annum and is redeemable over 15 years by equal half-yearly instalments, including interest, from the 16th February, 1956. The loan is to be used for the provision of power from Wilge Power Station for uranium production and is to be taken up during the period ending the 30th June, 1955. The amount taken up to the 31st December, 1953, was \$6,867,375, equivalent to £2,452,692 South African currency.

An agreement, dated the 28th August, 1953, was entered into with the International Bank for Reconstruction and Development for a further loan of \$30 million, equivalent to approximately £10,750,000 South African currency, for the purchase of imported materials, mainly from the United Kingdom. The loan bears interest at 4½ per cent per annum and is redeemable over 8½ years by equal half-yearly instalments, including interest, from the 15th September, 1955. The full amount of the loan is to be taken up during the period ending the 31st December, 1955. The amount taken up to the 31st December, 1953, was \$3,077,477 equivalent to £1,097,793 South African currency.

These amounts increased the Commission's loan capital at the date of the Balance Sheet to £105,435,972.

Redemption Fund—The amount in the Redemption Fund at 31st December, 1953, totalled £18,219,521, which in the aggregate exceeded the amounts required for the redemption of the loans over the maximum periods laid down in terms of issue, after taking into account the depreciation on the market value of investments. The amounts in the Redemption Fund include the proceeds from the sales of assets and profits on realisation of investments.

Reserve Fund—The amount in the Reserve Fund at 31st December, 1953, was £2,304,382.

Loan Capital and Deferred Liabilities Repaid, Less Assets Sold—A loan of £2,500,000 (Loan No. 4) was repaid during 1953 and the repayments against deferred liabilities amounted to £239,276.

Formerly the cost of assets sold was shown under Capital Expenditure, but in the Balance Sheet at the 31st December, 1953, the cost of assets sold, amounting to £1,793,890, was deducted from the loan and deferred liabilities repaid totalling £2,739,276, the remaining balance being £945,386.

The amount realised on the sale of the assets was credited to the Redemption Fund.

Capital Expenditure—Expenditure on Capital Account during the year amounted to £22,883,876, which increased the total capital expenditure at 31st December, 1953, to £109,369,537. Expenditure on Capital Account will amount to approximately £185,000,000 on completion of all the works to which the Commission is committed and on projected works.

Investments—The book value of securities, representing investment in Government, Municipal and Electricity Supply Commission stocks, held by the Commission on behalf of the various funds at 31st December, 1953, was £20,974,233, the nominal value being £21,276,424. The market value of these investments at that date was £17,854,568.

Assets and Liabilities—The Commission's total assets at the 31st December, 1953, amounted to £138,422,439, and its total liabilities to £117,492,904, the excess of assets (as shown in the Balance Sheet) over liabilities being £20,929,535.

A graph showing the growth of assets and liabilities since 1923 is reproduced on the opposite page.

Assets and Liabilities for the Years 1923-1953

TOTAL ASSETS

TOTAL LIABILITIES

LOAN CAPITAL

Millions
Pounds

1923 1925 1930 1935 1940 1945 1950 1953

138

130

120

117

110

105

100

90

80

70

60

50

40

30

20

10

STAFF

Home Ownership Scheme—The balance at 31st December, 1953, on 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, was £433,823.

Personnel—The staff employed by the Commission at the 31st December, 1953, numbered 11,518 employees, made up as follows:

			1953	1952	Increase
Europeans	...	...	4,071	3,790	Increase of 7·4 per cent
Non-Europeans	...	...	7,447	7,099	Increase of 4·9 per cent
			<hr/>	<hr/>	<hr/>
			11,518	10,889	Increase of 5·8 per cent
			<hr/>	<hr/>	<hr/>

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

THE COMMISSION'S UNDERTAKINGS

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

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

CAPE WESTERN UNDERTAKING

		CONSUMERS			SALES			Average Price per Unit Sold	
		Class	Number	Units	Increase %	Revenue from Sales £	1953		1952
							d	d	
			2	70,561,892	9.024	361,604	1.2299	0.6659	
			22	117,171,259	9.601	415,146	0.8503	0.7130	
			1,735	106,342,424	8.863	519,233	1.1718	0.9786	
			20,088	81,470,342	13.271	463,560	1.3656	1.1638	
			21,847	375,545,917	10.054	1,759,543	1.1245	0.8751	
				1953		1952	Accumulated to 31.12.53		
Total Revenue				£1,769,562		£1,252,137			
Working Costs				£1,809,694		£1,369,626			
Deficit				£40,132		£117,489		£151,838	
Capital Expenditure				£2,838,381		£2,125,041		£13,793,988	
				Hex River Power Station					
				1953		1952			
Units Sent Out				163,090,540		57,759,350			
Maximum half-hour Demand kW S.O.				45,500		39,900			
Station Peak kW				47,800		—	28.1		
Load Factor %				40.9		23.05	21.85		
Thermal Efficiency % S.O.				17.20					
				Salt River Power Station					
				1953		1952			
Units Sent Out				168,424,925		137,788	37,575	1.301	
Maximum half-hour Demand kW S.O.				46,500		12,070	12,000	12,000	
Station Peak kW				51,500		£243,040	£177,575	£61,751	
Load Factor %				34.4		35s. 3d.	35s. 4d.	32s. 10d.	
Thermal Efficiency % S.O.				17.20					
				FUEL:					
Coal Consumed—tons				114,973		137,788	37,575	1.301	
Average per unit sent out—lb.				1.640		12,070	12,000	12,000	
Caloric Value B.Th.U./lb				£215,076		£243,040	£177,575	£61,751	
Total Cost				37s. 5d.		35s. 3d.	35s. 4d.	32s. 10d.	
Cost per ton									

Output and Sales—The foregoing statistics show further increases in the number of units sold to all classes of consumers. The percentage increase is slightly lower than it has been for several years past, with the exception of the year 1950. The reduction in increase probably indicates a return to a normal rate of growth after the exceptional demands that have had to be met in the immediate post-war years. The increase in traction supplies for the year 1953 was required for part of the new main-line electrification. A considerable increase in the main-line traction supply is expected in 1954; but after the electrification of the section to Touws River is completed it is probable that the traction load will remain static for many years.

As regards generation of electricity, the Commission and the Cape Town City Council have continued to operate the Salt River and Table Bay Power Stations as a pool, in terms of the 1933 Agreement. The units sent out from the Pooled Stations amounted to 918,263,976, which represent a decrease of 41,312,968 units, or 4·31 per cent, as compared with the year 1952.

The Commission's Salt River Power Station sent out 140,252,269 units in 1953 as against 168,424,925 for the previous year. This decrease (16·73 per cent) is accounted for by the programme of boiler reconditioning which was carried out during the year.

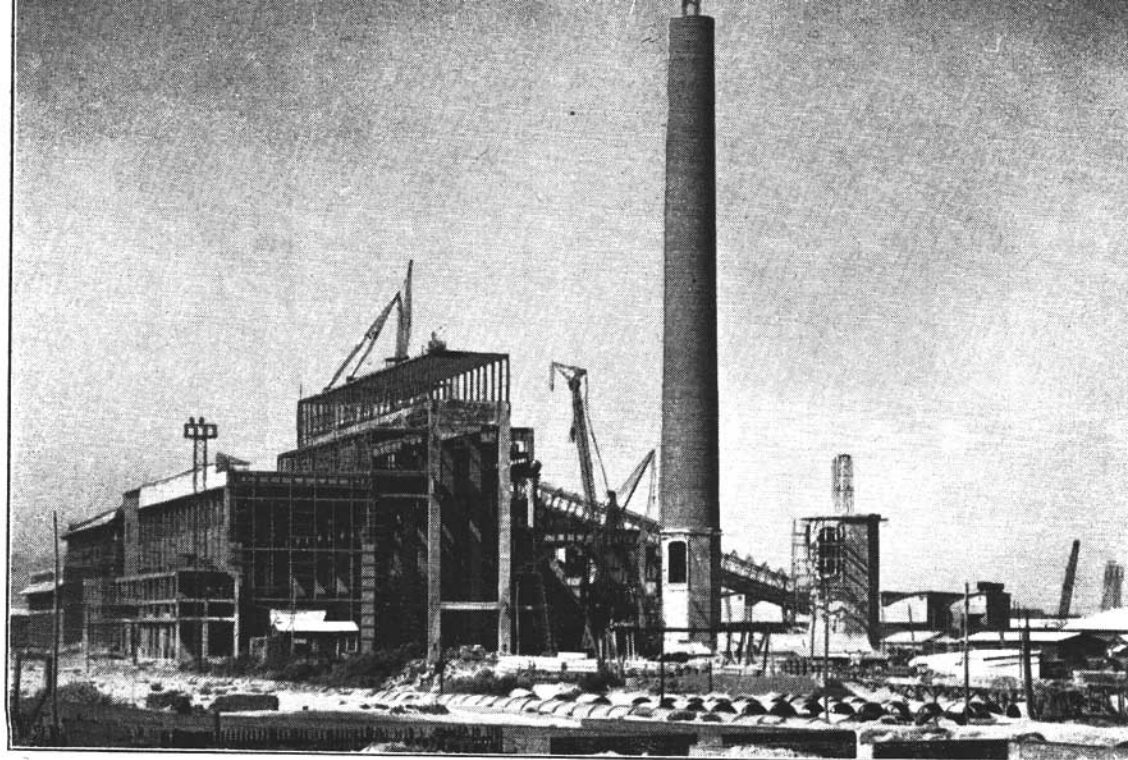
The total number of units sent out to consumers of the Commission and the City Council was 1,018,354,516, which represents an increase of 0·10 per cent over the figure for 1952.

Coal—There was no coal shortage at the Pooled Stations or at Hex River Power Station during 1953, but once again coal grading was unsatisfactory. Coal storage space at Salt River Power Station is restricted at present owing to the space required by contractors engaged in the construction of Salt River No. 2 Power Station, but in view of the reduction in output from Salt River No. 1 Power Station, this is not a serious matter. The Railway Administration has also given assistance by diverting consignments from Salt River to Table Bay, in many cases at very short notice.

At Hex River Power Station the coal staithes were filled to capacity during the middle part of the year, and it was necessary to pile further stocks on the ground. This resulted in excessive manual handling of coal, and representations to the collieries to spread out consignments in accordance with rate of burning were only partially successful owing to shortage of trucks.

System Operation—With Hex River Power Station in operation throughout 1953, there was no necessity for this Undertaking to curtail supplies to consumers. Owing to shortage of generating capacity in the Pooled Stations, however, the Cape Town City Council was compelled to shed load occasionally at peak periods even with the assistance of the second generator at Hex River Power Station.

During 1953 plant failures caused interruptions of supply to a few consumers on four occasions only. Two of these failures arose from minor troubles



SALT RIVER No. 2 POWER STATION
Western view of construction.

at Hex River Power Station, two from mechanical troubles on the Table Bay turbo-generators. None of the interruptions was of greater duration than one hour.

Major Transmission System—The long-range programme of construction of the major transmission system, as designed in 1946, was practically completed during the year; only a portion of the Worcester-Touws River 66-kV line was not finished.

Due to growth of system load, construction work was commenced on a further 66-kV line (operating initially at 33 kV) from Oakdale via Stellenbosch to Capex. The Oakdale-Stellenbosch portion was completed towards the end of August, except for a minor piece of reconstruction within the town of Stellenbosch itself. The line from Stellenbosch to Capex (Somerset West) was completed as far as Firgrove early in December.

Loading in the Vredenburg area, where there is a considerable fish-canning and fishmeal industry, has necessitated strengthening this supply, and to that end a 66-kV line is being erected from Gouda via Moorreesburg to Koperfontein, where it will connect with the existing Oakdale-Vredenburg 33-kV line. A 66-kV/33-kV stepdown substation is to be provided at Koperfontein for this purpose.

Urban Development—In recent years development of the urban areas of Goodwood, Parow and Bellville has involved very large annual increases in the supply, the figure for the annual growth in 1952 being of the order of 35 per cent. The return to a normal rate of growth was most noticeable in these areas, inasmuch as the overall increase in units sold in 1953 was only 8·2 per cent over the figure for 1952. Nevertheless, it was necessary to build six indoor and five outdoor substations, together with three temporary substations and two consumers' 11-kV substations. The total installed capacity of these additions amounted to 6,450 kVA.

A total of 1,121 new consumers, of whom seven are large users, was connected during the year.

Rural Development—During the year, 536 new connections were made, which included 143 farms. These figures also represent a decrease in comparison with the 1952 figures, although they are considerably higher than for the years 1949 to 1951.

Amongst the projects carried out during the year was the supply to Table View Township and Blaauwberg Strand. Although at the end of the year only 12 consumers were connected in Table View and 27 in Blaauwberg Strand, there are potentialities for a large reticulation system in that area.

Land and Buildings—In the urban area nine substation sites, and in the rural area eight substation sites, were purchased. In one case (at Malmesbury), the site is to be used for native quarters as well as for a substation.

An arrangement has been made with the Townships Board whereby the layout of all new townships within this Undertaking's area of supply shall include provision of satisfactory substation sites, which shall be transferred to the Commission free of charge. Three such sites were acquired during 1953.

Three staff houses were purchased during the year, one at Wellington for the local distribution official, and two at Worcester for power station employees. Native quarters were erected at Wellington for occupation by regular labourers who are also required for standby duties.

New Power Stations—Reports on the construction of Hex River Power Station and Salt River No. 2 Power Station are given on page 8.

Financial—Increased standard prices were approved by the Electricity Control Board in October, 1953.

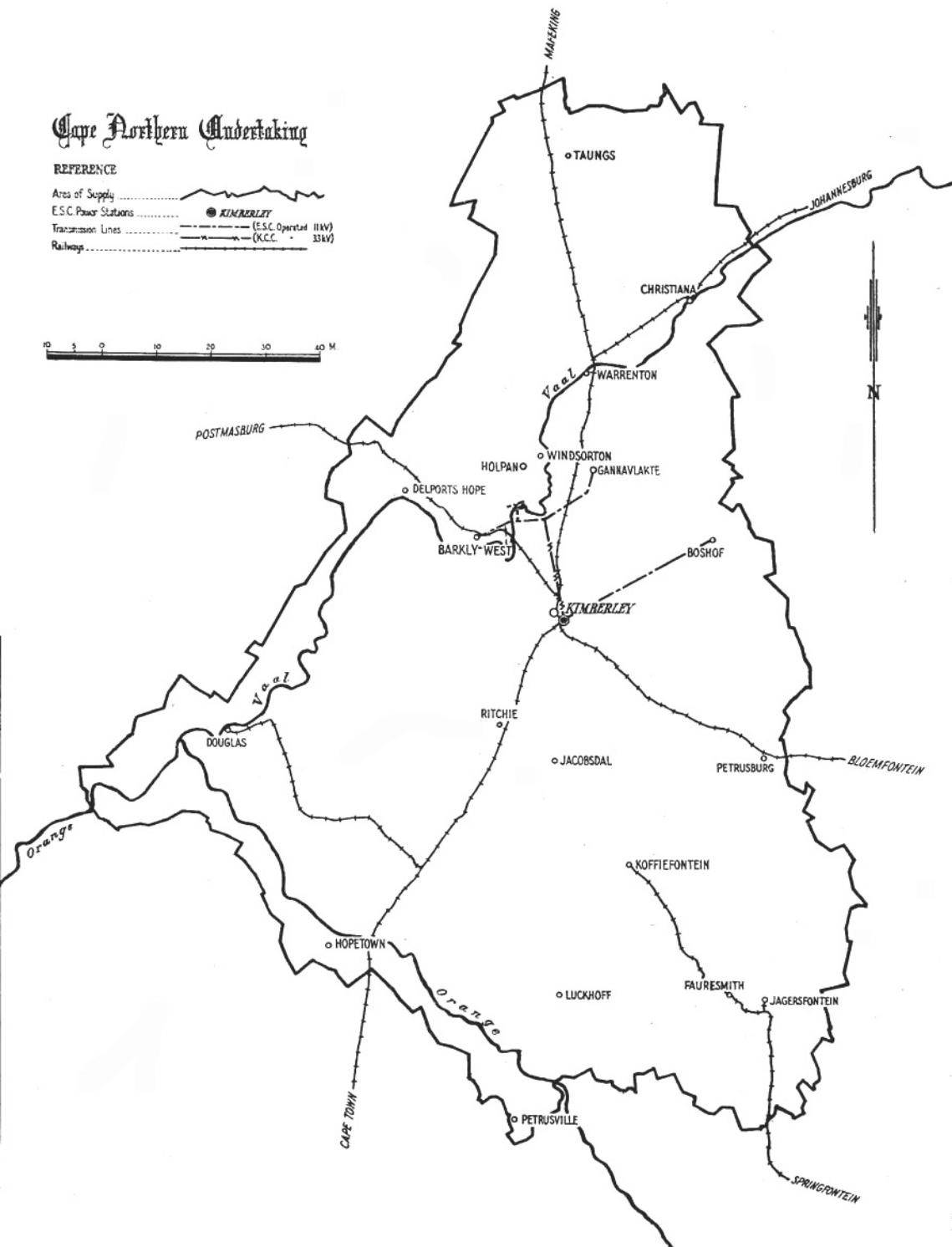
The year's working showed a deficit of £40,132, resulting in an accumulated deficit up to the end of 1953 of £151,838.

Capital expenditure on the Undertaking, which now stands at £13,793,988, increased by £2,838,381 during the year.

Cape Northern Undertaking

REFERENCE

- Area of Supply
- E.S.C. Power Stations ● **KIMBERLEY**
- Transmission Lines (E.S.C. Operated 11kV)
- (K.C.C. - 33kV)
- Railways



CAPE NORTHERN UNDERTAKING

CONSUMERS		SALES		Revenue from Sales	Average Price per Unit Sold	
Class	Number	Units	Increase		1953	1952
			%	£	d	d
Bulk	3	42,613,375	6·186	125,892	0·7090	0·6046
Mining	3	23,643,997	14·979	82,558	0·8380	0·7024
Industrial	34	762,836	24·837	8,733	2·7475	2·2837
Domestic and Lighting	32	72,851	129·070	605	1·9950	2·1095
	72	67,093,059*	9·383	217,788	0·7791	0·6549

	1953	1952	Accumulated to 31.12.53
Total Revenue	£218,287	£167,802	
Working Costs	£213,197	£179,716	
Surplus	£5,090		
Deficit		£11,914	£3,848
Capital Expenditure	£527,606	£320,787	£1,145,033
CENTRAL POWER STATION—			
Units Sent Out	65,394,477	60,542,467	
Maximum half-hour Demand kW S.O. }	16,150	14,350	
Load Factor %	46·70	48·00	
Thermal Efficiency % Sent Out ...	12·70	12·65	
COAL:			
Consumption—tons	71,672	65,693	
Average per unit sent out—lb ...	2·192	2·170	
Calorific Value B.Th.U./lb ...	12,260	12,430	
Total Cost	£99,517	£86,603	
Cost per ton	27s. 9d.	26s. 4d.	

*This total includes sales of units re-purchased.

Output and Sales—Units sold in 1953 show an increase of nearly 9·4 per cent over the 1952 figure.

The figure for bulk supplies reflects the continued steady increase in the requirements of the Kimberley Municipality. There was also a large increase in the supply taken by the Barkly West Municipality, and supply was given to the Boshof Municipality in October, 1953.

