



**Dr. H. J. van der Bijl inaugurating construction of the Vaal Power Station, March, 1939.**



Dr. H. J. van der Bijl inaugurating construction of the Vaal Power Station, March, 1939.

MEMBERS OF THE  
**Electricity Supply Commission.**

---

DR. HENDRIK JOHANNES VAN DER BIJL (Chairman).

ALBERT MICHAEL JACOBS.

ROBERT BURNS WATERSTON.

WILLIAM PLOWMAN MOYESE HENDERSON.

## CONTENTS.

	Pages.
Introductory ... ..	5-6
Financial ... ..	6-7
Sales of Electricity ... ..	7-11
Railway Electrification ... ..	13-15
Rural Electrification ... ..	15-17
Domestic Development ... ..	17
Promotional Work ... ..	19
Staff ... ..	19
Commission's Undertakings:—	
Natal Central ... ..	23-25
Witbank ... ..	27-29
Cape Town ... ..	31-35
Durban ... ..	37-38
Sabie ... ..	39
Klip Generating Station ... ..	41
Rand Extension ... ..	43
Vaal Generating Station ... ..	45
Municipal Electricity Supply Schemes ... ..	46
Annexure "A"—Accounts ... ..	50-81
Annexure "B"—Statistical and other Statements ... ..	82-90
Annexure "C"—Union Statistics ... ..	91-93



MEMBERS OF THE  
**Electricity Supply Commission.**

---

DR. HENDRIK JOHANNES VAN DER BIJL (Chairman).

ALBERT MICHAEL JACOBS.

ROBERT BURNS WATERSTON.

WILLIAM PLOWMAN MOYESE HENDERSON.

## CONTENTS.

	Pages.
Introductory ... ..	5-6
Financial ... ..	6-7
Sales of Electricity ... ..	7-11
Railway Electrification ... ..	13-15
Rural Electrification ... ..	15-17
Domestic Development ... ..	17
Promotional Work ... ..	19
Staff ... ..	19
Commission's Undertakings:—	
Natal Central ... ..	23-25
Witbank ... ..	27-29
Cape Town ... ..	31-35
Durban ... ..	37-38
Sabie ... ..	39
Klip Generating Station ... ..	41
Rand Extension ... ..	43
Vaal Generating Station ... ..	45
Municipal Electricity Supply Schemes ... ..	46
Annexure "A"—Accounts ... ..	50-81
Annexure "B"—Statistical and other Statements ... ..	82-90
Annexure "C"—Union Statistics ... ..	91-93

# Electricity Supply Commission.

---

Escom House,

Rissik Street,

Johannesburg,

May 29th, 1939.

To the Honourable

The Minister of Commerce and Industries,  
Pretoria.

SIR,

In conformity with the provisions of Section 14 of the Electricity Act, No. 42 of 1922, the Commission has the honour to present its Sixteenth Annual Report, covering its operations for the year ended 31st December, 1938, together with a brief review of its activities up to 31st March, 1939.

Steady progress, which has characterised the work of the Commission since its inception sixteen years ago, was well maintained in 1938.

The total output of electricity from the Commission's six generating stations during the year established a new record of 3,175,434,133 units, which represents an increase of 15·4 per cent. over the output for 1937.

The generating plant capacity of the stations was increased by 103,387 kilowatts in 1938, and the total plant capacity installed or on order at the end of the year was 782,230 kilowatts.

An important development during the year was the Commission's decision to establish a new power station, to be known as the Vaal Generating Station Undertaking, with an initial instal-

# Electricity Supply Commission.

---

Escom House,

Rissik Street,

Johannesburg,

May 29th, 1939.

To the Honourable

The Minister of Commerce and Industries,  
Pretoria.

SIR,

In conformity with the provisions of Section 14 of the Electricity Act, No. 42 of 1922, the Commission has the honour to present its Sixteenth Annual Report, covering its operations for the year ended 31st December, 1938, together with a brief review of its activities up to 31st March, 1939.

Steady progress, which has characterised the work of the Commission since its inception sixteen years ago, was well maintained in 1938.

The total output of electricity from the Commission's six generating stations during the year established a new record of 3,175,434,133 units, which represents an increase of 15·4 per cent. over the output for 1937.

The generating plant capacity of the stations was increased by 103,387 kilowatts in 1938, and the total plant capacity installed or on order at the end of the year was 782,230 kilowatts.