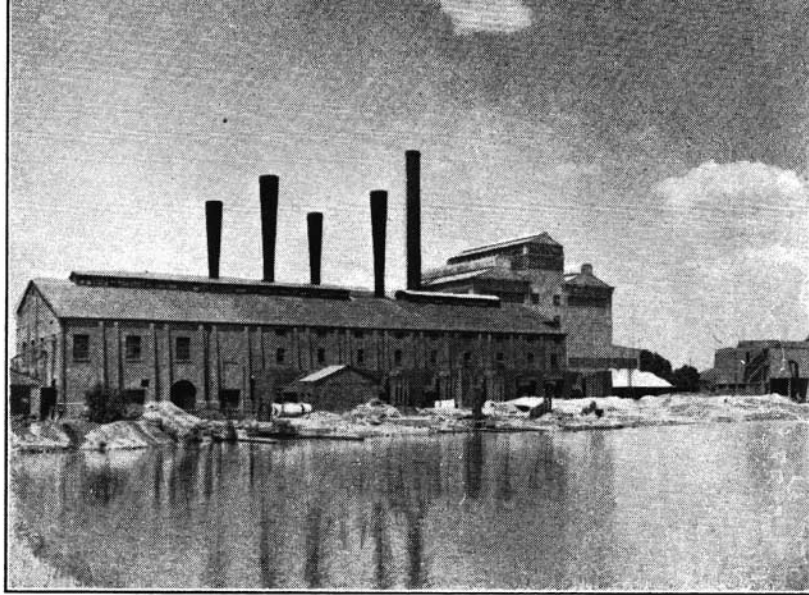
The increase in mining supplies is accounted for mainly by the De Beers Company re-connecting certain plant which was kept out of service during the period of shortage of generating plant.

Power Station—Operating conditions at the power station were most difficult at the beginning of 1953 owing to the drought and hot weather which persisted

CENTRAL POWER STATION, KIMBERLEY

The new extensions to the station are in the centre (right).

[Photo: Brian Eaton



until the end of March. In January, as a result of the small quantity of water in Blackenbergs vlei, the temperature of the water in the vlei reached 103°F, and in March a maximum of 96°F was recorded. Continuous condenser cleaning was necessary during these months.

Load staggering by the De Beers Company and the Kimberley Municipality was resorted to in December, 1952, and was continued in January, 1953, in order that the boiler overhaul programme could be carried out; but in January, when one of the boilers had to be withdrawn from the range, load was shed over the peak period for several days and the boiler overhaul programme was suspended, with the consent of the Inspector of Factories. The full complement of eight boilers was steamed continuously until October, when the first of the two new boilers (No. 10) was brought into service.

From May, 1953, the De Beers Company agreed to a further staggering of some 650 kW to 700 kW of their load, and this assistance made it possible to maintain supplies without interruption during the winter months.

No. 10 boiler was taken into service in October, 1953, and No. 5 generator on 17th December, 1953.

At the end of the year No. 9 boiler was nearly complete and the erection of No. 6 turbo-generator was well advanced. The mechanical draught-cooling system was completed in part and capable of intermittent use.

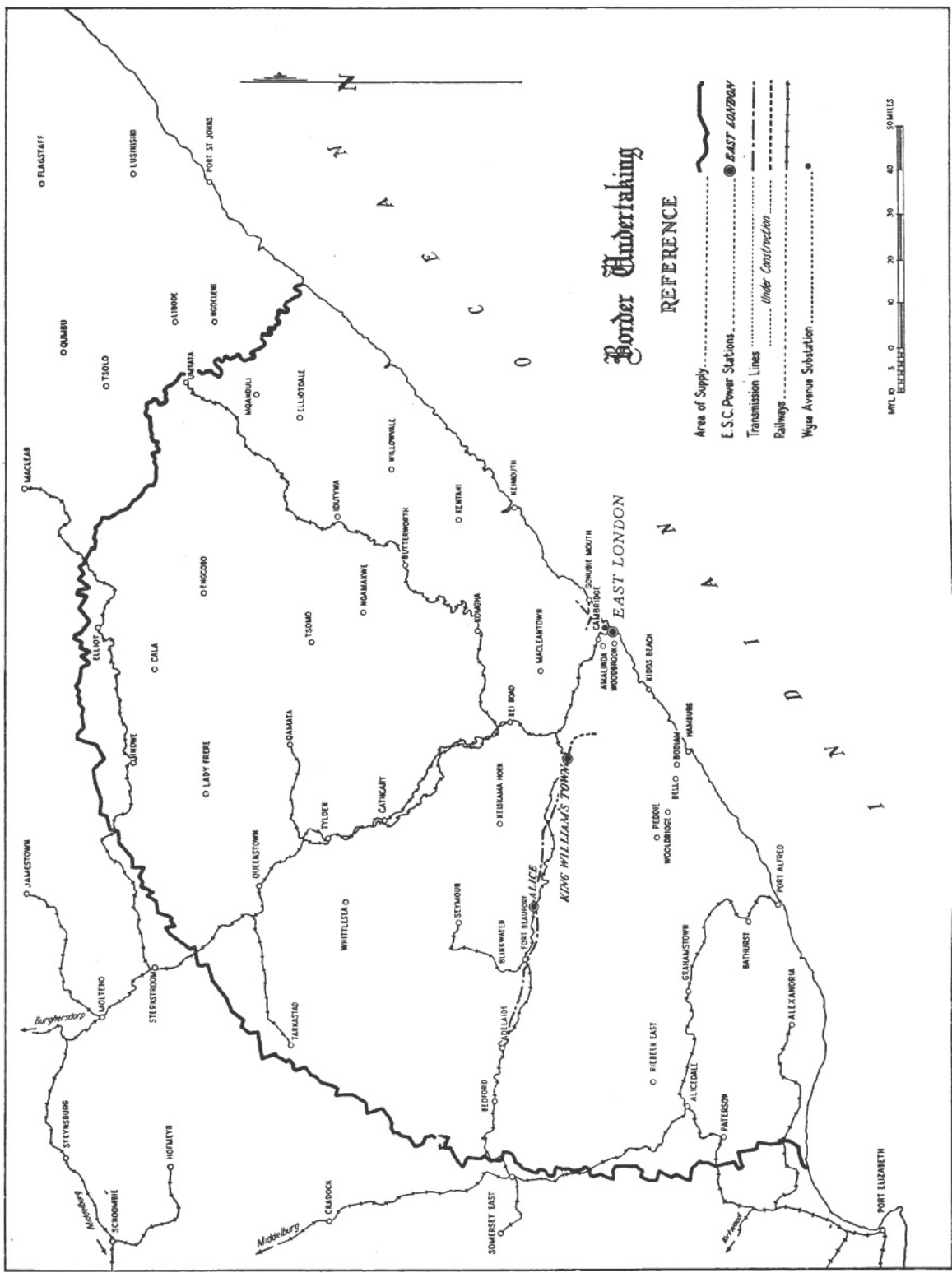
Coal supplies were satisfactory during the year.

Distribution—The 22-kV line to Boshof was completed and brought into operation in October, 1953.

Steps are to be taken to increase the Commission's transformer capacity at the municipal stepdown substation at Riverton, at which point the Commission repurchased an aggregate of 1,850,000 units in 1953. The majority of these units were supplied to farmers.

An additional two miles of 11-kV overhead line was added to the Barkly West rural scheme. The connected h.p. in this scheme increased during the year to the total of 710 h.p.

Financial—In order to take account of the extensions to the power station and the developments undertaken by the Commission, the Electricity Control Board approved increased standard prices with effect from 1st January, 1954.



Border Undertaking

REFERENCE

- Area of Supply
- E. S. C. Power Stations.....● EAST LONDON
- Transmission Lines
- Railways.....Under Construction.....
- Wye Avenue Substation.....●



Map showing the border between the Orange Free State and the Cape Province, with numerous towns and locations marked. The Orange River is shown as a dotted line. Key locations include Maclear, Oudorp, Tsoelike, and King William's Town. The map also shows the Orange River and the border with the Cape Province.

BORDER UNDERTAKING—(continued)

	King William's Town			
	1953 Steam	1952 Steam	1953 Oil	1952 Oil
Units Sent Out	10,007,669	9,036,019	26,119	87,488
Maximum Half-hour Demand kW S.O. }	2,930	2,636	In parallel with steam plant	
Load Factor %	39·10	39·40		
Thermal Efficiency % S.O. ...	13·28	13·27		
FUEL:				
Coal consumed—tons	10,281*	9,339*		
Average per unit S.O.—lb ...	2·013	2·021		
Calorific Value B.Th.U./lb ...	12,760	12,720		
Total Cost	£20,446	£17,358		
Cost per ton	39s. 9d.	37s. 2d.		
Fuel Oil consumed—lb			15,345	50,067
Fuel Oil per unit S.O.—lb ...			0·588	0·572

*Includes 210 tons for Steam Supply.

Output and Sales—Sales for the whole Undertaking in 1953 increased by 10·28 per cent over the corresponding figure for 1952. In the different areas, sales increased as follows: East London, 10·76 per cent; King William's Town, 5·52 per cent; Alice, 7·97 per cent.

The first step in co-ordination of supplies within this new Undertaking was accomplished on the 11th August, 1953, when the 33-kV transmission line between King William's Town and Alice was put into commission. From that date the small power station at Alice, which was expensive to run was shut down, and the Alice section was supplied from the power station at King William's Town.

East London—During the past year East London experienced the heaviest rains on record, and exceptional storms caused unprecedented flooding. There were two total interruptions of the West Bank No. 1 Power Station and a number of partial failures of supply, mainly as a consequence of storm and flood conditions.

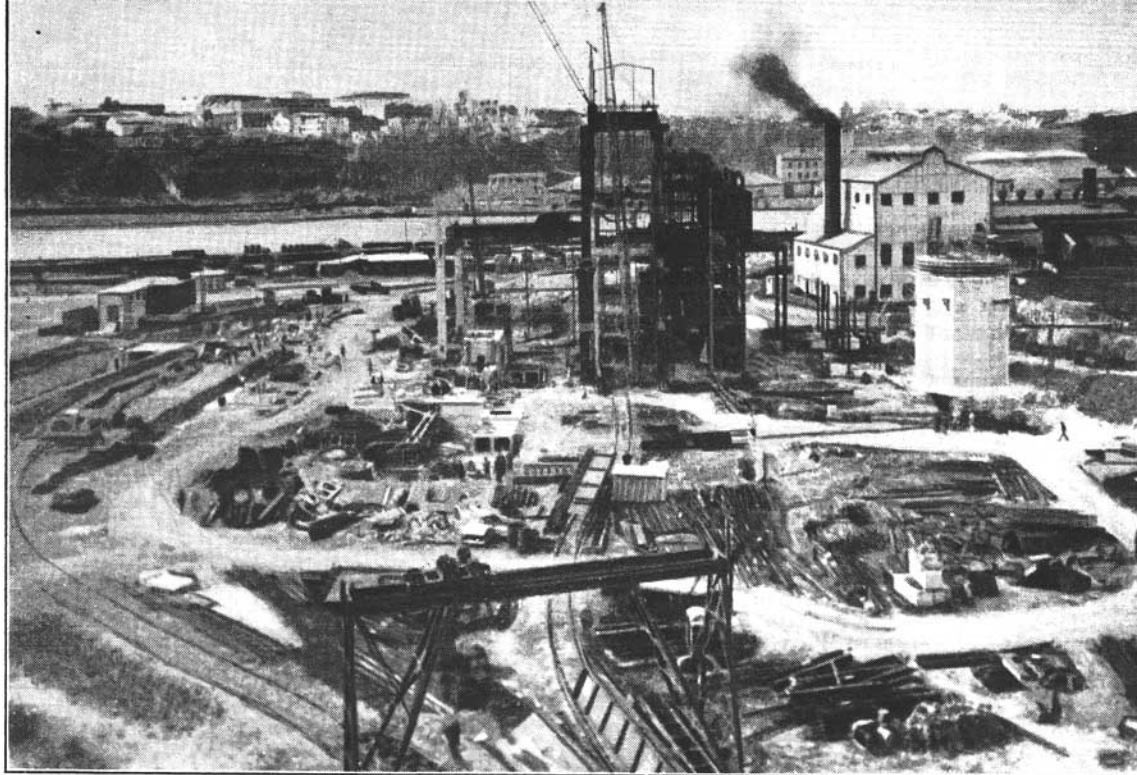
A report on the progress of West Bank No. 2 Power Station is given on page 8.

The supply to the East London Municipality continues to grow at a rate exceeding 10 per cent per annum.

In the Gonubie and Bonza Bay areas the maximum demand increased from 351 kVA to 400 kVA and the number of consumers connected to the system increased from 207 to 259. Consumption on this 11-kV rural system increased by 283,060 units to 1,142,705 units, an increase of 32·9 per cent.

King William's Town—Electric units sent out from the King William's Town Power Station were 10,033,788 kWh, an increase of nearly 10 per cent over the corresponding figure for 1952. Part of the increase is due to Alice being supplied from this power station.

Continuity of supply was maintained throughout the year, save for a two-minute interruption in December owing to breakdown of the excitation circuit on No. 3 Alternator.



WEST BANK No. 2 STATION, EAST LONDON
General view of the site.

[Photo: E. R. Trangmar

Minor extensions and improvements have been made to the 11-kV reticulation system within the town. 24 new consumers were connected and the street lighting system at the coloured and native townships was reconstructed.

Alice—Continuous working of the generating plant in the Alice Power Station ceased on 11th August, 1953. A 34 h.p. D.C. engine and generator were sold during the year.

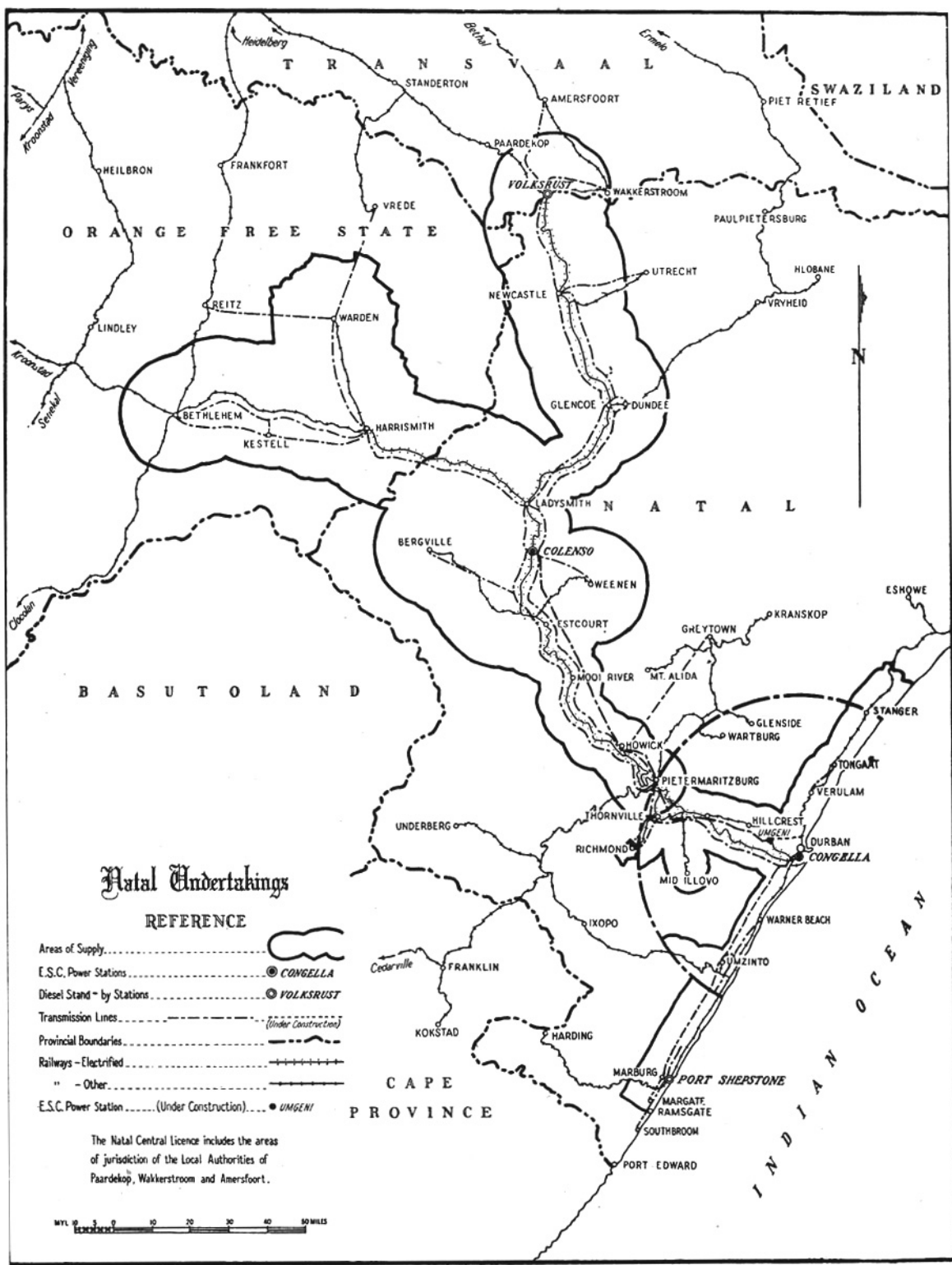
The erection of 3.3-kV mains and the reticulation substations was completed during the year and the outdoor 33/3.3-kV substation with two 400 kVA transformers for the bulk supply to Alice was commissioned in August. Work has commenced on the reconstruction of the low voltage reticulation system at Lovedale.

Distribution System—The 11/33-kV outdoor step-up yard and the first section of the King William's Town/Adelaide 33-kV transmission line as far as Alice was completed in July and commissioned in August. The section from Alice to Fort Beaufort, together with the substation at Fort Beaufort, was completed and energised to give a bulk supply to Fort Beaufort Municipality in January, 1954.

It is expected that the third section, Fort Beaufort/Adelaide, will be completed in the first half of 1954.

Negotiations have been concluded for a supply to the Bedford Municipality, and an extension by means of an 11-kV line from Adelaide to Bedford will be commenced as soon as the main transmission line to Adelaide is in service.

Financial—The new tariffs which were introduced in November, 1952, were applicable over the full year 1953; thus the deficit which amounted to £40,896 in 1952 was only £15,548 for the year 1953. The accumulated deficit for the whole Undertaking now stands at £66,715.



ORANGE FREE STATE

TRANSVAAL

SWAZILAND









NATAL

BASUTOLAND

CAPE PROVINCE

Natal Undertakings

REFERENCE

- Areas of Supply..... 
- E.S.C. Power Stations.....  CONGELLA
- Diesel Stand-by Stations.....  VOLKSRUST
- Transmission Lines.....  (Under Construction)
- 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.



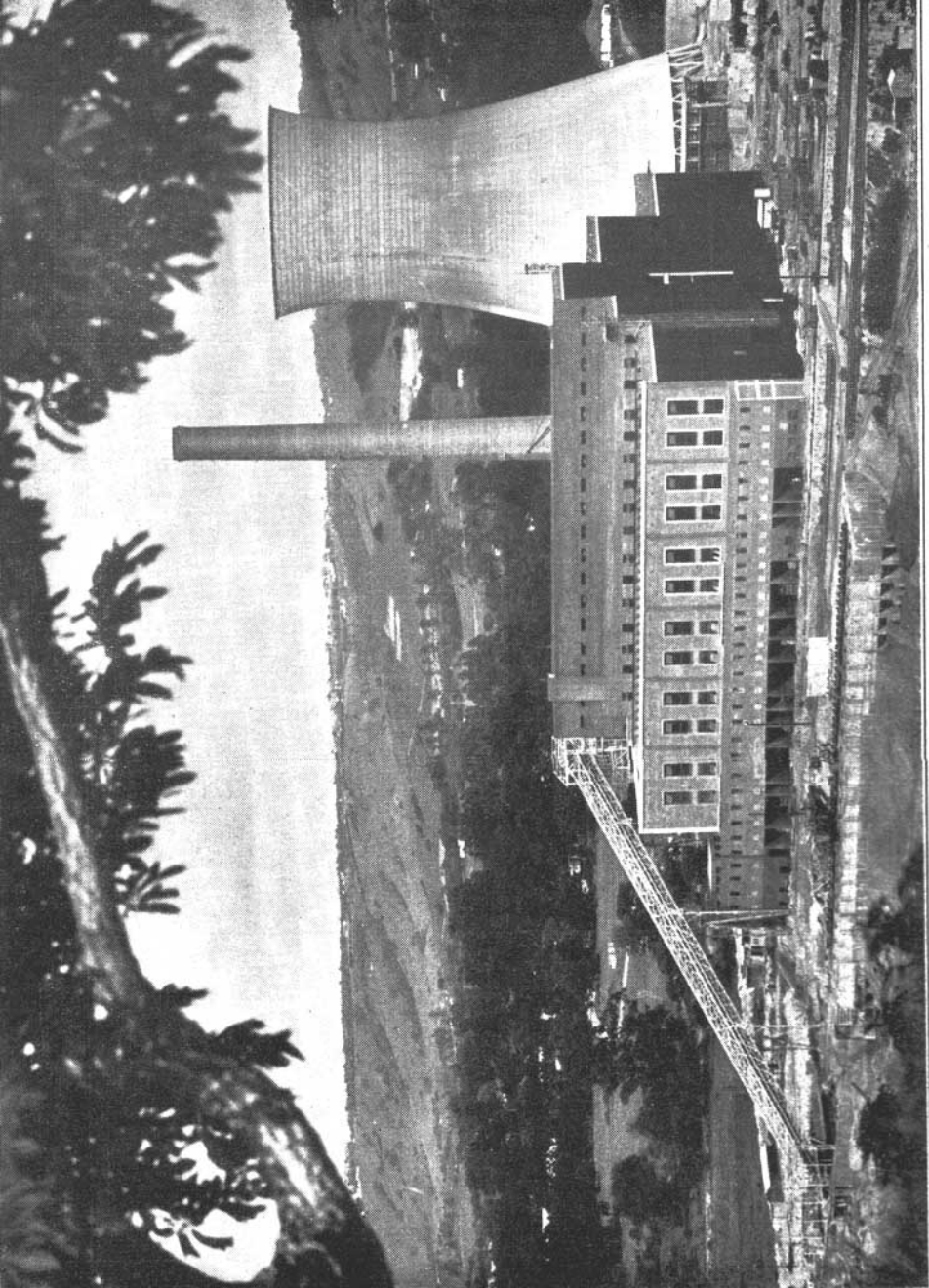
DURBAN UNDERTAKING

CONSUMERS		SALES		Revenue from Sales	Average Price per Unit Sold	
Class	Number	Units	Increase		1953	1952
			%	£	d	d
Traction	* 1	44,708,061	6.147	90,444	0.4855	0.4650
Bulk	2	630,424,965	9.096	1,257,168	0.4786	0.4420
Industrial	211	22,771,168	1.794	61,509	0.6483	0.6111
Domestic and Lighting	3,626	15,309,131	15.451	107,013	1.6776	1.6711
	3,840	713,213,325*	8.786	1,516,134	0.5102	0.4741

	1953	1952	Accumulated to 31.12.53
Total Revenue	£1,526,231	£1,302,162	
Working Costs	£1,508,990	£1,317,407	
Surplus	£17,241	—	
Deficit	—	£15,245	£10,897
Capital Expenditure	£2,129,018	£2,226,544	£11,152,176

	Congella Power Station Nos. 1 and 2		Port Shepstone Power Station	
	1953	1952	1953	1952
Units Sent Out ...	720,697,340	651,482,630	162,221	416,044
Maximum half-hour Demand kW S.O. }	170,436	142,216	3,020	2,674
Station Peak kW ...	190,000	158,000	3,175	2,730
Load Factor % ...	48.30	52.20	0.6	1.8
Thermal Efficiency % S.O.	20.55	21.36		
FUEL:				
Coal Consumed — tons	498,252	437,596		
Average per unit sent out—lb	1.383	1.343		
Calorific Value B.Th.U./lb	12,000	11,900		
Total Cost	£631,641	£513,801		
Cost per ton	25s. 4d.	23s. 6d.		
Fuel Oil consumed—lb			105,909	239,833
Fuel Oil per unit sent out—lb			0.653	0.576

*This total excludes interchange, but includes sales of units repurchased.



UMGENI POWER STATION

Scheduled to come into commercial operation this year.

Output and Sales—The foregoing figures reflect continued expansion of the Undertaking. Total sales, 713,213,325 units for the year, increased by 8.786 per cent over the 1952 figure. In addition there was a net export of 4,433,515 units on the interchange of power between Congella and Colenso Power Stations.

Consumers' demands upon the system continue to rise; but the commissioning of the first set at the new Umgeni Power Station in about June, 1954, should enable the Undertaking to meet the peak demand in 1954.

Congella Power Station—The drainage and concreting of the grounds at Congella Power Station has improved the property.

Two of the new 200,000-lb/hr boilers were commissioned, No. 15 Boiler on the 2nd April, 1953, and No. 17 Boiler early in August, 1953. These boilers have been satisfactory, except for minor troubles which have been rectified. The third of the new boilers is expected to be ready for steaming in June, 1954.

The performance of the turbines at Congella has not been entirely satisfactory. In addition to minor troubles, two of the three 40 MW sets have had to be run at reduced output due to fouling of the turbine blades. The simple precautions taken previously to overcome this trouble are no longer effective, and the problem is therefore being re-investigated.

Umgeni Power Station—The progress of work on the Umgeni Power Station is reported on page 9.

South Coast—Units sold in this area have increased to 18,451,403 kWh and the maximum demand has increased from 5,600 kW to 6,600 kW.

The 88-kV line from Durban to Marburg was extended to Margate, and a temporary substation at Margate was energised in June, 1953. The performance of the 88-kV line has been very satisfactory.

Modification of the system around Umkomaas to 11-kV has been completed, and the new 11-kV substation is established, being fed temporarily from the 33-kV line.

The number of new consumers, including rural consumers, connected during the year was 195 for the South Coast and 12 for the Durban Central section.

North Coast—The demand in this area has increased considerably, and the total number of consumers at the end of the year was 232.

The 6.6-kV supply was converted to 33-kV and energised on the 13th August, 1953.

Financial—In order to meet rising costs, due largely to the commissioning of new plant, it became necessary, in terms of Section 10 of the Electricity Act, to increase the tariffs in the Durban Undertaking by approximately 10 per cent from August, 1953. This adjustment resulted in a small surplus of £17,241, on the year's working, and the accumulated deficit was thereby reduced to £10,897.

NATAL CENTRAL UNDERTAKING

CONSUMERS		SALES		Revenue from Sales	Average Price per Unit Sold	
Class	Number	Units	Increase		1953	1952
			%	£	d	d
Traction	1	268,346,047	4·311	560,745	0·5015	0·4800
Bulk	15	159,888,375	13·614	404,881	0·6077	0·5806
Mining	10	22,804,662	15·282	71,015	0·7474	0·7162
Industrial	472	29,842,061	12·942	100,036	0·8045	0·7857
Domestic and Lighting	3,840	11,417,299	16·690	89,398	1·8792	1·9062
	4,338	492,298,444*	8·442	1,226,075	0·5977	0·5700

	1953	1952	Accumulated to 31.12.53
Total Revenue	£1,241,126	£1,095,882	
Working Costs	£1,229,600	£1,116,132	
Surplus	£11,526	—	
Deficit	—	£20,310	£8,615
Capital Expenditure	£1,207,267	£1,058,707	£9,277,007
COLENSO POWER STATION—			
Units Sent Out	512,154,210	481,956,691	
Maximum half-hour Demand kW S.O. }	96,230	91,620	
Station Peak kW	115,000	106,000	
Load Factor %	60·80	59·90	
Thermal Efficiency % Sent Out ...	18·74	18·89	
COAL:			
Consumption—tons	382,785	360,038	
Average per unit sent out—lb	1·495	1·494	
Calorific Value B.Th.U./lb ...	12,180	12,090	
Total Cost	£381,455	£333,298	
Cost per ton	19s. 11d.	18s. 6d.	

*This total includes sales of the balance of units taken on interchange.

Output and Sales—The total units sold increased by 8·4 per cent over the figure for 1952, which is a rate of increase higher than the average over the past five years. The biggest increases were 11,090,951 units sold for traction and 19,159,013 units sold to bulk consumers. Sales to bulk consumers increased by 13·6 per cent over the figure for 1952 and include supplies to two new consumers, the municipalities of Greytown and Vrede.

In the interchange of power between Colenso and Congella Power Stations, Natal Central Undertaking sent 4,701,935 units to Durban Undertaking and received 9,135,450 units, a net import of 4,433,515 units.

Colenso Power Station—The new 25,000-kW turbo-generator (No. 8) was commissioned in July, 1953. There was a relatively large number of "teething troubles" and the machine did not give satisfactory service until after the end of the year.

Of the new 180,000-lb/hr boilers, the first (No. 16 Boiler) was commissioned in June and the second (No. 18 Boiler) in November, 1953. The third boiler is expected to be available in April, 1954.

The Colenso Station peak, when supplying the Natal Central Undertaking only, was 107,000 kW, and when assisting Durban, 115,000 kW. The corresponding figures for 1952 were 102,000 kW and 106,000 kW respectively.

The performance of transmission lines was more satisfactory than in previous years, but there was a large number of failures of synchronous motors. As the plant is some thirty years old, it will be necessary in the near future to rewind these motors.

Distribution System—Work continued throughout the year on the 88-kV/132-kV step-up substation at Colenso and on the 132-kV transmission line from Colenso to Umgeni Power Station, and this section of the interconnector was energised in March, 1954. The substation at Mason's Mill is not complete, however, and the line by-passes this substation. Modifications at Weltevrede substation to accommodate an incoming supply from Mason's Mill are nearing completion and it is expected that the substation will be in service in May or June, 1954.

The Cedara/Greytown 33-kV line was completed and the supply to the Greytown Municipality was commenced on the 23rd July, 1953.

During the year construction was started on the Harrismith/Warden/Vrede/Reitz 33-kV line and the section between Warden and Vrede was completed and energised, temporarily at 22-kV, to give supply to Vrede Municipality on the 22nd December, 1953. The section Warden to Reitz was also energised at 22-kV in March, 1954.

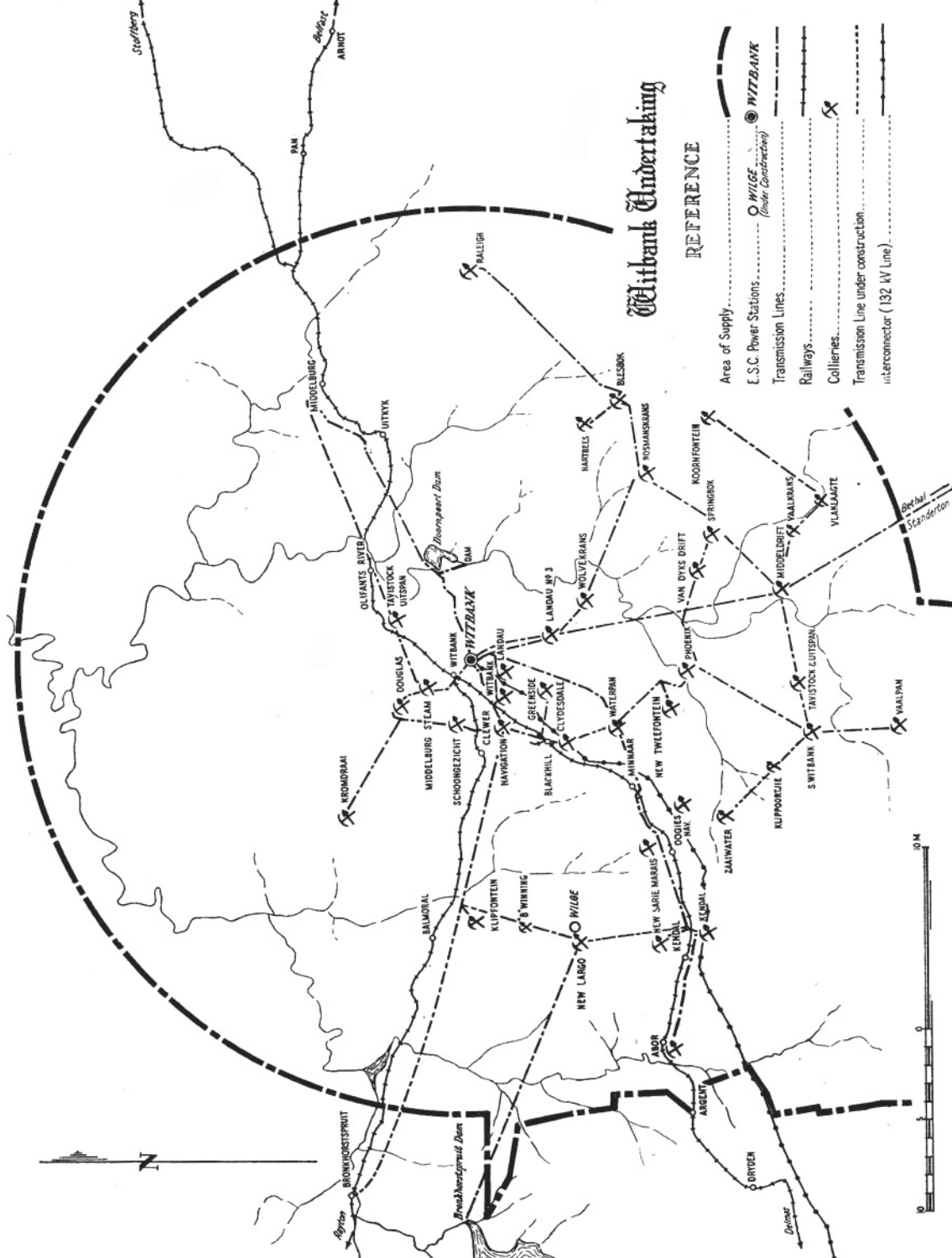
The first three miles of the Thornville/Richmond 88-kV line have been completed and work on the remaining portion is proceeding.

Rural Supplies—The Winterton rural network was completed during the year, and the first section of the Eston/Mid-Illovo scheme, which has cost about £6,000, was practically finished by March, 1954. About eight miles of rural line was built and put into service near Volksrust.

Engineering planning has been done on the extended Mid-Illovo scheme, the Bergville Farmers' scheme and projects at Bethlehem and Assegai Kraal, and money has been voted for these schemes to be spent in 1954.

A total of 61 new rural consumers was connected during the year.

Financial—In order to meet rising costs, owing largely to the commissioning of new plant, it became necessary to increase the tariffs for Natal Central Undertaking in terms of Section 10 of the Electricity Act. As from the month of August, 1953, an increase of approximately 10 per cent was imposed, and this adjustment resulted in a small surplus of £11,526 on the year's working, as compared with the deficit of £20,310 in 1952. On 31st December, 1953, there was an accumulated deficit of £8,615.



Witbank Undertaking

REFERENCE

- Area of Supply
- E.S.C. Power Stations WILGE WITBANK
(Under Construction)
- Transmission Lines
- Railways
- Collieries
- Transmission Line under construction
- interconnector (132 kV Line)



WITBANK UNDERTAKING

CONSUMERS		SALES		Revenue from Sales	Average Price per Unit Sold	
Class	Number	Units	Increase or Decrease		1953	1952
			%	£	d	d
Traction	1	200,882,083*	+ 5.320	336,800	0.4024	0.3542
Bulk	3	8,047,000†	+ 9.292	20,061	0.5983	0.6252
Mining	29	79,091,734	+ 1.739	182,428	0.5536	0.4992
Industrial	103	115,256,331	- 19.701	165,299	0.3442	0.2922
Domestic and Lighting	1,818	6,659,979	+ 18.171	34,031	1.2263	1.2139
	1,954	409,937,127	- 3.546	738,619	0.4324	0.3759
		1953	1952	Accumulated to 31.12.53		
Total Revenue		£1,136,395	£974,663			
Working Costs		£1,141,747	£989,698			
Deficit		£5,352	£15,035	£29,674		
Capital Expenditure		£370,519	£463,750	£3,907,194		
WITBANK POWER STATION—						
Units Sent Out		778,299,834	710,997,440			
Maximum one hour Demand kW S.O. }		112,973	100,628			
Load Factor %		78.6	80.4			
Thermal Efficiency % Sent Out ...		16.44	16.46			
COAL:						
Consumption—tons		735,330	666,900			
Average per unit sent out—lb ...		1.890	1.876			
Calorific Value B.Th.U./lb ...		10,980	11,050			
Total Cost		£255,803	£195,099			
Cost per ton		6s. 11d.	5s. 10d.			

*Units purchased and interchanged.

†561,216,069 units sent to Rand Undertaking are not included.

Output and Sales—The foregoing statistics show an increase of 5.3 per cent in units sold for traction. This increase was to meet development of the Reef and Pretoria electric traction systems, mainly on the West Rand and Pretoria sections. Bulk sales continue to increase at about the normal rate; but industrial sales show a decrease of 19.7 per cent in 1953, after the exceptional increase of 20.7 per cent in 1952. The overall figure is a decrease of 3.5 per cent, but this is a passing phase and should not indicate a downward trend.

Sales of the Witbank Local Supply System amounted to 209,055,044 units in 1953, compared with 234,271,966 units in 1952.

Witbank Power Station—Installation of No. 6 turbo-generator was completed in July, 1953, but the machine has not been entirely satisfactory in operation. The two additional boilers were commissioned in September, 1953, and the extensions to the ash handling plant were not completed until after the end of the year. Apart from a short period on peak when the maximum demand was 112,973 kW S.O., Witbank Power Station has been operated on the basis of a 100,000 kW station.

Distribution System—An additional 21-kV cable was laid from the power station to the 88-kV step-up substation at Witbank, which has been extended to double the capacity from 12,000 kVA to 24,000 kVA. The new section of the substation was put into service in December, 1953.

Work is in progress to double the capacity of the Middeldrift 88-kV step-down substation.

At the Bethal substation the automatic on-load tap changing gear was installed and put into service, and the 88-kV O.C.B. on the transmission line to Standerton was erected.

A good deal of preliminary work has been done on the 88-kV line route from Bethal to Ermelo and the substation site at Ermelo.

Two miles of 21-kV line were erected to supply the pumping station at the new Witbank municipal dam; and construction has started on two extensions on the 21-kV network, consisting of two lines of about 7 miles each between Bronkhorstspuit Town and Bronkhorstspuit Dam and from Blesbok Colliery to Koornfontein Collieries.