An important development during the year was the Commission's decision to establish a new power station, to be known as the Vaal Generating Station Undertaking, with an initial instal-

lation of 108,000 kW. of generating plant, estimated to cost £2,039,000. This station, which will be situated on the Orange Free State side of the Vaal River near Vereeniging, will feed into the grid system of the Commission and The Victoria Falls and Transvaal Power Company, Limited. Work has been started on the site, and the plant is to be ready for operation in 1941 to meet the estimated expansion requirements of the gold mining and other industries. Further details of this new Undertaking are given later in this report.

lation of 108,000 kW. of generating plant, estimated to cost £2,039,000. This station, which will be situated on the Orange Free State side of the Vaal River near Vereeniging, will feed into the grid system of the Commission and The Victoria Falls and Transvaal Power Company, Limited. Work has been started on the site, and the plant is to be ready for operation in 1941 to meet the estimated expansion requirements of the gold mining and other industries. Further details of this new Undertaking are given later in this report.

#### FINANCIAL.

The Commission's Loan Capital, which, at the date of the Balance Sheet, totalled £16,250,000, was increased in April, 1939, to £18,250,000, by the issue of £2,000,000 local registered stock bearing interest at  $3\frac{3}{4}$  per cent. per annum, at an issue price of £98 10s. per cent., and redeemable on 30th September, 1959/64. This loan was raised to finance capital commitments in respect of the Klip Generating Station; further plant extensions at the Congella Power Station, and immediate requirements in connection with the new Vaal Station.

The amount was fully subscribed within a few hours of the opening of the subscription lists. Having regard to the nervous state of the money market at that time, due to the reaction of the political situation in Europe, the ready response to the issue is a remarkable tribute by the South African investing public to the financial stability of the Commission.

The amount in the Redemption Fund at 31st December, 1938, stood at £1,910,214, and the Reserve Fund at that date amounted to £1,255,224.

The book value of securities, representing investments in Government, Municipal and Electricity Supply Commission stocks, and debentures guaranteed by the Union Government, held by the Commission on behalf of the various Funds at 31st December, 1938, was £3,164,101, the nominal value being £3,179,689. The market value of these investments at that date was considerably higher than the book value.

Expenditure on Capital Account during the year amounted to £2,123,531, which brought the total capital expenditure at 31st December, 1938, up to £17,148,484.

## FINANCIAL.

The Commission's Loan Capital, which, at the date of the Balance Sheet, totalled £16,250,000, was increased in April, 1939, to £18,250,000, by the issue of £2,000,000 local registered stock bearing interest at  $3\frac{3}{4}$  per cent. per annum, at an issue price of £98 10s. per cent., and redeemable on 30th September, 1959/64. This loan was raised to finance capital commitments in respect of the Klip Generating Station; further plant extensions at the Congella Power Station, and immediate requirements in connection with the new Vaal Station.

The amount was fully subscribed within a few hours of the opening of the subscription lists. Having regard to the nervous state of the money market at that time, due to the reaction of the political situation in Europe, the ready response to the issue is a remarkable tribute by the South African investing public to the financial stability of the Commission.

The amount in the Redemption Fund at 31st December, 1938, stood at £1,910,214, and the Reserve Fund at that date amounted to £1,255,224.

The book value of securities, representing investments in Government, Municipal and Electricity Supply Commission stocks, and debentures guaranteed by the Union Government, held by the Commission on behalf of the various Funds at 31st December, 1938, was £3,164,101, the nominal value being £3,179,689. The market value of these investments at that date was considerably higher than the book value.

Expenditure on Capital Account during the year amounted to £2,123,531, which brought the total capital expenditure at 31st December, 1938, up to £17,148,484.