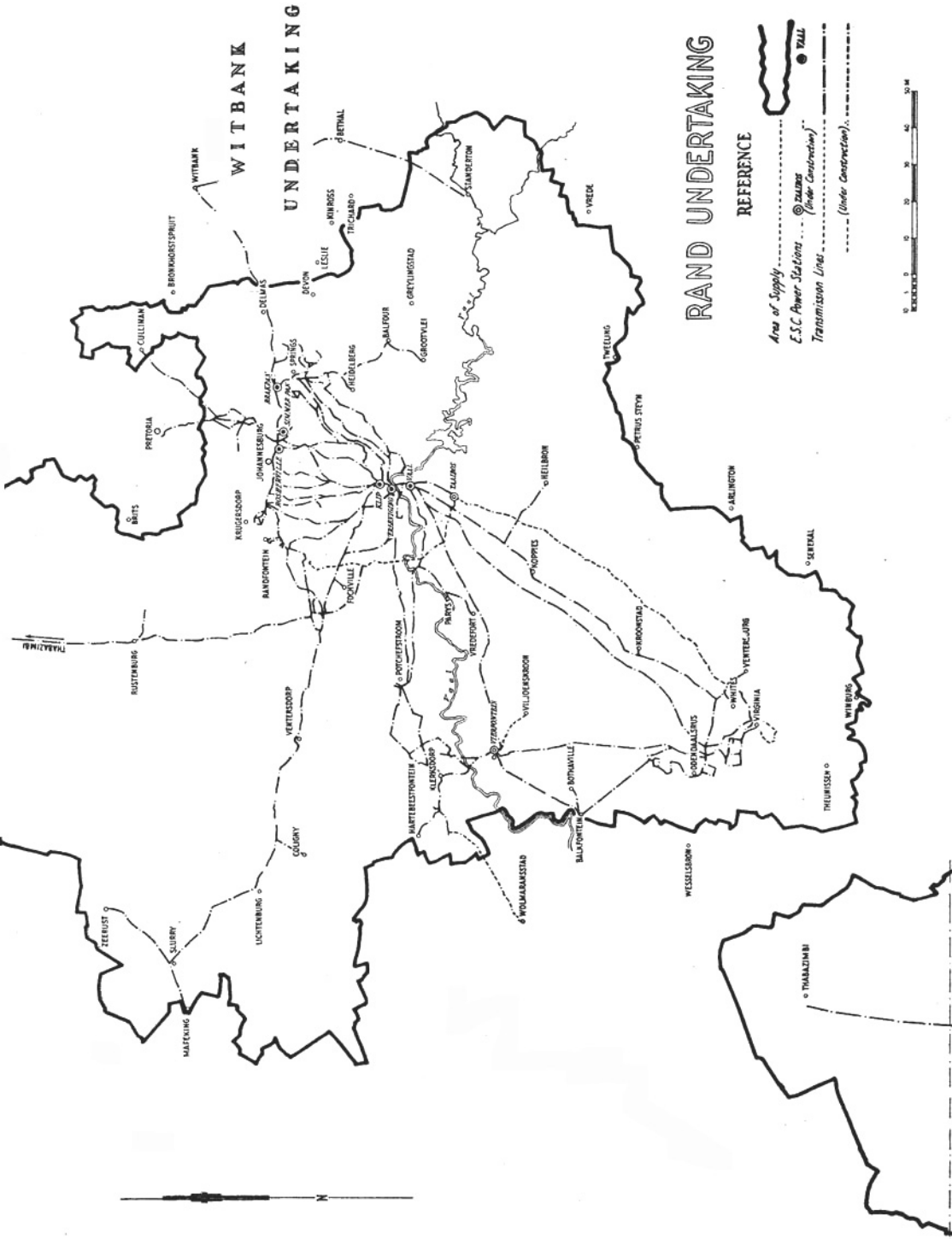
Initial supplies were given to the new works of Messrs. Ferrometals, Limited, and to the pumping station on the Wilge River which will provide the water supply for the Wilge Power Station.

Witbank Municipal Reticulation—Permanent repair of the damage caused by the explosion and fire that occurred in the municipal substation at the end of 1952, was completed before the end of 1953. Some 2 miles of new 6·6-kV lines were constructed and a section of 6·6-kV cable was laid. Four new substation transformers, 6·6-kV/400-230 volts were put into service.

Forty-two new domestic consumers were connected during the year.

The Witbank Municipality, in terms of the Supply and Reticulation Agreement, gave notice to the Commission of its intention to terminate the Agreement and take over the reticulation of lighting and certain other supplies within the municipal area with effect from the end of 1953. Several technical alterations had to be made to the system, and the reticulation in question has been operated by the Municipality since 1st January, 1954.

Financial—During the year the upward trend of costs continued, and it therefore became necessary, in terms of the Electricity Act, to increase tariffs. As from August, 1953, the surcharge on standard prices was increased from 15 per cent to 25 per cent for all consumers. In spite of this increase the Undertaking incurred a deficit of £5,352 on the year's working. The accumulated deficit stood at £29,674 at 31st December, 1953.



**WITBANK
UNDERTAKING**

RAND UNDERTAKING

REFERENCE

- Area of Supply
- E.S.C. Power Stations
- Transmission Lines
- (Under Construction)



TEGUS

WATKING

SURRY

LUCTERBURG

VEREDOP

COLEBY

WITBANK

WITBANK

WITBANK

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RAND UNDERTAKING

CONSUMERS		SALES			Average Price per Unit Sold	
Class	Number	Units	Increase or Decrease	Revenue from Sales	1953	1952
			%	£	d	d
ELECTRICITY:						
Bulk	54	585,128,061	+ 17.304*	939,968	0.3855	0.3361
Mining	101	4,604,525,563	+ 9.406	6,348,403	0.3309	0.2866
Industrial	352	1,123,585,801	+ 7.607	1,640,623	0.3504	0.3097
Domestic and Lighting	1,581	12,746,941	- 45.452*	59,561	1.1214	1.0461
	2,088	6,325,986,456†	+ 9.541			
AIR AND STEAM:						
Bulk	1	2,767,564	+ 3.484			
Mining	14	221,277,567	- 12.359			
Industrial	22	9,911,837	+ 5.299			
	37	233,956,968	- 11.571	630,815	0.6471	0.5858
	2,125	6,559,943,424	+ 8.616	9,619,370	0.3519	0.3107
					Accumulated to 31.12.53	
					1952	
Revenue ... ..	...	...	£9,966,236	£8,108,763		
Working Costs ... ..	...	...	£9,938,070	£8,306,250		
Surplus ... ..	...	...	£28,166	—		
Deficit ... ..	...	...	—	£197,487		£274,059
Capital Expenditure ... ..	...	...	£13,670,017	£12,294,240		£65,094,975

*For interpretation of these figures, Germiston Municipality was a bulk consumer during the whole of 1953.

†Includes sales of units purchased, but does not include units supplied to Witbank Undertaking for Traction.

RAND UNDERTAKING—(continued)

	Brakpan Power Station		Klip Power Station	
	1953	1952	1953	1952
Electricity Units Sent Out ...	...	...	...	...
Maximum Load	186,661,706	212,893,784	2,674,869,718	2,762,691,276
One-hour kW S.O. }	44,187	42,904	363,695	375,085
Load Factor %	48.2	56.5	84.0	83.9
Thermal Efficiency % Sent Out ...	12.74	13.28	20.88	20.32
COAL:				
Consumption—tons ...	269,886	301,223	2,256,980	2,467,764
Average per unit sent out—lb	2.892	2.830	1.688	1.786
Caloric Value B.Th.U./lb ...	9,260	9,080	9,680	9,400
Total Cost	£144,358*	£158,675*	£1,303,779	£1,196,393
Cost per Ton ...	10s. 1d.	9s. 7d.	11s. 7d.	9s. 8d.

	Rosherville Power Station		Simmerpan Power Station	
	1953	1952	1953	1952
Electricity Units Sent Out ...	...	...	...	...
Maximum Load	215,906,690	240,960,917	126,740,358	130,417,982
One-hour kW S.O. }	48,446	50,016	34,169	32,907
Load Factor %	50.9	54.8	42.3	45.1
Thermal Efficiency % Sent Out ...	10.51	10.37	9.94	9.94
COAL:				
Consumption—tons ...	353,729	394,396	238,399	250,312
Average per unit sent out—lb	3.277	3.274	3.762	3.839
Caloric Value B.Th.U./lb ...	9,910	9,500	9,120	8,940
Total Cost	£393,308*	£375,293*	£134,139	£134,436
Cost per Ton ...	15s. 0d.	12s. 9d.	11s. 3d.	10s. 9d.

*Includes cost of coal for compressed air.

	Vaal Power Station		Vereeniging Power Station	
	1953	1952	1953	1952
Electricity Units Sent Out ...	1,942,727,085	1,531,673,311	824,607,667	958,535,062
Maximum Load } ...	284,825	211,926	131,378	136,897
One-hour kW S.O. } ...	77-90	82-30	71-70	79-70
Load Factor % ...	22-43	22-75	15-98	16-18
Thermal Efficiency % Sent Out ...				
Thermal Efficiency % Sent Out ...				
COAL:				
Consumption—tons ...	1,645,170	1,269,611	975,730	1,138,293
Average per unit sent out—lb ...	1-694	1-658	2-367	2-375
Calorific Value B.Th.U./lb ...	8,980	9,050	9,020	8,880
Total Cost ...	£559,101	£425,302	£352,374	£383,219
Cost per Ton ...	6s. 10d.	6s. 8d.	7s. 3d.	6s. 9d.
Compressed Air Units Sent Out ...				
Steam Units Sent Out ...				
COAL:				
Consumption—tons ...	16,839	30,087	171,906	194,771
Average per unit sent out—lb ...	3-576	3-461	2-753	2-840
Calorific Value B.Th.U./lb ...	9,260	9,080	9,910	9,500
Compressed Air Units Sent Out ...				
Steam Units Sent Out ...				
Canada Dam Compressor Station				
Robinson Compressor Station				
Brakpan Power Station				
Rosherville Power Station				
1953	1952	1953	1952	
9,419,000	17,387,190	124,894,400	137,139,900	
16,839	30,087	171,906	194,771	
3-576	3-461	2-753	2-840	
9,260	9,080	9,910	9,500	
44,578,400	50,974,300	54,091,800	59,545,500	
53,361,177	60,420,664	67,720,253	74,344,017	
83-54	84-37	79-88	80-09	

RAND UNDERTAKING—(continued)

	Modder B and New Modder Compressor Stations	
	1953	1952
COMPRESSED AIR:		
Units Sent Out	8,503,527	9,194,390
Electric Input kWh	9,949,765	10,801,452
Air Units Sent out kWh per cent.	85·46	85·12
		Vierfontein Power Station
		From 4.5.53
Electricity Units Sent Out		245,353,679
Maximum Load—One-hour kW S.O.		84,684
Load Factor %		51·00
Thermal Efficiency % Sent Out		21·13
COAL:		
Consumption—tons		217,006
Average per Unit Sent Out—lb		1·769
Calorific Value B.Th.U./lb		9,130
Total Cost		£101,906
Cost per ton		9s. 5d.

Output and Sales—The notable features of the foregoing statistics are the increase of 411 million units in the output of Vaal Power Station; the output of 245 million units from the new Vierfontein Power Station; and the continuance of the abnormally high load factors on the peak load stations, Brakpan, Rosher-ville and Simmerpan. In addition, the number of units purchased from outside sources reached a record total of 544 million units, an increase of 133 million units over the figure for 1952.

The sale of 6,559,943,424 units, including compressed air and steam, shows an increase of 8·6 per cent, whilst sales of electricity increased by 9·5 per cent. When allowance is made for Germiston Municipality becoming a bulk consumer, the figures show that the increased output has been allocated as equitably as practicable among the various classes of consumer.

It must be recorded that this output of units could not have been achieved without the co-operation of consumers in load-staggering, especially the Gold Mining Industry, and the assistance afforded by certain other producers of electricity, especially the Municipalities of Johannesburg and Pretoria. These con-

certed efforts, from within and outside the Commission's organisation, enabled the Undertaking to pass through a critical year without any major shutdown and without impeding the economic development of the country.

Generating Plant Capacity—Details of the plant commissioned, and the progress of construction, in new power stations and existing power stations of the Undertaking, are given on page 9 of this report.

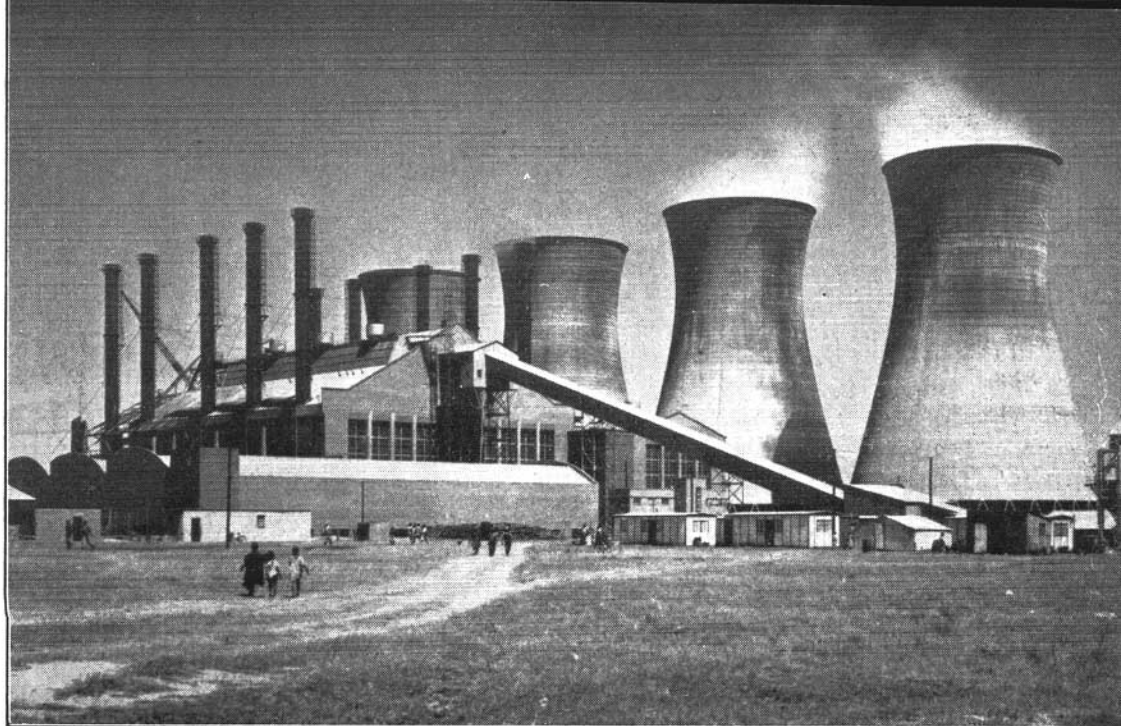
The maximum electric load carried by the system during 1953 was 1,072,000 kW, and up to the end of April, 1954, this maximum had risen to 1,142,781 kW, an increase of 165,781 kW above the peak load of 1952.

The increase in the peak load carried and the progress reported on page 47 are to be interpreted in the light of the following facts. Assistance from outside sources is expected to diminish and will be reduced to negligible proportions by 1957. Technically and economically it is highly undesirable that the old Reef stations should be loaded to the extent that they have been during the past two or three years. Moreover, allowance must be made for a decrease in load factor and diversity as soon as the special measures to reduce power consumption are relaxed.

The increased plant capacities which became available to the system during 1953 were only sufficient to meet the most essential needs, and the limitations on the consumers' maximum demands had to be strictly enforced throughout the year. In the early months of 1954 a slight relaxation was possible, and adjustments of the basic quotas were made, which, it was hoped, would put consumers in a position to face the winter of 1954 with less difficulty than the previous winter. It is not yet possible to abolish the limitations on maximum demands or to undertake to provide new supplies without consideration of the essentiality of the supply.

Interchange Arrangements with the Municipalities of Johannesburg and Pretoria—For many years past there have existed interchange arrangements between the Rand Undertaking and the electricity undertakings of the Johannesburg and Pretoria Municipalities, and mention has been made of the assistance given and received on interchange between these systems.

During the year a new agreement was signed between the Commission and the City Council of Johannesburg, covering a period of 15 years. The Council will provide in its power stations such capacity as it requires to meet the day peak demands on its system, and the Commission will, subject to certain conditions, supply the additional amount of power required to meet the Council's evening peak loads which do not coincide with the Commission's peak load. This agreement will enable the Municipality to save several millions of pounds on the purchase of generating plant.



VIERFONTEIN POWER STATION,
where four 30,000 kW sets were in operation in April, 1954.

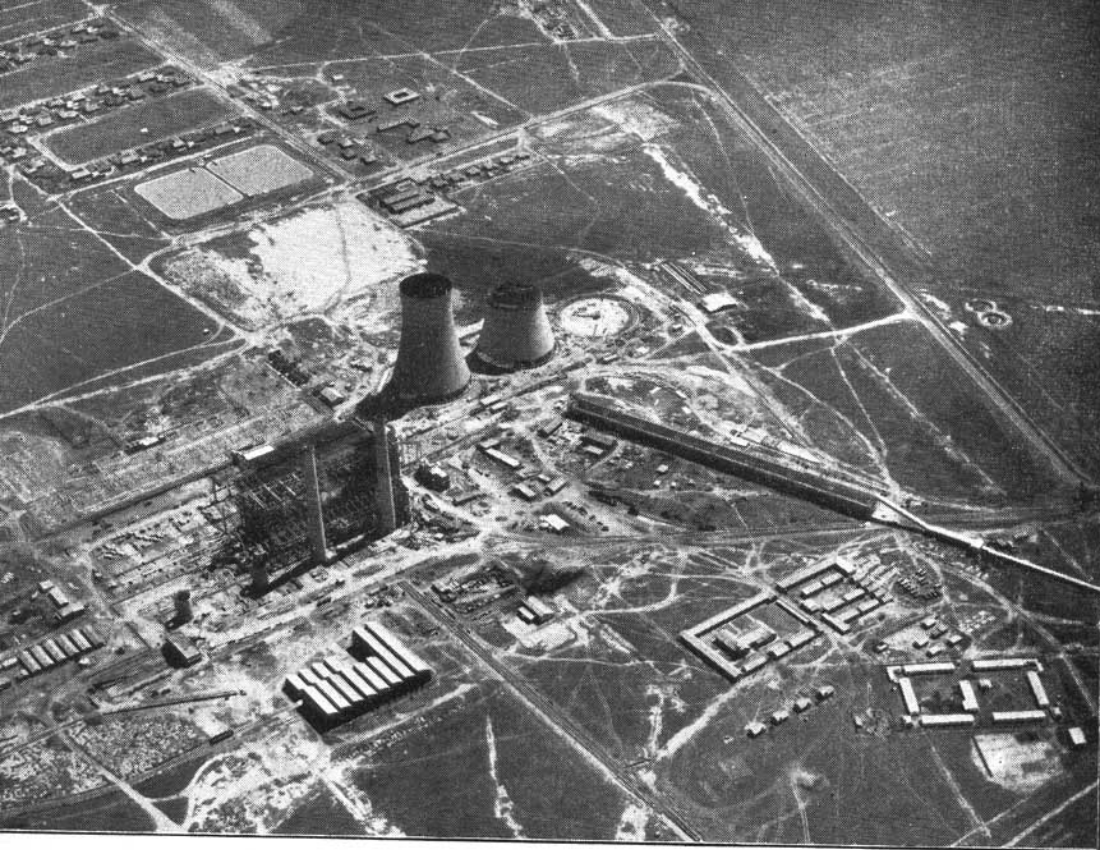
[Photo: R. H. Scrimgeour (Pty.) Ltd.]

A new interchange agreement is being negotiated with the City Council of Pretoria.

Supplies in the Orange Free State Goldfields Area—Much of the available resources continue to be directed towards the development of supplies to the new goldfields in the Orange Free State and the towns in the vicinity of that network.

Up to the end of the year 1953 about £3.25 millions had been spent in the erection of the transmission and distribution systems, including the Alma Distribution station, to serve this area. Besides the two 88-kV transmission lines from Vaal Power Station, the network in use includes the 132-kV interconnector Vaal/Taaibos/Vierfontein, the 132-kV transmission lines from Vierfontein Power Station to Alma Distribution Station, Grootkop Distribution Station (under construction) and Virginia Distribution Station (also under construction), and a total of over 110 miles of 40-kV distribution lines which carry the electricity to the individual consumers' substations.

The total energy sold over this network in 1953 was 765 million units. This output was taken by 12 mines (of which five have already reached the production stage), by a small number of industrial consumers, and by the towns of Koppies, Heilbron, Kroonstad, Hennenman, Odendaalsrus, Welkom and Ventersburg.



TAAIBOS POWER STATION

Aerial view showing the stage of construction reached at the end of April, 1954.

[Photo: Aircraft Operating Co. of Africa, Ltd.]

Distribution System—147 miles of major transmission lines were completed and brought into service during 1953. This total includes lines in the Orange Free State already referred to and an 88-kV line from Klip Power Station to the E.R.P.M. Distribution Station which was commissioned in November, 1953.

The Rosherville Switching Station, which is to be the main point of interconnection with the Johannesburg Municipal system, was placed in service on 16th April, 1953.

The length of major transmission lines under construction at the end of the year totalled 353 miles, whilst projected construction amounted to 311 miles.

Financial—The accounts for the year show a small surplus of £28,166, so that the accumulated deficit was reduced to £274,059 at the 31st December, 1953.

In order to cover the rising costs, it was necessary to adjust tariffs by decreasing the general discount rate from the previous figure of 13 per cent to 8 per cent, with effect from January, 1954.

SABIE UNDERTAKING

CONSUMERS				SALES		Revenue from Sales	Average Price per Unit Sold	
Class			Number	Units	Increase		1953	1952
			1		%	£	d	d
Mining			1	6,398,798	4.557	16,493	0.6186	0.3495
				1953	1952	Accumulated to 31.12.53		
Total Revenue				£16,493	£8,911			
Working Costs				£16,553	£8,817			
Surplus				—	£94	£144		
Deficit				£60	—	—		
Capital Expenditure				—	—	£96,170		
SABIE POWER STATION—								
Units Sent Out				6,562,400	6,410,000			
Maximum half-hour Demand kW S.O. }				1,300	1,200			
Station Peak kW				1,320	1,220			
Load Factor %				57.6	60.8			
RAINFALL at Power Station:								
Inches				58.09	54.52			
Millimetres				1,475	1,385			

Sabie is the Commission's only hydro-electric station and has continued to give uninterrupted and satisfactory service during the year.

The accounts for the year show a small deficit of £60 on the year's working and the accumulated surplus is therefore reduced to £144 as at 31st December, 1953.

MUNICIPAL ELECTRICITY SUPPLY SCHEMES—1953

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

TRANSVAAL:

New Schemes	Extensions	Tenders
Evaton	Bedfordview, Ermelo	Alberton
	Klerksdorp	Groblersdal
	Meyerton (2)	Koster
	Pietersburg	Machadodorp
	Standerton	Potchefstroom
	Warmbaths	White River

ORANGE FREE STATE:

New Schemes	Extensions	Tenders
Fouriesburg	Edenburg, Hoopstad	Bloemfontein (3)
	Ladybrand,	Rouxville
	Odendaalsrus	Trompsburg
	Trompsburg,	
	Viljoenskroon	

NATAL:

New Schemes	Extensions	Tenders
Empangeni	Mooi River	Harding
	Vryheid	Paulpietersburg
		Vryheid

CAPE:

	Extensions	Tenders
	Aliwal North (2)	Adelaide
	Elliot	Aliwal North (2)
	Graaff-Reinet	Fort Beaufort
	Komgha	Griquatown
	Oudtshoorn	Kenhardt
	Prince Albert	Laingsburg
	Riviersonderend	Prieska
	Williston	Vredendal

SOUTH WEST AFRICA:

New Schemes	Extensions	Tenders
Karasburg	Omaruru	Omaruru
	Outjo	Walvis Bay

Up to the 31st December, 1953, a total of 1,357 reports on Municipal Electricity Supply Schemes had been submitted by the Commission. Of these, 235 were in respect of new schemes, 647 were in respect of extension schemes and 475 were reports on tenders.

ANNEXURES

The Commission submits for the year 1953 with this Report:—

ANNEXURE A—AUDITORS' REPORT AND ACCOUNTS

The Report of the Auditors

Balance Sheet

Schedule No. 1—Expenditure on Capital Account

Schedule No. 2—Investments of the Redemption Fund

Schedule No. 3—Loan Capital and Sundry Loans and Amounts Outstanding for Rights Acquired

Account No. 1—Redemption Fund Account

Account No. 2—Reserve Fund Account

Revenue Accounts in respect of:—

Account No. 3—Cape Western Undertaking

Statement of Pooled Costs, Cape Town

Account No. 4—Cape Northern Undertaking

Account No. 5—Border Undertaking

Account No. 6—Durban Undertaking

Account No. 7—Natal Central Undertaking

Account No. 8—Witbank Undertaking

Account No. 9—Rand Undertaking

Account No. 10—Sabie Undertaking

ANNEXURE B—STATISTICAL AND OTHER STATEMENTS

Statement No. 1—Summary of principal plant and equipment installed at the Commission's several Undertakings as at 31st December, 1953.

Statement No. 2—Summary of principal plant and equipment in course of installation or on order as at 31st December, 1953.

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

Statement No. 4—Units sold and number of consumers, 1953.

Statement No. 5—Power Station Statistics, 1953.

Statement No. 6—Power purchased, 1953.

Statement No. 7—Water consumed by power stations, 1953.

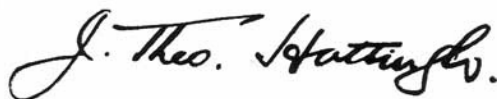
Statement No. 8—Showing the price or rent of land or rights or interests in or over land or other property acquired or hired by the Commission during the year 1953.

Statement No. 9—Coal used at the Commission's steam-raising power stations.

ANNEXURE C—UNION STATISTICS

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

Yours faithfully,



J. THEO. HATTINGH,

Chairman.

ANNEXURE A

THE REPORT OF THE AUDITORS

Johannesburg.

24th May, 1954.

*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, 1953.

REDEMPTION FUND

In the course of our audit we have examined the position of the Redemption Fund established by the Commission in terms of the Schedule to the Electricity Act to provide for the redemption of the loans issued by the Commission.

In the records of the Commission the Redemption Fund is divided into sections corresponding to the loans. The Commission has invested the moneys accruing to each section of the Fund in the investments prescribed in the Schedule to the Act and in valuing the Fund at 31st December, 1953, we have taken into account the market value of the investments at that date.

We find that in the aggregate the value of the Fund at 31st December, 1953, was in excess of the sum required to provide for the redemption of the respective loans over the maximum periods laid down in terms of issue.

The Minister has fixed the date from which provision for redemption of Loan No. 19 commenced at 1st October, 1953. Application has been made to the Minister to fix the date from which provision for redemption of Loan No. 21 shall commence at 1st May, 1954.

We understand that application will be made, within the prescribed period, to the Minister to fix the dates from which provision for redemption of subsequent loans must be made. Provision has been made, however, for the redemption of moneys expended out of such loans on works which had come into commercial operation before 31st December, 1953.

Loan No. 4 of £2,500,000 was redeemed in terms of issue on 30th June, 1953. The investments of the Redemption Fund held for this loan were transferred to other sections of the Fund at their market values at that date. The resulting deficit was applicable to certain Undertakings which had, with the exception of Sabie, surpluses in other sections of the Fund which more than offset the portion of the deficit applicable to them. In the case of Sabie, the portion of the deficit applicable to the Undertaking was recovered from the consumer there.

LOAN FROM INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

The Commission entered into an agreement dated 28th August, 1953, with the Bank to borrow a further sum of \$30,000,000 carrying interest at the rate of 4½% per annum. The amount drawn at 31st December, 1953, was \$3,077,477 equivalent to £1,097,793 and the balance of the loan must be taken up not later than 31st December, 1955. The loan which is secured on all the assets and revenues of the Commission ranks *pari passu* with all other loans issued by the Commission and has, as required by the Bank's constitution, been guaranteed by the Government of the Union of South Africa. The loan, which is for a period of ten years, is repayable in equal half-yearly instalments, the first instalment falling due on 15th September, 1955, and the final one on 15th September, 1963. To avoid losses through fluctuations in the Exchange Rate between South African and United States currencies the Commission has arranged forward dollar cover with the South African Reserve Bank for payments falling due under this agreement.

VERIFICATION OF LANDED PROPERTIES, RIGHTS AND INVESTMENTS

We have verified the documents of title to the Landed Properties, Rights and Investments as shown in the records of the Commission, with the exception of certain documents of title relating to Properties and Rights acquired from the Victoria Falls and Transvaal Power Company Limited to which reference was made by us in previous reports. We are informed that steps are being taken to expedite the transfer of these remaining documents into the name of the Commission.

HEAD OFFICE ADMINISTRATION, ENGINEERING AND GENERAL EXPENSES, INCLUDING PUBLICITY

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

- (a) Capital and Reserve Fund Expenditure.
- (b) Revenue Accounts of all Undertakings in commercial operation.

In view of the considerable amount of time spent by Administrative personnel in connection with Capital Works, the Commission has agreed in principle that a limited portion of the administration and engineering charges should be charged to Capital Account. We are in agreement with this principle and the amount so capitalised during the year under review. The amount allocated to Revenue Accounts of Undertakings has been apportioned by the Commission: we have no reason to disagree with the apportionment so made.

RESERVE FUND

This Fund was established in terms of Section 9 of the Electricity Act 1922 for the purpose, inter alia, of

- (a) Replacement of obsolete plant
- (b) The betterment of plant

and (c) Exceptional repairs.

The Fund is divided into separate sections for the several Undertakings of the Commission and it has been the practice of the Commission that contributions of each Undertaking and interest thereon shall be available to meet Reserve Fund expenditure only at that Undertaking.

The amounts set aside to the Fund have been increased from £277,892 in 1952 to £482,274 in 1953 and the aggregate amount in the Fund now stands at £2,304,382 as compared with £2,192,405 at 31st December, 1952. It seems to us to be open to doubt whether the amount in the Fund at 31st December, 1953, or the amounts set aside during the year 1953 are adequate to achieve the purposes set out above.

REVENUE ACCOUNTS

The results of the operations of the Commission's Undertakings for 1952 and 1953 may be summarised as follows:—

	+ -		Amounts set aside to	
	Surplus/Deficit		Reserve Fund	
	1952	1953	1952	1953
Cape Western ...	-£117,489	-£40,132	£34,892	£54,898
Cape Northern ...	- 11,914	+ 5,090	5,000	6,000
Border ...	- 40,896	- 15,548	3,000	3,000
Durban ...	- 15,245	+ 17,241	15,000	20,000
Natal Central ...	- 20,310	+ 11,526	20,000	20,000
Witbank ...	- 15,035	- 5,352	5,000	5,000
Rand ...	- 197,487	+ 28,166	195,000	373,376
Sabie ...	+ 94	- 60		
	-£418,282	+£931	£277,892	£482,274
Accumulated Deficit carried forward from previous year	-£128,151	-£546,433		
Accumulated Deficit at end of year ...	-£546,433	-£545,502		

The foregoing summary shows that in the year 1953 there has been an overall surplus on Revenue Accounts of £931 and that the accumulated deficit at 31st December, 1953, amounts to £545,502. The general improvement has been

brought about largely by the imposition of surcharges or the upward revision of tariffs during the year, in the case of all Undertakings other than Border Undertaking. In the case of the latter an adjustment of charges was made in November, 1952, and we are informed that the Commission has under consideration a revision of tariffs at this Undertaking at a later stage.

GENERAL

As the result of our audit of the books and accounts of the Commission for the year 1953 and, subject to the foregoing remarks, in terms of Clause 13 (4) of the Electricity Act 1922, we certify as follows:—

- (a) We have found the Accounts of the Commission to be in order.
- (b) The Accounts issued present a true and correct view of the financial position of the Commission and its transactions and of the result of trading.
- (c) Due provision has been made for the redemption and repayment of moneys borrowed.
- (d) As formerly, the Land and Rights, Buildings and Civil Works and Machinery and Plant are set out in the Balance Sheet as on a cost basis. The value of the other assets of the Commission is correctly stated.
- (e) Sums fixed by the Commission have been set aside to the Reserve Fund under Section 9 as prescribed.
- (f) All our requirements as Auditors have been complied with and carried out.

Yours faithfully,

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

Electricity Supply Commission.

Incorporated under the

BALANCE SHEET at

Loan Capital (as per Schedule No. 3)	£105,435,972
Interest Accrued on Loan Capital	671,711
Deferred Liabilities for Assets and Rights Acquired	168,894
Creditors and Credit Balances	7,029,770
Current Liabilities and Provisions.	
Temporary Advances	4,186,557
Amount due to Bankers less Cash on Current Accounts and on Hand	£1,024,267
Advances at Call	3,162,290
Redemption Fund (as per Account No. 1)	18,219,521
Sinking Fund	5,748
Reserve Fund (as per Account No. 2)	2,304,382
Loan Capital and Deferred Liabilities Repaid, less Assets Sold	945,386
Loan Capital (as per Schedule No. 3)	2,500,000
Deferred Liabilities	239,276
	2,739,276
<i>Less</i> —Assets Sold	1,793,890

NOTE—

In addition to the liabilities shown above the Commission is committed to the extent of approximately £58,200,000 for expenditure on Capital Account and £763,000 chargeable against Reserve Fund.

In addition to the annual contributions the Commission is committed to pay £32,131 annually to the Electricity Supply Commission Pension and Provident Fund for the period ending 31st December, 1969, and £11,027 during 1970.

The Commission is committed to purchase £2,000,000 Electricity Supply Commission 5 per cent. Local Registered Stock, 1967/70, from a stockholder at par during the period 1956 to 1958.

£138,967,941

Electricity Act, 1922.

31st DECEMBER, 1953.

Expenditure on Capital Account (at Cost) (as per Schedule No. 1)		£109,369,537
Land and Rights	£854,940	
Buildings and Civil Works	25,919,365	
Machinery and Plant	82,595,232	
Movable Plant and Equipment (less Depreciation)		814,712
Workshop Equipment, Instruments, Tools and Loose Plant	412,199	
Transportation Equipment	244,216	
Furniture and Office Equipment	158,297	
Stores and Materials		5,088,373
Debtors and Debit Balances		1,744,737
Current Debtors less Reserves	1,683,128	
Entire Share Capital of the Rand Mines Power Supply Company, Limited	600	
Expenditure on Investigations in terms of Section 3 (b) of the Act and Payments in Advance	61,009	
Investments		430,847
Amount invested in First Mortgages on Leasehold Properties at Kimberley and on Freehold Properties, in terms of the Electricity Amendment Act, 1941, less Reserve.		
Investment of Redemption Fund (as per Schedule No. 2) ...		18,526,833
(Market Value £15,670,196)		
Investment of Sinking Fund		5,945
Amount invested in Stocks of Electricity Supply Commission, the Government of the Union of South Africa and Municipalities	5,908	
Interest Accrued	37	
(Market Value £5,198)		
Investment of Reserve Fund		2,441,455
Amount invested in Stocks and Securities of Electricity Supply Commission, the Government of the Union of South Africa and Municipalities	2,425,579	
Interest Accrued	15,876	
(Market Value £2,179,174)		
Balance on Revenue Accounts (as per Accounts Nos. 3 to 10)		545,502
Cape Western Undertaking	151,838	
Cape Northern Undertaking	3,848	
Border Undertaking	66,715	
Durban Undertaking	10,897	
Natal Central Undertaking	8,615	
Witbank Undertaking	29,674	
Rand Undertaking	274,059	
Sabie Undertaking	Cr. 144	

£138,967,941

Referred to in our Report of 24th May, 1954.

Schedule of Expenditure on Capital Account at 31st December, 1953.

Expenditure in connection with Electricity Undertakings.	Total at 31st December, 1952	Year ended 31st December, 1953	Total at 31st December, 1953	Expenditure in connection with Electricity Undertakings.	Total at 31st December, 1952	Year ended 31st December, 1953	Total at 31st December, 1953
RAND UNDERTAKING:				CAPE NORTHERN UNDERTAKING:			
Rand.				Land and Rights	£2,294	—	£2,294
Land and Rights	£243,988	£3,766	£247,754	Buildings and Civil Works	86,575	£93,609	180,184
Buildings and Civil Works	1,901,004	356,188	2,257,192	Machinery and Plant	528,558	433,997	962,555
Machinery and Plant	12,968,489	692,933	13,661,422		£617,427	£527,606	£1,145,033
	15,113,481	1,052,887	16,166,368				
Assets Sold	377,492	Cr. 377,492	—	SWARTKOPS RIVER UNDERTAKING:			
	£15,490,973	£675,395	£16,166,368	Land and Rights	£17,353	£29	£17,382
Klip Power Station.				Buildings and Civil Works	613,151	483,636	1,096,787
Land and Rights	£128,325	—	£128,325	Machinery and Plant	632,489	1,049,846	1,682,335
Buildings and Civil Works	1,647,287	£5,780	1,653,067		£1,262,993	£1,533,511	£2,796,504
Machinery and Plant	4,884,708	10,282	4,894,990				
	£6,660,320	£16,062	£6,676,382	BORDER UNDERTAKING:			
Vaal Power Station.				Land and Rights	£6,691	£940	£7,631
Land and Rights	£5,768	Cr. £421	£5,347	Buildings and Civil Works	181,714	£428,592	610,306
Buildings and Civil Works	2,229,255	12,229	2,241,484	Machinery and Plant	905,018	178,019	1,083,037
Machinery and Plant	7,722,726	494,961	8,217,687		£1,093,423	£607,551	£1,700,974
	£9,957,749	£506,769	£10,464,518				
Vierfontein Power Station.				DURBAN UNDERTAKING:			
Land and Rights	£28,754	£2,604	£31,358	Land and Rights	£125,624	£5,582	£131,206
Buildings and Civil Works	2,211,473	1,195,622	3,407,095	Buildings and Civil Works	2,561,922	489,831	3,051,753
Machinery and Plant	3,649,067	2,643,046	6,292,113	Machinery and Plant	6,335,612	1,633,605	7,969,217
	£5,889,294	£3,841,272	£9,730,566		£9,023,158	£2,129,018	£11,152,176
Taaibos Power Station.							
Land and Rights	£3,237	£402	£3,639	NATAL CENTRAL UNDERTAKING:			
Buildings and Civil Works	1,285,841	1,464,331	2,750,172	Land and Rights	£41,976	£5,513	£47,489
Machinery and Plant	316,666	1,794,259	2,110,925	Buildings and Civil Works	1,495,048	64,170	1,559,218
	£1,605,744	£3,258,992	£4,864,736	Machinery and Plant	6,532,716	1,137,584	7,670,300
Wilge Power Station.				Assets Sold	8,069,740	1,207,267	9,277,007
Land and Rights	£128	£223	£351		479,718	Cr. 479,718	—
Buildings and Civil Works	533,391	947,506	1,480,897		£8,549,458	£727,549	£9,277,007
Machinery and Plant	1,949,528	1,453,424	3,402,952				
	£2,483,047	£2,401,153	£4,884,200	WITBANK UNDERTAKING:			
Rand Extension.				Land and Rights	£20,928	£2,334	£23,262
Land and Rights	£31,151	£16,514	£47,665	Buildings and Civil Works	739,778	207,271	947,049
Buildings and Civil Works	358,640	76,102	434,742	Machinery and Plant	2,775,969	160,914	2,936,883
Machinery and Plant	4,668,736	1,470,725	6,139,461	Assets Sold	3,536,675	370,519	3,907,194
	£5,058,527	£1,563,341	£6,621,868		472,687	Cr. 472,687	—
Greater Rand Extension.					£4,009,362	Cr. £192,168	£3,907,194
Land and Rights	£15,087	£635	£15,722				
Buildings and Civil Works	333,918	90,526	424,444	SABIE UNDERTAKING:			
Machinery and Plant	4,307,791	938,380	5,246,171	Land and Rights	£510	—	£510
	£4,656,796	£1,029,541	£5,686,337	Buildings and Civil Works	60,491	—	60,491
TOTAL RAND UNDERTAKING:				Machinery and Plant	35,169	—	35,169
Land and Rights	£456,438	£23,723	£480,161		£96,170	—	£96,170
Buildings and Civil Works	10,500,809	4,148,284	14,649,093	HEAD OFFICE:			
Machinery and Plant	40,467,711	9,498,010	49,965,721	Land	£61,685	—	£61,685
	51,424,958	13,670,017	65,094,975	Buildings and Equipment	343,825	£6	343,831
Assets Sold	377,492	Cr. 377,492	—		£405,510	£6	£405,516
	£51,802,450	£13,292,525	£65,094,975				
CAPE WESTERN UNDERTAKING:				SUMMARY:			
Land and Rights	£70,991	£12,329	£83,320	Land and Rights	£804,490	£50,450	£854,940
Buildings and Civil Works	2,937,858	482,795	3,420,653	Buildings and Civil Works	19,521,171	6,398,194	25,919,365
Machinery and Plant	7,946,758	2,343,257	10,290,015	Machinery and Plant	66,160,000	16,435,232	82,595,232
	10,955,607	2,838,381	13,793,988	Assets Sold	86,485,661	22,883,876	109,369,537
Assets Sold	463,993	Cr. 463,993	—		1,793,890	Cr. 1,793,890	—
	£11,419,600	£2,374,388	£13,793,988		£88,279,551	£21,089,986	£109,369,537

Schedule of Investments of the Redemption Fund at 31st December, 1953.