Revenue, production costs, and other important figures relating to the operation of the Commission's Undertakings during the year 1938, and the comparative figures for 1937, are as follows:—

	1938.	1937.	Difference.
Total Revenue ... ..	<b>£2,232,022</b>	£1,930,719	+ 15·61%
Total Production Costs (including interest, redemption and reserve fund charges, but excluding a portion of Salt River Power Station costs paid by Cape Town Corporation under the Pooling Agreement) ... ..	<b>£2,218,696</b>	£1,909,918	+ 16·17%
Excess of Revenue over Production Costs ... ..	<b>£13,326</b>	£20,801	- £7,475
Average price per unit sold ... ..	<b>0·176d.</b>	0·180d.	- 2·22%
Average Revenue per unit sold (including Sundry Revenue) ... ..	<b>0·179d.</b>	0·183d.	- 2·19%
Average cost per unit sold ... ..	<b>0·178d.</b>	0·181d.	- 1·66%
Total cost of coal consumed, including railage ... ..	<b>£789,805</b>	£682,164	+ 15·78%
Railage on coal consumed ... ..	<b>£362,473</b>	£322,592	+ 12·36%
Coal consumed (in tons of 2,000 lbs.) ...	<b>2,630,740</b>	2,263,064	+ 16·25%
Average cost of fuel per unit sold ...	<b>0·059d.</b>	0·065d.	- 0·006d.



Revenue, production costs, and other important figures relating to the operation of the Commission's Undertakings during the year 1938, and the comparative figures for 1937, are as follows:—

	1938.	1937.	Difference.
Total Revenue ... ..	<b>£2,232,022</b>	£1,930,719	+ 15·61%
Total Production Costs (including interest, redemption and reserve fund charges, but excluding a portion of Salt River Power Station costs paid by Cape Town Corporation under the Pooling Agreement) ... ..	<b>£2,218,696</b>	£1,909,918	+ 16·17%
Excess of Revenue over Production Costs ... ..	<b>£13,326</b>	£20,801	- £7,475
Average price per unit sold ... ..	<b>0·176d.</b>	0·180d.	- 2·22%
Average Revenue per unit sold (including Sundry Revenue) ... ..	<b>0·179d.</b>	0·183d.	- 2·19%
Average cost per unit sold ... ..	<b>0·178d.</b>	0·181d.	- 1·66%
Total cost of coal consumed, including railage ... ..	<b>£789,805</b>	£682,164	+ 15·78%
Railage on coal consumed ... ..	<b>£362,473</b>	£322,592	+ 12·36%
Coal consumed (in tons of 2,000 lbs.) ...	<b>2,630,740</b>	2,263,064	+ 16·25%
Average cost of fuel per unit sold ...	<b>0·059d.</b>	0·065d.	- 0·006d.

### SALES OF ELECTRICITY.

Sales of electricity from all the Commission's Undertakings in 1938 amounted to 2,985,452,589 units, the increase over the previous year's total being 449,831,841 units, or 17·74 per cent.

Increased sales were recorded at all the Undertakings, as follows:—

Undertaking.	Units Sold.		Increase over 1937.	
	1938.	Units.	Percentage.	
Natal Central ... ..	<b>234,948,157</b>	24,315,330	11·54	
Witbank ... ..	<b>768,114,272</b>	83,597,639	12·21	
Cape Town* ... ..	<b>98,801,619</b>	4,763,170	5·07	
Durban ... ..	<b>209,495,780</b>	20,083,089	10·60	
Sabie ... ..	<b>7,240,167</b>	73,483	1·03	
Klip ... ..	<b>1,666,852,594</b>	316,999,130	23·48	
Totals ... ..	<b>2,985,452,589</b>	449,831,841	17·74	

\* Excluding units supplied to Cape Town Corporation under pooling arrangements.

## SALES OF ELECTRICITY.

Sales of electricity from all the Commission's Undertakings in 1938 amounted to 2,985,452,589 units, the increase over the previous year's total being 449,831,841 units, or 17·74 per cent.