SCHEDULE No. 2.

INVESTMENTS.

LOCAL REGISTERED STOCKS.

Nominal Value Book Value

Electricity Supply Commission—								Nominal Value	Book Value
4½	per cent.	1953/63	...	...	...	...	£108,475	£108,475
3¼	per cent.	1954/64	...	...	...	...	896,781	896,033
3¼	per cent.	1959/64	...	...	...	...	196,397	195,273
3¼	per cent.	1956/66	...	...	...	...	346,050	321,002
3½	per cent.	1957/67	...	...	...	...	355,677	336,327
3¼	per cent.	1959/64	...	...	...	...	521,310	500,021
3¼	per cent.	1960/65	...	...	...	...	443,400	428,509
3¼	per cent.	1961/66	...	...	...	...	515,900	490,688
3¼	per cent.	1965/70	...	...	...	...	553,500	535,560
3	per cent.	1967/73	...	...	...	...	641,050	612,887
3	per cent.	1968/74	...	...	...	...	1,142,000	1,116,741
3½	per cent.	1968/73	...	...	...	...	6,626,800	6,588,977
3½	per cent.	1969/74	...	...	...	...	296,300	285,509
3¼	per cent.	1969/74	...	...	...	...	42,700	41,846
3¼	per cent.	1965/67	...	...	...	...	50,000	48,500
3¼	per cent.	1964/67	...	...	...	...	600,000	588,000
3¼	per cent.	1964/68	...	...	...	...	100,000	98,000
4½	per cent.	1964/67	...	...	...	...	500,000	486,250
5	per cent.	1964/67	...	...	...	...	324,850	318,081
5	per cent.	1966/68	...	...	...	...	350,050	345,675
5	per cent.	1967/69	...	...	...	...	425,800	420,477
5	per cent.	1968/70	...	...	...	...	195,220	190,235
5	per cent.	1967/70	...	...	...	...	1,180,000	1,165,250
The Government of the Union of South Africa—								Nominal Value	Book Value
3½	per cent.	1953/58	...	...	...	...	25,000	24,824
3½	per cent.	1955/65	...	...	...	...	2,300	2,300
3	per cent.	1956/61	...	...	...	...	40,000	39,289
3	per cent.	1957/66	...	...	...	...	535,000	522,722
3	per cent.	1958/68	...	...	...	...	15,000	14,849
3	per cent.	1959/69	...	...	...	...	100,000	94,751
3	per cent.	1960/70	...	...	...	...	343,700	331,746
Municipal—								Nominal Value	Book Value
Johannesburg:								Nominal Value	Book Value
3¼	per cent.	1956/66	...	...	...	...	1,600	1,600
3½	per cent.	1959	...	...	...	...	6,200	6,200
3¼	per cent.	1960/65	...	...	...	...	20,000	19,057
3¼	per cent.	1962/67	...	...	...	...	129,000	119,246
3½	per cent.	1965	...	...	...	...	1,200	1,200
3¼	per cent.	1965/70	...	...	...	...	294,000	284,895
3	per cent.	1967/77	...	...	...	...	30,000	30,000
Cape Town:								Nominal Value	Book Value
3¼	per cent.	1960/65	...	...	...	...	2,000	2,000
3¼	per cent.	1962/67	...	...	...	...	225,000	222,568
3	per cent.	1976	...	...	...	...	100,000	95,588
Durban:								Nominal Value	Book Value
3¼	per cent.	1962/72	...	...	...	...	115,500	90,090
3¼	per cent.	1965/75	...	...	...	...	45,000	41,484
3¼	per cent.	1966/76	...	...	...	...	50,000	50,000
3	per cent.	1967/77	...	...	...	...	334,000	320,320
Interest Accrued							18,826,700	18,433,045	
							—	93,788	
							18,826,760	18,433,045	
Market Value							£15,670,196		

ALLOCATION OF INVESTMENTS TO LOANS.

Loan No.	Local Registered Stocks.	Nominal Value	Book Value including Interest Accrued
3	£500,000 4½ per cent. 1953/63	£466,025	£464,640
5	£6,750,000 3¼ per cent. 1954/64	4,736,931	4,712,589
6	£2,500,000 3½ per cent. 1959/64	1,462,997	1,459,075
7	£2,000,000 3¼ per cent. 1956/66	1,223,550	1,204,068
8	£2,000,000 3½ per cent. 1957/67	1,102,777	1,086,646
9	£2,000,000 3¼ per cent. 1959/64	1,052,010	1,041,210
10	£1,500,000 3¼ per cent. 1960/65	705,500	697,011
11	£2,000,000 3¼ per cent. 1961/66	857,000	833,968
12	£2,500,000 3¼ per cent. 1965/70	796,100	768,346
13	£3,000,000 3 per cent. 1967/73	575,050	542,034
14	£3,000,000 3 per cent. 1968/74	441,700	412,655
15	£15,000,000 3½ per cent. 1968/73	3,501,000	3,427,550
16	£3,000,000 3½ per cent. 1969/74	379,000	369,467
17	£3,000,000 3¼ per cent. 1969/74	320,000	317,583
18	£5,250,000 3¼ per cent. 1965/67	389,000	379,744
19	£3,000,000 3¼ per cent. 1964/67	205,000	199,633
21	£5,000,000 3¼ per cent. 1964/68	171,000	170,274
22	£4,500,000 4½ per cent. 1964/67	88,350	88,083
23	£5,000,000 5 per cent. 1964/67	81,500	81,250
25	£3,500,000 5 per cent. 1966/68	25,050	24,976
26	£4,000,000 5 per cent. 1967/69	55,000	55,008
27	£4,250,000 5 per cent. 1968/70	22,220	21,653
29	£8,000,000 5 per cent. 1967/70	15,000	14,955
Future—not yet raised		155,000	154,415
		£18,826,760	£18,526,833

Electricity Supply Commission.

SCHEDULE No. 3.

LOAN CAPITAL AT 31st DECEMBER, 1953.

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

LOCAL REGISTERED STOCKS.

						Outstanding	Repaid
Loan No. 3:	£500,000	4 $\frac{1}{2}$	per cent.	1953/63	...	£500,000	
Loan No. 4:	£2,500,000	4 $\frac{1}{2}$	per cent.	1953	...		£2,500,000
Loan No. 5:	£6,750,000	3 $\frac{3}{4}$	per cent.	1954/64	...	6,750,000	
Loan No. 6:	£2,500,000	3 $\frac{1}{2}$	per cent.	1959/64	...	2,500,000	
Loan No. 7:	£2,000,000	3 $\frac{1}{2}$	per cent.	1956/66	...	2,000,000	
Loan No. 8:	£2,000,000	3 $\frac{1}{2}$	per cent.	1957/67	...	2,000,000	
Loan No. 9:	£2,000,000	3 $\frac{3}{4}$	per cent.	1959/64	...	2,000,000	
Loan No. 10:	£1,500,000	3 $\frac{3}{4}$	per cent.	1960/65	...	1,500,000	
Loan No. 11:	£2,000,000	3 $\frac{1}{2}$	per cent.	1961/66	...	2,000,000	
Loan No. 12:	£2,500,000	3 $\frac{1}{2}$	per cent.	1965/70	...	2,500,000	
Loan No. 13:	£3,000,000	3	per cent.	1967/73	...	3,000,000	
Loan No. 14:	£3,000,000	3	per cent.	1968/74	...	3,000,000	
Loan No. 15:	£15,000,000	3 $\frac{1}{2}$	per cent.	1968/73	...	15,000,000	
Loan No. 16:	£3,000,000	3 $\frac{1}{2}$	per cent.	1969/74	...	3,000,000	
Loan No. 17:	£3,000,000	3 $\frac{3}{4}$	per cent.	1969/74	...	3,000,000	
Loan No. 18:	£5,250,000	3 $\frac{3}{4}$	per cent.	1965/67	...	5,250,000	
Loan No. 19:	£3,000,000	3 $\frac{3}{4}$	per cent.	1964/67	...	3,000,000	
Loan No. 21:	£5,000,000	3 $\frac{3}{4}$	per cent.	1964/68	...	5,000,000	
Loan No. 22:	£4,500,000	4 $\frac{1}{2}$	per cent.	1964/67	...	4,500,000	
Loan No. 23:	£5,000,000	5	per cent.	1964/67	...	5,000,000	
Loan No. 25:	£3,500,000	5	per cent.	1966/68	...	3,500,000	
Loan No. 26:	£4,000,000	5	per cent.	1967/69	...	4,000,000	
Loan No. 27:	£4,250,000	5	per cent.	1968/70	...	4,250,000	
Loan No. 29:	£8,000,000	5	per cent.	1967/70	...		

(Payable in full not later than the 30th January, 1954, in terms of the Prospectus)

Fully Paid £7,811,700

Partly Paid 91,365

7,903,065

£93,750,000	Total Local Registered Stocks	£91,153,065	£2,500,000
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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT.

Loan No. 20: £10,732,422 \$30,000,000 4 per cent. 1954/70 10,732,422

Loan No. 28: £10,750,000 \$30,000,000 4 $\frac{1}{2}$ per cent. (to be taken up during the period ending 31st December, 1955)

Amount received to 31st December, 1953 1,097,793

EXPORT-IMPORT BANK OF WASHINGTON.

Loan No. 24: £7,000,000 \$19,600,000 4 per cent. (to be taken up during the period ending 30th June, 1955)

Amount received to 31st December, 1953 2,452,692

£122,232,422

£105,435,972

£2,500,000

Electricity Supply Commission.

Redemption Fund Account for the

Dr.

To Repayment of 4½ per cent. Local Registered Stock, 1953 (Loan No. 4)		£2,500,000
„ Loss on Transfer of Investments held on behalf of 4½ per cent Local Registered Stock, 1953 (Loan No. 4)		253,678
„ Balance as per Balance Sheet		18,219,521
Cape Western Undertaking	£2,510,193	
Cape Northern Undertaking	29,812	
Border Undertaking	63,491	
Durban Undertaking	1,306,998	
Natal Central Undertaking	3,036,392	
Witbank Undertaking	1,240,794	
Rand Undertaking	9,789,907	
Sabie Undertaking	25,637	
Head Office	216,297	
	<u>£18,219,521</u>	

Loan No.	Local Registered Stocks.	
3	£500,000 4½ per cent. 1953/63	£463,105
5	£6,750,000 3¾ per cent. 1954/64	4,668,100
6	£2,500,000 3½ per cent. 1959/64	1,524,761
7	£2,000,000 3¼ per cent. 1956/66	1,198,852
8	£2,000,000 3½ per cent. 1957/67	1,039,074
9	£2,000,000 3¼ per cent. 1959/64	1,014,078
10	£1,500,000 3¾ per cent. 1960/65	678,525
11	£2,000,000 3¼ per cent. 1961/66	793,166
12	£2,500,000 3½ per cent. 1965/70	768,195
13	£3,000,000 3 per cent. 1967/73	561,590
14	£3,000,000 3 per cent. 1968/74	415,539
15	£15,000,000 3¼ per cent. 1968/73	3,423,609
16	£3,000,000 3½ per cent. 1969/74	362,224
17	£3,000,000 3¾ per cent. 1969/74	302,157
18	£5,250,000 3¾ per cent. 1965/67	361,209
19	£3,000,000 3¾ per cent. 1964/67	192,411
21	£5,000,000 3¾ per cent. 1964/68	162,379
22	£4,500,000 4½ per cent. 1964/67	76,261
23	£5,000,000 5 per cent. 1964/67	87,672
25	£3,500,000 5 per cent. 1966/68	38,892
26	£4,000,000 5 per cent. 1967/69	39,353
27	£4,250,000 5 per cent. 1968/70	21,199
29	£8,000,000 5 per cent. 1967/70	3,470
	Future—not yet raised	23,700
		<u>£18,219,521</u>
		<u>£20,973,199</u>

J. VAN NIEKERK, Chief Accountant.

Johannesburg,
22nd April, 1954.

Year ended 31st December, 1953.

Cr.

By Balance at 31st December, 1952, brought forward		£18,301,974
	Loan No.	
Cape Western Undertaking	£2,365,878	3 £432,098
Cape Northern Undertaking	19,263	4 2,461,365
Border Undertaking	41,968	5 4,506,203
Durban Undertaking	1,806,000	6 1,342,719
Natal Central Undertaking	2,864,623	7 1,123,420
Witbank Undertaking	2,723,916	8 1,005,681
Rand Undertaking	8,179,748	9 949,550
Sabie Undertaking	99,470	10 629,815
Head Office	201,108	11 738,836
		12 673,422
		13 432,761
		14 312,949
		15 2,806,483
	<u>£18,301,974</u>	16 271,365
		17 211,171
		18 211,718
		19 100,554
		21 50,332
		22 14,996
		23 9,410
		Future 17,126
		<u>£18,301,974</u>
„ Amounts contributed during the year as per Revenue Accounts		2,036,080
Cape Western Undertaking		239,598
Cape Northern Undertaking		7,362
Border Undertaking		19,964
Durban Undertaking		178,815
Natal Central Undertaking		159,385
Witbank Undertaking		102,361
Rand Undertaking		1,323,343
Sabie Undertaking		5,252
„ Other Contributions		17,485
„ Net Proceeds of Sales of Fixed Property		11,692
„ Net Interest earned on Investments		605,968
		<u>£20,973,199</u>

We hereby certify that we are satisfied as to the correctness of the Accounts and Books of the Redemption Fund and as to the maintenance of the Fund at the amount required by the Schedule to the Electricity Act 1922, subject to the remarks contained in our report dated 24th May, 1954.

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

Electricity Supply Commission.

Dr.

Reserve Fund Account for the Year ended 31st December, 1953.

Cr.

To Expenditure during the year on Replacements and Betterment

Cape Western Undertaking	... ..	£85,300
Cape Northern Undertaking	... ..	3,021
Border Undertaking	... ..	8,817
Durban Undertaking	... ..	38,817
Natal Central Undertaking	... ..	25,912
Witbank Undertaking	... ..	31,064
Rand Undertaking	... ..	257,549
Sabie Undertaking	... ..	132

„ Balance as per Balance Sheet

Cape Western Undertaking	... ..	397,160
Cape Northern Undertaking	... ..	21,937
Border Undertaking	... ..	Dr. 4,187
Durban Undertaking	... ..	90,498
Natal Central Undertaking	... ..	569,033
Witbank Undertaking	... ..	129,887
Rand Undertaking	... ..	1,088,345
Sabie Undertaking	... ..	11,709

£450,612

By Balance at 31st December, 1952, brought forward

Cape Western Undertaking	... ..	£413,012
Cape Northern Undertaking	... ..	18,204
Border Undertaking	... ..	1,695
Durban Undertaking	... ..	105,672
Natal Central Undertaking	... ..	554,782
Witbank Undertaking	... ..	150,994
Rand Undertaking	... ..	936,620
Sabie Undertaking	... ..	11,426

£2,192,405

2,304,382

„ Amounts set aside during the year as per Revenue Accounts

Cape Western Undertaking	... ..	54,898
Cape Northern Undertaking	... ..	6,000
Border Undertaking	... ..	3,000
Durban Undertaking	... ..	20,000
Natal Central Undertaking	... ..	20,000
Witbank Undertaking	... ..	5,000
Rand Undertaking	... ..	373,376

482,274

„ Interest earned on Investments

80,315

 £2,754,994

 £2,754,994

Electricity Supply Commission.

CAPE WESTERN UNDERTAKING.

Dr. Revenue Account for the Year ended 31st December, 1953.

Cr.

Generation of Electricity.

To Proportion of Pooled Costs (as per attached Statement) ...	£544,255
„ Other Operation and Maintenance Costs Operation—	
Fuel	177,575
Water, Oil, Waste and Stores	12,233
Salaries and Wages	29,034
Other Expenses	920
„ Maintenance—	
Stores	2,233
Salaries and Wages	16,767
Other Expenses	1,461

Distribution of Electricity.

„ Operation and Maintenance—	
Stores	25,045
Salaries and Wages	148,797
Other Expenses	26,524

General Expenses.

„ Local Administration and Technical Management	87,109
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	109,706
„ Head Office Administration and General Expenses, including Publicity	25,271
„ Engineering Expenses	13,036

235,122	
Less—Charged to Pooled Costs	12,687

222,435

„ Interest	384,802
„ Redemption Fund	239,598
„ Provision for Repayment of Overseas Loan	6,671
„ Instalments on Deferred Liabilities for Assets Acquired	609
„ Amount set aside to Reserve Fund	54,898

686,578	
Less—Charged to Pooled Costs	84,163

602,415

£1,809,694

To Balance at 31st December, 1952, brought forward	£111,706
„ Balance brought down	40,132

£151,838

By Sales of Electricity—

Traction Supplies	£361,604
Bulk Supplies	415,146
Industrial Supplies	519,233
Domestic and Lighting Supplies	463,560

£1,759,543

„ Other Revenue	10,019
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„ Balance carried down	40,132
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£784,478

200,366

1,207,279

£1,809,694

By Balance as per Balance Sheet	£151,838
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£151,838

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 24th May, 1954.

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

Johannesburg,
22nd April, 1954.

Electricity Supply Commission and City of Cape Town.

Dr. **Statement of Pooled Costs for the Year ended**

31st December, 1953, and Allocation thereof.

Cr.

Pooled Generation of Electricity.

To Operation and Maintenance—

Fuel	£1,069,505	
Water, Oil, Waste and Stores	102,115	
Salaries, Wages and Other Expenses	412,378	
	£1,583,998	
„ General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	35,963	
„ Interest	184,999	
„ Redemption Fund	183,376	
„ Provision for Repayment of Overseas Loan	2,037	
„ Reserve Fund	51,926	
	£2,042,299	

By Allocation of Pooled Costs in terms of Agreement—

Electricity Supply Commission	£544,255	
City of Cape Town	1,493,820	
	£2,038,075	
„ Sundry Revenue		4,224
		£2,042,299

Electricity Supply Commission.

CAPE NORTHERN UNDERTAKING.

Dr. Revenue Account for the Year ended 31st December, 1953. Cr.

Dr.	Revenue Account for the Year	ended 31st December, 1953.	Cr.
Generation of Electricity.			
To Operation—			
Fuel	£99,517		
Water, Oil, Waste and Stores	8,188		
Salaries and Wages	26,624		
Other Expenses	9,433		
„ Maintenance—			
Stores	3,500		
Salaries and Wages	11,249		
Other Expenses	1,180		
„ Electricity Purchased		£159,691	
		8,073	
Distribution of Electricity.			
„ Operation and Maintenance—			
Stores	1,157		
Salaries and Wages	1,414		
Other Expenses	616		
		3,187	
General Expenses.			
„ Local Administration and Technical Management	7,566		
„ General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	5,861		
„ Head Office Administration and General Expenses, including Publicity	2,486		
„ Engineering Expenses	1,282		
		17,195	
		188,146	
„ Interest		11,688	
„ Redemption Fund		7,365	
„ Amount set aside to Reserve Fund		6,000	
„ Balance carried down		5,090	
		£218,287	
To Balance at 31st December, 1952, brought forward		£8,938	
		£8,938	
By Sales of Electricity—			
			£125,892
Bulk Supplies			82,558
Mining Supplies			8,733
Industrial Supplies			605
Domestic Supplies			—
„ Other Revenue			£217,788
			499
			£218,287
By Balance brought down			£5,090
„ Balance as per Balance Sheet			3,848
			£8,938

J. VAN NIEKERK, Chief Accountant Referred to in our Report of 24th May, 1954

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

Electricity Supply Commission.

BORDER UNDERTAKING.

Dr. Revenue Account for the Year

ended 31st December, 1953.

Cr.

Generation of Electricity.

To Operation—			
Fuel	£184,457		
Water, Oil, Waste and Stores	4,448		
Salaries and Wages	36,391		
Other Expenses	1,886		
„ Maintenance—			
Stores	5,732		
Salaries and Wages	18,637		
Other Expenses	2,247		
		£253,798	
„ Electricity Purchased		4,868	

Distribution of Electricity.

„ Operation and Maintenance—			
Stores	832		
Salaries and Wages	9,333		
Other Expenses	2,673		
		12,838	

General Expenses.

„ Local Administration and Technical Management	21,205		
„ General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	16,029		
„ Head Office Administration and General Expenses, including			
Publicity	6,214		
„ Engineering Expenses	3,205		
		46,653	
		318,157	
„ Interest		41,069	
„ Redemption Fund		19,964	
„ Instalments and Provision for Repayment of Deferred			
Liabilities for Assets Acquired		7,252	
„ Amount set aside to Reserve Fund		3,000	
		£389,442	

To Balance at 31st December, 1952, brought forward	£51,167		
„ Balance brought down	15,548		
		£66,715	

By Sales of Electricity—

Bulk Supplies	£280,485		
Industrial Supplies	31,061		
Domestic and Lighting Supplies	61,031		
		£372,577	
„ Sales of Steam			853
„ Other Revenue			464
„ Balance carried down			15,548

By Balance as per Balance Sheet	£66,715
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£66,715

£66,715

J. VAN NIEKERK, Chief Accountant.

Referred to in our report of 24th May, 1954.

Johannesburg,
22nd April, 1954.

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

Electricity Supply Commission.

DURBAN UNDERTAKING.

Dr.

Revenue Account for the Year

ended 31st December, 1953.

Cr.

Generation of Electricity.

To Operation—		
Fuel	£632,509	
Water, Oil, Waste and Stores	28,124	
Salaries and Wages	87,007	
Other Expenses	22,121	
„ Maintenance—		
Stores	39,039	
Salaries and Wages	98,803	
Other Expenses	7,675	
„ Electricity Purchased	£915,278	
„ Electricity supplied by Natal Central Undertaking	7,297	
	3,429	

Distribution of Electricity.

„ Operation and Maintenance—		
Stores	9,383	
Salaries and Wages	27,644	
Other Expenses	6,424	
	43,451	

General Expenses.

„ Local Administration and Technical Management	37,796	
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	45,499	
„ Head Office Administration and General Expenses, including Publicity	19,885	
„ Engineering Expenses	10,258	
	113,438	
	1,082,893	
	218,445	
„ Interest	178,815	
„ Redemption Fund	8,717	
„ Provision for Repayment of Overseas Loan	120	
„ Sinking Fund	20,000	
„ Amount set aside to Reserve Fund	17,241	
„ Balance carried down	£1,526,231	

To Balance at 31st December, 1952, brought forward £28,138

£28,138

By Sales of Electricity—

Traction Supplies	£90,444	
Bulk Supplies	1,257,168	
Industrial Supplies	61,509	
Domestic and Lighting Supplies	107,013	
	£1,516,134	
„ Electricity supplied to Natal Central Undertaking		6,661
„ Other Revenue		3,436

£1,526,231

By Balance brought down £17,241
 „ Balance as per Balance Sheet 10,897

£28,138

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 24th May, 1954.

Johannesburg,
22nd April, 1954.

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

Electricity Supply Commission.

NATAL CENTRAL UNDERTAKING.

Dr. Revenue Account for the Year ended 31st December, 1953. Cr.

Generation of Electricity.				
To Operation—				
Fuel	£381,518			
Water, Oil, Waste and Stores	4,613			
Salaries and Wages	67,592			
Other Expenses	2,052			
„ Maintenance—				
Stores	19,045			
Salaries and Wages	44,908			
Other Expenses	6,155			
„ Electricity supplied by Durban Undertaking		£525,883		
		6,661		
Distribution of Electricity.				
„ Operation and Maintenance—				
Stores	16,318			
Salaries and Wages	73,854			
Other Expenses	10,922			
		101,094		
General Expenses.				
„ Local Administration and Technical Management	45,468			
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	58,486			
„ Head Office Administration and General Expenses, including Publicity	29,414			
„ Engineering Expenses	15,173			
		148,541		
		782,179		
„ Interest		263,467		
„ Redemption Fund		159,385		
„ Provision for Repayment of Overseas Loan		3,081		
„ Instalments on Deferred Liability for Assets Acquired		1,488		
„ Amount set aside to Reserve Fund		20,000		
„ Balance carried down		11,526		
		£1,241,126		
To Balance at 31st December, 1952, brought forward	£20,141			
	£20,141			
By Sales of Electricity—				
Traction Supplies			£560,745	
Bulk Supplies			404,881	
Mining Supplies			71,015	
Industrial Supplies			100,036	
Domestic and Lighting Supplies			89,398	
			£1,226,075	
„ Electricity supplied to Durban Undertaking				3,429
„ Other Revenue				11,622
				£1,241,126
By Balance brought down				£11,526
„ Balance as per Balance Sheet				8,615
				£20,141

J. VAN NIEKERK, Chief Accountant. Referred to in our Report of 24th May, 1954.

Electricity Supply Commission.

WITBANK UNDERTAKING.

Dr. Revenue Account for the Year

ended 31st December, 1953.

Cr.

Generation of Electricity.

To Operation—			
Fuel	£255,803		
Water, Oil, Waste and Stores	12,968		
Salaries and Wages	71,408		
Other Expenses	1,791		
.. Maintenance—			
Stores	42,092		
Salaries and Wages	40,183		
Other Expenses	20,321		
.. Electricity Purchased		£444,566	
.. Electricity supplied by Rand Undertaking		31,023	
		305,777	

Distribution of Electricity.

.. Operation and Maintenance—			
Stores	4,016		
Salaries and Wages	17,139		
Other Expenses	1,516		
		22,671	

General Expenses.

.. Local Administration and Technical Management	28,255		
.. General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	51,225		
.. Head Office Administration and General Expenses, including Publicity	23,614		
.. Engineering Expenses	12,181		
		115,275	

.. Interest	919,312		
.. Redemption Fund	113,299		
.. Provision for Repayment of Overseas Loan	102,361		
.. Amount set aside to Reserve Fund	1,775		
	5,000		
		£1,141,747	

To Balance at 31st December, 1952, brought forward	£24,322		
.. Balance brought down	5,352		
		£29,674	

By Sales of Electricity—

Traction Supplies	£336,800		
Bulk Supplies	20,061		
Mining Supplies	182,428		
Industrial Supplies	165,299		
Domestic and Lighting Supplies	34,031		
		£738,619	
.. Electricity supplied to Rand Undertaking			386,268
.. Other Revenue			11,508
.. Balance carried down			5,352

By Balance as per Balance Sheet	£29,674		
		£29,674	

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 24th May, 1954.

Johannesburg,
22nd April, 1954.

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

Electricity Supply Commission.

RAND UNDERTAKING.

Dr. Revenue Account for the Year ended 31st December, 1953. Cr.

Generation.			
To Operation—			
Fuel	£2,988,966		
Water, Oil, Waste and Stores	89,275		
Salaries and Wages	599,479		
Other Expenses	23,474		
.. Maintenance—			
Stores	240,249		
Salaries and Wages	430,361		
Other Expenses	75,052		
.. Electricity Purchased		£4,446,856	
.. Electricity supplied by Witbank Undertaking		632,874	
		386,268	
Distribution.			
.. Operation and Maintenance—			
Stores	119,374		
Salaries and Wages	448,424		
Other Expenses	22,658		
		590,456	
General Expenses.			
.. Local Administration and Technical Management	203,338		
.. General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	300,111		
.. Head Office Administration and General Expenses, including Publicity	57,877		
.. Engineering Expenses	29,856		
		591,182	
.. Interest		6,647,636	
.. Redemption Fund		1,552,505	
.. Provision for Repayment of Overseas Loan		1,323,343	
.. Instalment and Provision for Repayment of Deferred Liability for Rights Acquired		36,541	
.. Amount set aside to Reserve Fund		4,669	
.. Balance carried down		373,376	
		28,166	
		£9,966,236	
To Balance at 31st December, 1952, brought forward		£302,225	
		£302,225	
By Sales of Electricity—			
Bulk Supplies	£939,968		
Mining Supplies	6,348,403		
Industrial Supplies	1,640,623		
Domestic and Lighting Supplies	59,561		
		£8,988,555	
.. Sales of Air and Steam			630,815
.. Electricity supplied to Witbank Undertaking			305,777
.. Other Revenue			41,089
			£9,966,236
By Balance brought down			£28,166
.. Balance as per Balance Sheet			274,059
			£302,225

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 24th May, 1954.

Johannesburg,
22nd April, 1954.

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

Electricity Supply Commission.

SABIE UNDERTAKING.

Dr. Revenue Account for the Year

ended 31st December, 1953.

Cr.

Generation of Electricity.

To Operation—	
Water, Oil, Waste and Stores	£110
Salaries and Wages	4,815
„ Maintenance—	
Stores	42
Salaries and Wages	190
Other Expenses	84
	£5,241

Distribution of Electricity.

„ Operation and Maintenance—	
Stores	43
Salaries and Wages	586
Other Expenses	188
	817

General Expenses.

„ Local Administration and Technical Management	328
„ General Expenses (including Maintenance of Quarters, Insurance, Pension Fund Contributions, etc.)	870
„ Head Office Administration and General Expenses, including Publicity	950
„ Engineering Expenses	490
	2,638
	8,696
„ Interest	2,605
„ Redemption Fund	5,252
	£16,553

To Balance brought down	£60
„ Balance as per Balance Sheet	144
	£204

By Sales of Electricity—

Mining Supplies	£16,493
„ Balance carried down	60

£16,553

By Balance at 31st December, 1952, brought forward £204

£204

J. VAN NIEKERK, Chief Accountant.

Referred to in our Report of 24th May, 1954.

Johannesburg,
22nd April, 1954.

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

ANNEXURE B

STATEMENT No. 1

Electricity Supply Commission

POWER STATIONS: PRINCIPAL EQUIPMENT INSTALLED AS AT 31st DECEMBER, 1953.

Undertaking and Area (Square Miles)	Electric Power-Station	Type	Station Capacity MW	BOILERS		MAIN GENERATORS		HOUSE SETS		
				No.	Continuous Maximum Rating, Each, thousand lb/hr	No.	Normal Rating Each MW	No.	Normal Rating Each MW	
Border 21,500	Alice	Oil	0.52	—	—	1	0.055			
	King William's Town	Steam	4.5	1	10.0	2	1.5			
		Oil			3	12.0	1	0.5		
							1	1.0		
	West Bank No. 1	Steam	32.0	4	21.5	1	1.5			
				2	27.5	2	4.0			
				4	55.0	3	7.5			
Cape Northern 14,800	Central, Kimberley	Steam	25.5	8	30.0	1	3.0			
				1	75.0	1	5.0			
						1	5.5			
						2	6.0			
Cape Western 12,600	Salt River } No. 1 Hex River }	Steam	90.3	2	60.0	3	10.0	1	0.3	
				6	100.0	3	20.0			
				4	200.0	3	20.0			
Durban 1,900	Congella Nos. 1 and 2	Steam	206.0	6	60.0	3	12.0			
				4	100.0	1	20.0			
				7	200.0	1	30.0			
	Port Shepstone	Oil	3.4	—	—	2	0.7			
						2	1.0			

Natal Central 11,300	Colenso Nos. 1 and 2	Steam	135-0	8 4 4	60-0 80-0 180-0	5 3	12-0 25-0		
	Volkstrust	Oil	0-5	—	—	2	0-25		
Rand 39,300	Brakpan	Steam	48-0	8	28-0	1	3-0	4	7-0
				10	45-0	2	12-5		
				1	70-0	1	20-0		
	Klip	Steam	424-0	24	180-0	12	33-0		
				32	38-0	5	9-6		
	Rosherville	Steam	60-5	ε	48-0	1	12-5		
	Simmerpan	Steam	40-0	4	20-0	1	3-0	3	7-0
12				25-0	5	3-0			
8				48-0	2	11-0			
Vaal	Steam	318-0	17	190-0	9	33-0			
Vereeniging	Steam	157-5	20	45-0	3	20-0			
			2	60-0	3	32-5			
			5	180-0					
Vierfontein	Steam	90-0	4	210-0	3	30-0			
Sabie 200	Sabie Gorge	Hydro	1-35	—	—	3	0-45		
Witbank 2,640	Witbank	Steam	128-0	20 2	70-0 80-0	6	20-0	1	8-0

SUMMARY:

Total Number of Boilers	...	...	...	...	...	...	245
Total Boiler House Rating	...	...	...	...	...	...	20,900,000 lb./hr.
Total Number of Main Generators	...	...	...	...	...	...	106 Capacity 1,767-77 MW
Total Number of House Sets	...	...	...	...	...	...	9 Capacity 57-30 MW
Total Plant Capacity (Electricity	...	...	...	...	...	...	1,825-07 MW

Major Items of Plant Commissioned 1953

Hex River	...	...	...	1-20 MW Generator
Vaal	...	...	...	1-33 MW Generator
Vierfontein	...	...	...	3-30 MW Generators

Statement No. 1—(continued)

COMPRESSED AIR POWER STATIONS: RAND UNDERTAKING

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

CAPACITY OF TRANSFORMERS IN SERVICE AT 31st DECEMBER, 1953.

Undertaking	Number	MVA
Border	128	41.0
Cape Northern	56	24.9
Cape Western	2,092	397.6
Durban	443	124.4
Natal Central	1,130	442.4
Rand	2,353	6,654.3
Sabie	13	3.6
Witbank	391	332.0
At Compressor Stations, Rand	51	354.0
TOTALS	6,657	8,374.2

- (1) Transmission Lines and Cables: Circuit Miles (excludes Service Connections on Reticulation Systems).
 (2) Telephone and Pilot Cables: Circuit Miles.

(1) OVERHEAD TRANSMISSION LINES

Undertaking	132 kV	88 kV	66 kV	33 kV and 40 kV	10 kV to 22 kV	2.0 kV to 6.6 kV	525 V 380/220	Totals
Border	—	—	—	46	27	4	50	127
Cape Northern	—	—	—	—	83	—	—	83
Cape Western	—	—	245	310	616	267	429	1,867
Durban	—	123	—	18	186	41	139	507
Natal Central	132	597	—	96	571	176	140	1,712
Rand	327	1,838	—	745	230	115	59	3,314
Sabie	—	—	—	—	7	—	1	8
Witbank	—	86	—	—	253	43	53	435
Totals	459	2,644	245	1,215	1,973	646	871	8,053

UNDERGROUND CABLES

Border	—	—	—	—	15	2	—	17
Cape Western	—	—	—	60	54	7	23	144
Durban	—	—	—	—	3	1	2	6
Natal Central	—	—	—	—	2	5	3	10
Rand	—	—	—	—	95	100	11	206
Witbank	—	—	—	—	22	12	2	36
Totals	—	—	—	60	191	127	41	419

TOTAL OVERHEAD LINES AND UNDERGROUND CABLES: 8,472 CIRCUIT MILES.

(2) TELEPHONE AND PILOT CABLES

Cape Western	...	...	...	93
Rand	...	...	...	884
Witbank	...	...	...	11
				988 circuit miles.

POWER-STATIONS: PRINCIPAL EQUIPMENT ON ORDER AS AT 31st DECEMBER, 1953

Undertaking	Electric Power-Station	BOILERS		GENERATORS		Transmission Lines Circuit Miles	TRANSFORMERS	
		No.	Continuous Maximum Rating Each, thousand lb/hr	No.	Normal Rating Each MW		No.	Capacity MVA
Border ...	West Bank No. 2	2	170	2	15.0	22	6	7
Cape Northern ...	Central, Kimberley	3	75	1	5.5	—	17	22
Cape Western ...	Salt River No. 2	6	260	4	30.0	52	91	167
Durban ...	{ Congella No. 2 Umgeni	1 4	200 180	2	30.0	—	43	198
Natal Central ...	Colenso No. 2	1	180	—	—	—	48	24
	{ Robinson Taaibos Vaal	7 1	580 190	7	60.0	—	—	—
Rand ...	{ Vereeniging Vierfontein Wilge	1 13 { 4 4	180 210 150 400	— 7 2 2	— 30.0 30.0 60.0	353	369	3,613
Swartkops ...	Swartkops	2	210	2	20.0	—	—	—
Witbank ...	Witbank	—	—	—	—	—	3	75

SUMMARY:

Number of Boilers ...	49	...	...	C.M.R. 13,005,000 lb/hr
Number of Generators ...	29	...	...	Total Rating 1,065.5 MW
Transmission Lines ...	427	...	...	Circuit Miles
Transformers ...	577	...	...	Rating 4,106 MVA

STATEMENT No. 3

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

Million Units

Year	Border	Cape Northern	Cape Western	Durban	Klip	Natal Central	Rand	Sabie	Vaal	Witbank	Totals
1925			0.3			0.7		0.08		160.0	0.08
1926			5.8			104.2		0.7		439.1	161.7
1927			31.0	15.6		114.2		1.9		464.3	551.0
1928			47.9	78.9		123.9		2.8		543.1	627.9
1929			49.8	99.1		117.1		3.2		619.0	797.0
1930			52.1	103.9		101.1		4.6		603.4	889.6
1931			64.2	109.8		100.3		6.6		610.3	867.1
1932			100.7	118.5		109.2		6.3		639.4	890.7
1933			73.6	131.1		124.9		6.3		648.3	974.1
1934			80.0	149.8		154.3		7.3		727.9	985.2
1935			85.8	170.4	557.0	171.5		7.2		696.4	1,119.2
1936			94.0	189.4	1,349.9	210.6		6.9		684.5	1,688.0
1937			98.8	209.5	1,666.9	234.9		7.2		708.1	2,535.6
1938			106.5	233.7	2,193.2	266.2		7.2		767.7	2,985.4
1939			119.8	242.7	2,566.6	281.1		6.4		853.3	3,573.7
1940			136.2	270.3	2,675.9	302.4		6.7		862.6	4,070.2
1941			151.8	273.8	2,707.8	307.7		6.6		873.4	4,320.8
1942			145.7	293.4	2,669.1	312.4		6.3		849.1	4,275.6
1943			158.7	321.6	2,703.6	336.0		5.9		889.2	4,415.8
1944			165.9	348.8	2,643.0	333.2		6.7	377.9	830.7	4,706.1
1945			184.6	369.7	2,614.3	347.0		6.6	582.5	896.9	5,002.4
1946			198.6	402.6	2,547.2	346.0		7.4	608.6	887.7	5,114.5
1947	56.2		222.4	448.7	1,207.4	367.9	2,185.7	7.6	435.1	633.2	5,576.9
1948	69.2		249.5	513.0		371.8	4,653.9	7.3		358.3	6,222.2
1949	68.7		271.9	561.8		406.5	5,151.8	7.0		378.5	6,910.6
1950	79.9	53.9	303.5	617.0		433.4	5,563.2	6.3		386.8	7,456.5
1951	88.0	58.5	341.2	655.6		454.0	6,039.6	6.1		425.0	8,080.5
1952	97.7	61.3	375.5	713.2		492.3	6,560.0	6.1		409.9	8,732.2
1953	107.8	67.1						6.4			

Notes.—(1) The units sold at Cape Western since 1934 do not include the units supplied to Cape Town City Council under the Pooling Agreement.
(2) The units purchased from Durban Corporation for sale down the South Coast are included in the Durban Undertaking figures above.
(3) The decreases of Klip, Vaal and Witbank are due to the E.S.C. taking over the V.F.P. at 00.00 hours on 1st July, 1948, since when Klip and Vaal became part of the Rand Undertaking, whilst Witbank now interchanges to Rand Undertaking.

UNITS SOLD AND NUMBER OF CONSUMERS, 1953 (Electricity, Air and Steam)

By use:—
ELECTRICITY

Undertaking	TRACTION			BULK			MINING	
	Units	Per cent. Traction	No. Cons.	Units	Per cent. Bulk	No. Cons.	Units	Per cent. Mining
Border ...				96,738,410	5.899	1		
Cape Northern ..				42,613,375	2.598	3	23,643,997	0.499
Cape Western ...	70,561,892	12.072	2	117,171,259	7.145	22		
Durban ...	44,708,061	7.649	1	630,424,965	38.440	2		
Natal Central ...	268,346,047	45.911	1	159,888,375	9.749	15	22,804,662	0.482
Rand ...				585,128,061	35.678	54	4,604,525,563	97.214
Sabie ...							6,398,798	0.135
Witbank ...	200,882,083	34.368	1	8,047,000	0.491	3	79,091,734	1.670
Total Electricity ...	584,498,083	100.000	5	1,640,011,445	100.000	100	4,736,464,754	100.000
Per cent. ...	6.878			19.299			55.736	

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	
	3,565,033	0.254	108	7,258,287	5.379	2,078	107,561,730	1.266	2,187
3	762,836	0.055	34	72,851	0.054	32	67,093,059	0.789	72
	106,342,424	7.584	1,735	81,470,342	60.378	20,088	375,545,917	4.419	21,847
	22,771,168	1.624	211	15,309,131	11.345	3,626	713,213,325	8.393	3,840
10	29,842,061	2.128	472	11,417,299	8.461	3,840	492,298,444	5.793	4,338
101	1,123,585,891	80.135	352	12,746,941	9.447	1,581	6,325,986,456	74.441	2,088
1							6,398,798	0.075	1
29	115,256,331	8.220	103	6,659,979	4.936	1,818	409,937,127	4.824	1,954
144	1,402,125,744	100.000	3,015	134,934,830	100.000	33,063	8,498,034,856	100.000	36,327
	16.499			1.588			100.000		

AIR AND STEAM

Border: Steam ..								
Rand: Air ...				2,767,564		1	211,858,567	95.743
Steam ...							9,419,000	4.257
Total Air and Steam				2,767,564		1	221,277,567	100.000
Per cent. ...				1.182			94.496	

	208,194	2.057	2				208,194	0.089	2
13	9,911,837	97.943	22				224,537,968	95.889	36
1							9,419,000	4.022	1
14	10,120,031	100.000	24				234,165,162	100.000	39
	4.322						100.000		

ELECTRICITY, AIR AND STEAM

Grand Total ...	584,498,083		5	1,642,779,009		101	4,957,742,321	
Per cent. ...	6.694			18.813			56.775	

158	1,412,245,775		3,039	134,934,830		33,063	8,732,200,018		36,366
	16.173			1.545			100.000		

By Province:—

Cape ...	70,561,892	12.072	2	261,234,353	15.902	27	23,643,997	0.477
Natal ...	304,580,581	52.110	1	772,497,405	47.024	14	22,804,662	0.460
O.F.S. ...	8,473,527	1.450	1	67,234,450	4.093	13	659,204,800	13.296
Transvaal ...	200,882,083	34.368	1	541,812,801	32.981	47	4,252,088,862	85.767

3	110,878,487	7.851	1,879	88,801,480	65.811	22,198	555,120,209	6.357	24,109
10	51,114,351	3.619	564	23,169,025	17.171	5,703	1,174,166,024	13.446	6,292
16	56,382,945	3.993	70	932,631	0.691	488	792,228,353	9.073	588
129	1,193,869,992	84.537	526	22,031,694	16.327	4,674	6,210,685,432	71.124	5,377

Air and Steam— 2.682 }
Electricity —97.318 } per cent. of total sales.

POWER STATION OPERATING STATISTICS: YEAR, 1953.

STEAM ELECTRIC:

Power Station	Units Generated	Units Sent Out	MAXIMUM DEMANDS		Station Load Factor % Sent Out	Coal Burned Tons (2,000 lb)	LB OF COAL		Calorific Value of Coal B.Th.U. as Recd. (Weighted Average)	B.Th.U. PER UNIT		OVERALL THERMAL EFFICIENCY %	
			$\frac{1}{2}$ Hour (or Hour) Sent Out kW	Peak kW			Per Unit Generated	Per Unit Sent Out		Gene-rated	Sent Out	Gene-rated	Sent Out
Brakpan	201,173,487	186,661,706	Hour 44,187	—	48.2	269,886	2.683	2.892	9,260	24,840	26,780	13.74	12.74
Central, Kimberley ...	69,517,387	65,394,477	16,150	16,900	46.7	71,672	2.062	2.192	12,260	25,280	26,870	13.50	12.70
Colenso No. 1 and No. 2 ...	541,732,240	512,154,210	96,230	115,000	60.8	382,785	1.413	1.495	12,180	17,210	18,210	19.83	18.74
Congella No. 1 and No. 2 ...	779,007,600	720,697,340	170,436	190,000	48.3	498,252	1.279	1.383	12,000	15,350	16,600	22.23	20.55
Hex River	172,435,730	163,090,540	45,500	47,800	40.9	100,552	1.166	1.233	12,000	13,990	14,800	24.39	23.05
King William's Town ...	10,628,339	10,007,669	2,930* Hour	3,030*	39.1	10,071	1.895	2.013	12,760	24,180	25,690	14.11	13.28
Klip	2,860,542,672	2,674,869,718	363,695 Hour	—	84.0	2,256,980	1.578	1.688	9,690	15,280	16,340	22.33	20.88
Rosherville	237,609,081	215,906,690	48,446 Hour	—	50.9	353,729	2.977	3.277	9,910	29,500	32,480	11.57	10.51
Salt River No. 1	152,011,533	140,252,269	46,500 Hour	51,500	34.4	114,973	1.513	1.640	12,100	18,310	19,840	18.63	17.20
Simmerpan	133,482,831	126,740,358	34,169 Hour	—	42.3	238,399	3.572	3.762	9,120	32,580	34,310	10.47	9.94
Vaal	2,059,865,473	1,942,727,085	284,825 Hour	—	77.9	1,645,170	1.597	1.694	8,980	14,340	15,210	23.79	22.43
Vereeniging	879,795,655	824,607,667	131,378 Hour	—	71.7	975,730	2.218	2.367	9,020	20,010	21,350	17.05	15.98
Vierfontein from 4/5/53 ...	264,525,360	245,353,679	84,684 Hour	—	51.0	217,006	1.641	1.769	9,130	14,980	16,150	22.78	21.13
West Bank, East London ...	101,887,810	96,941,320	21,790 Hour	23,200	50.8	90,849	1.783	1.874	11,930	21,270	22,360	16.04	15.26
Witbank	835,524,010	778,299,834	112,973 Hour	—	78.6	735,330	1.760	1.890	10,980	19,320	20,750	17.66	16.44
Totals	9,299,739,208	8,703,704,562				7,961,384							

* Includes Diesel Plant.

STEAM GENERATION:

Station	Units Generated	Units Sent Out	Coal Burned Tons of 2,000 lb.	lb. Coal Per Units Sent Out	Max. Sustained Load over 1 Hour kW	Load Factor %
Brakpan	9,486,060	9,419,000	16,839	3.576	5.458	19.7
King William's Town	208,194	208,194	210			
Total Steam	9,694,254	9,627,194	17,049			

HYDRO ELECTRIC:

Power Station	Units Generated	Units Sent Out	Maximum Demand kW		Station Load Factor Sent Out	Rain	
			$\frac{1}{2}$ Hr. Sent Out	2 Mins. Generated		Inches	mm.
Sabie ...	6,705,900	6,562,400	1,300	1,320	57.6	58.09	1,475

Statement No. 5—(continued)
POWER STATION OPERATING STATISTICS: YEAR 1953

DIESEL ELECTRIC:

Power Station	Units Generated	Units Sent Out	Maximum Demands kW		Load Factor % ½ Hour Sent Out	Fuel Consumed		Lub. Oil Galls.
			½ Hour	2 Mins.		Total lb	Per kWh Sent Out	
Alice	471,207	443,394	201	224	25.2	339,295	0.765	954
King William's Town	26,119	26,119	900	1,000	*	15,345	0.588	24
Port Shepstone	165,574	162,221	3,020	3,175	0.6	105,909	0.653	405
Volksrust	4,365	4,365	—	—	—	4,426	1.014	27
TOTALS	637,265	636,099				464,975		1,410

COMPRESSED AIR GENERATION:

* In parallel with Steam Plant.

Station	Type*	Air Units Generated	Air Units Sent Out		Coal Burned		Electric Input		Max. Sustained Load over One Hour	Load Factor %
			Units	%	Total Tons	lb Coal/Units Sent Out	Total kWh excluding Losses	Units Sent Out/kWh		
Central Rand Compressed Air System:—										
Rosherville	Steam	125,170,700	124,894,400	55.87	171,906	2.753	67,720,253	79.88	} 70,390	36.3
Robinson	Electric	54,091,800	54,091,800	24.19	—	—	53,361,177	83.54		
Canada Dam	Electric	44,578,400	44,578,400	19.94	—	—	—	—		
Air Pipe-line Totals		223,840,900	223,564,600		171,906	—	121,081,430			
Other Air Stations:—										
Modder B and New Modder	Electric	8,503,527	8,503,527				9,949,765	85.46		
Total Air		232,344,427	232,068,127		171,906		131,031,195			

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

GENERATION SUMMARY:

TOTAL COAL BURNED
 = Steam Driven Generating Stations + Compressed Air Steam Driven Stations + Steam Sales.
 = 7,961,384 + 171,906 + 17,049.
 = 8,150,339 tons of 2,000 lb. (increase of 309,158 over 1952 or 3.943%).

TOTAL UNITS GENERATED
 = Electricity (Steam + Hydro) + Air Units Generated at Steam Driven Stations + Steam Units Generated.
 = Steam 9,299,739,208 }
 Hydro 6,705,900 } 9,307,112,373 + 125,170,700 + 9,694,254.
 Diesel 667,265 }
 = 9,441,977,327 (increase of 664,021,181 or 7.565% over 1952).

POWER PURCHASED.

Under-taking	Purchased From	Maximum Demand	UNITS	
Border	East London, Municipality of ...	414 kVA		1,142,705
Cape Northern	Kimberley, City of	760 kVA		1,850,000
Durban	Durban, City of At Canelands At Warner Beach	564 kW 2,772 kW	1,455,251 1,659,600	3,114,851
Rand	Johannesburg, City of ex Orlando at Bantjes Substation at Rosherville Switching Station ...	*67,680 kW	167,919,081 22,207,237	190,126,318 15,616,707 230,135,444 21,054,257 38,601,190 48,767,508
	Middle Witwatersrand (Western Areas), Ltd.	2,000 kW		
	Pretoria, City of for use of Rand Undertaking ... for use of Witbank Undertaking	43,000 kW	211,666,116 18,469,328	
	Pretoria Portland Cement Co., at Slurry	2,000 kW		
	Rand Water Board Vereeniging Zwartkopjes	4,960 kW 12,000 kW	7,004,494 31,596,696	
	The Randfontein Estates G.M. Co. (W) Ltd.	13,320 kW		

*Simultaneous Demand.

TOTAL UNITS PURCHASED

550,408,980

(6.303% of Units Sold)

Note re Cape Western Undertaking:

Under the Pooling Agreement, the E.S.C. received 252,731,934 Units from the Pool, which includes 140,252,269 Units sent out from Salt River Power Station.

STATEMENT No. 7

**WATER (OTHER THAN SEA WATER) CONSUMED BY POWER
STATIONS FOR THE YEAR 1953
(Millions of Gallons)**

Undertaking	Potable Water	Crude River Water	Water from Other Sources including Bore-holes, Dams and Sewage
Border	15		15
Cape Northern	60		180
Cape Western	22	142	
Durban	121		
Natal Central	31	161	
Rand (including Witbank Power Station)	247	6,664	902

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

STATEMENT NO. 8

**STATEMENT SHOWING THE PRICE OR RENT OF LAND OR
INTERESTS IN OR OVER LAND OR OTHER PROPERTY
ACQUIRED OR HIRED BY THE COMMISSION
DURING THE YEAR 1953**

(See previous Annual Reports for Rights or Interests in or over land
acquired prior to 1953)

Cape Western Undertaking

Immovable Property acquired to the value of	...	...	...	£6,052	0	0
Servitudes acquired—capitalised payments to the amount of	...	...	...	1,562	1	9

Natal Central Undertaking

Immovable Property acquired to the value of	...	...	...	3,369	3	6
Servitudes acquired—capitalised payments to the amount of	...	...	...	2,262	13	3

Durban Undertaking

Immovable Property acquired to the value of	...	...	...	525	0	0
Servitudes acquired—capitalised payments to the amount of	...	...	...	3,624	12	10
Property hired on lease—annual rentals to the amount of	...	...	...	13	0	0

Witbank Supply System

Servitudes acquired—capitalised payments to the amount of	1,067	19	6
---	-----	-----	-----	-------	----	---

Border Undertaking

Property hired on lease—annual rentals to the amount of	705	0	0
---	-----	-----	-----	-----	---	---

Cape Northern Undertaking

Property hired on lease—annual rentals to the amount of	750	0	0
---	-----	-----	-----	-----	---	---

Rand Undertaking

Immovable Property acquired to the value of	...	...	...	49,543	6	3
Servitudes acquired—capitalised payments to the amount of	...	...	...	742	8	9
Servitudes acquired—option moneys paid to the amount of	...	...	...	1,617	19	3
Industrial Stands acquired—licence moneys paid to the amount of	...	...	...	126	0	0
Property hired on lease—annual rentals to the amount of	...	...	...	198	0	0

Swartkops Power Station

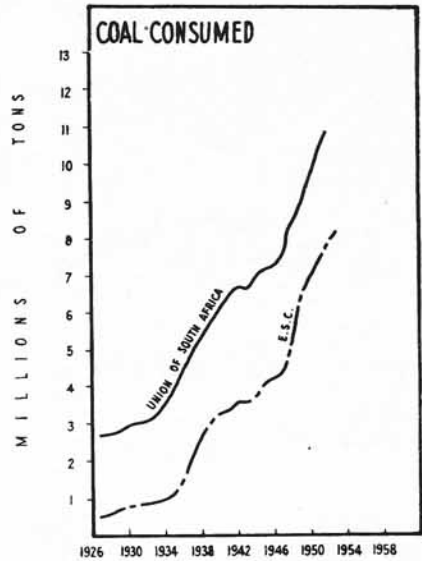
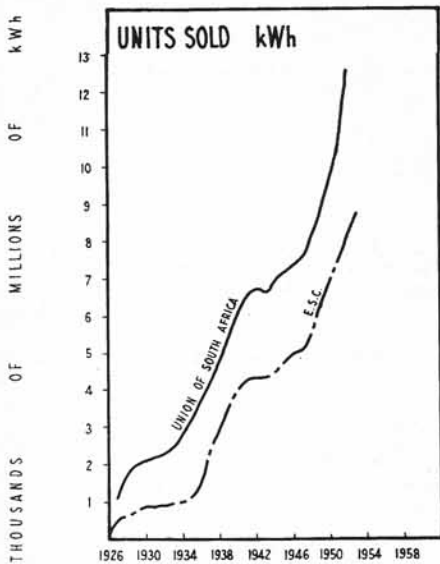
Immovable Property acquired to the value of	9,150	0	0
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COAL USED AT COMMISSION'S STEAM-RAISING POWER STATIONS

Average Cost per ton (2,000 lb)

Power Station	1945		1946		1947		1948		1949		1950		1951		1952		1953	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Brakpan	—	—	—	—	—	—	7	9	7	8	8	9	8	10	9	7	10	1
Colenso	10	8	10	11	11	4	11	6	12	9	13	2	14	3	18	6	19	11
Congella	15	4	15	7	16	4	16	4	18	0	19	5	20	0	23	6	25	4
East London ...	—	—	—	—	26	7	26	11	28	6	30	5	31	6	34	0	35	4
Hex River	—	—	—	—	—	—	—	—	—	—	23	1	24	4	26	4	27	9
Kimberley, Central	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Klip	4	2	4	4	4	5	4	1	4	7	5	0	7	7	9	8	11	7
King William's Town	—	—	—	—	—	—	27	10	29	6	31	8	33	1	37	2	39	9
Rosherville ...	—	—	—	—	—	—	8	3	8	5	9	5	10	7	12	9	15	0
Salt River ...	25	4	25	9	28	1	28	5	29	6	32	5	33	10	35	3	37	5
Simmerpan ...	—	—	—	—	—	—	8	4	8	3	9	6	9	9	10	9	11	3
Vaal	5	10	6	0	5	7	4	11	4	9	5	4	5	11	6	8	6	10
Vereeniging ...	—	—	—	—	—	—	4	11	4	10	5	5	5	9	6	9	7	3
Vierfontein ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Witbank	2	4	2	9	3	4	4	0	3	9	4	2	4	6	5	10	6	11

ANNEXURE C



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