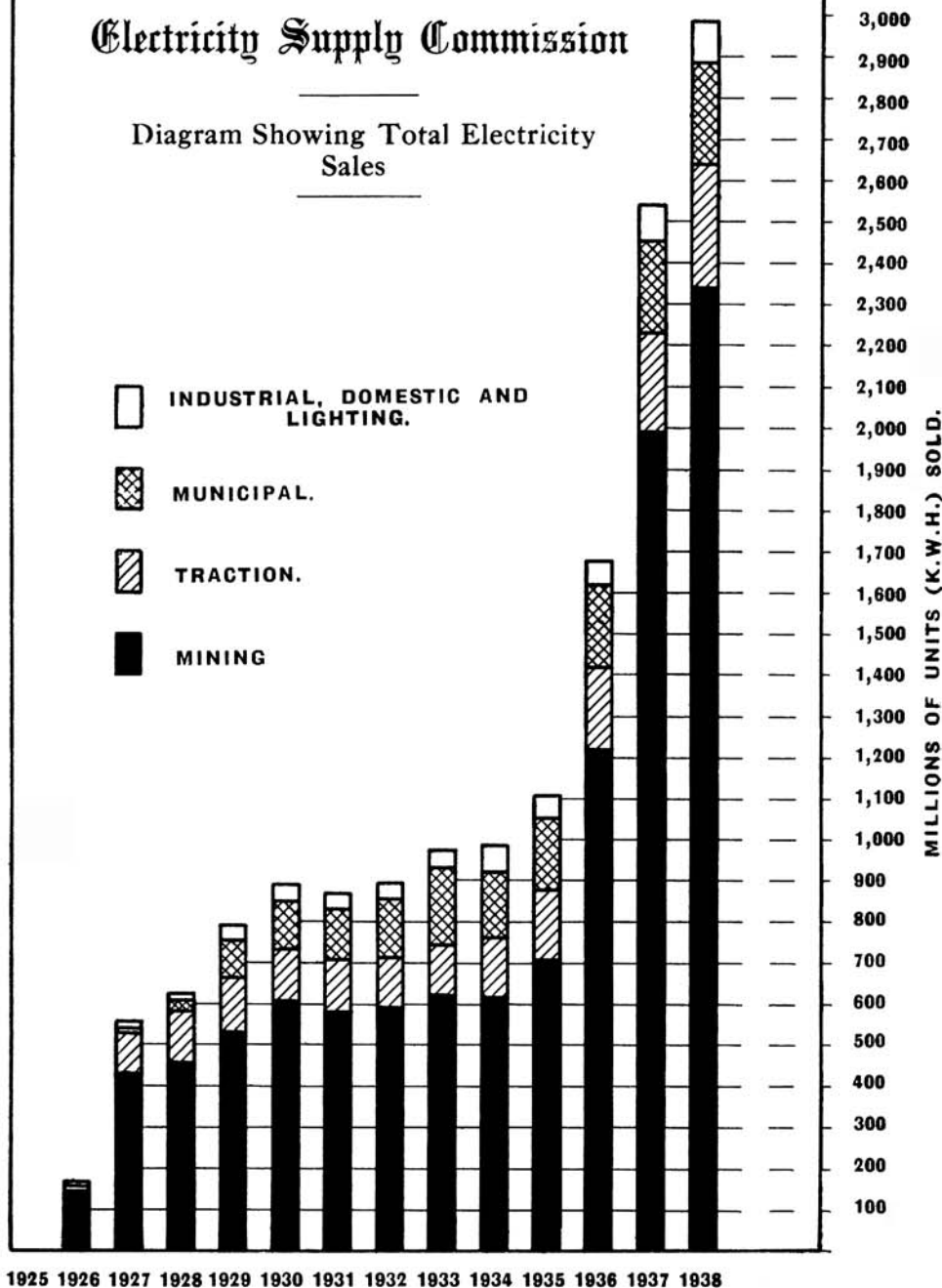
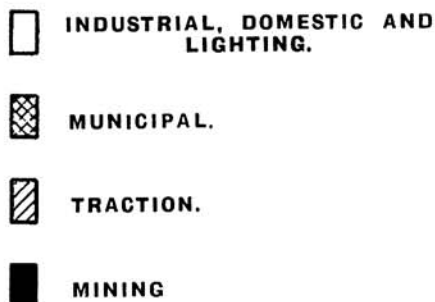
Increased sales were recorded at all the Undertakings, as follows:—

Undertaking.	Units Sold.			Increase over 1937.	
	1938.			Units.	Percentage.
Natal Central	...	...	234,948,157	24,315,330	11·54
Witbank	...	...	768,114,272	83,597,639	12·21
Cape Town*	...	...	98,801,619	4,763,170	5·07
Durban	...	...	209,495,780	20,083,089	10·60
Sabie	...	...	7,240,167	73,483	1·03
Klip	...	...	1,666,852,594	316,999,130	23·48
Totals	...	...	2,985,452,589	449,831,841	17·74

\* Excluding units supplied to Cape Town Corporation under pooling arrangements.

# Electricity Supply Commission

Diagram Showing Total Electricity Sales



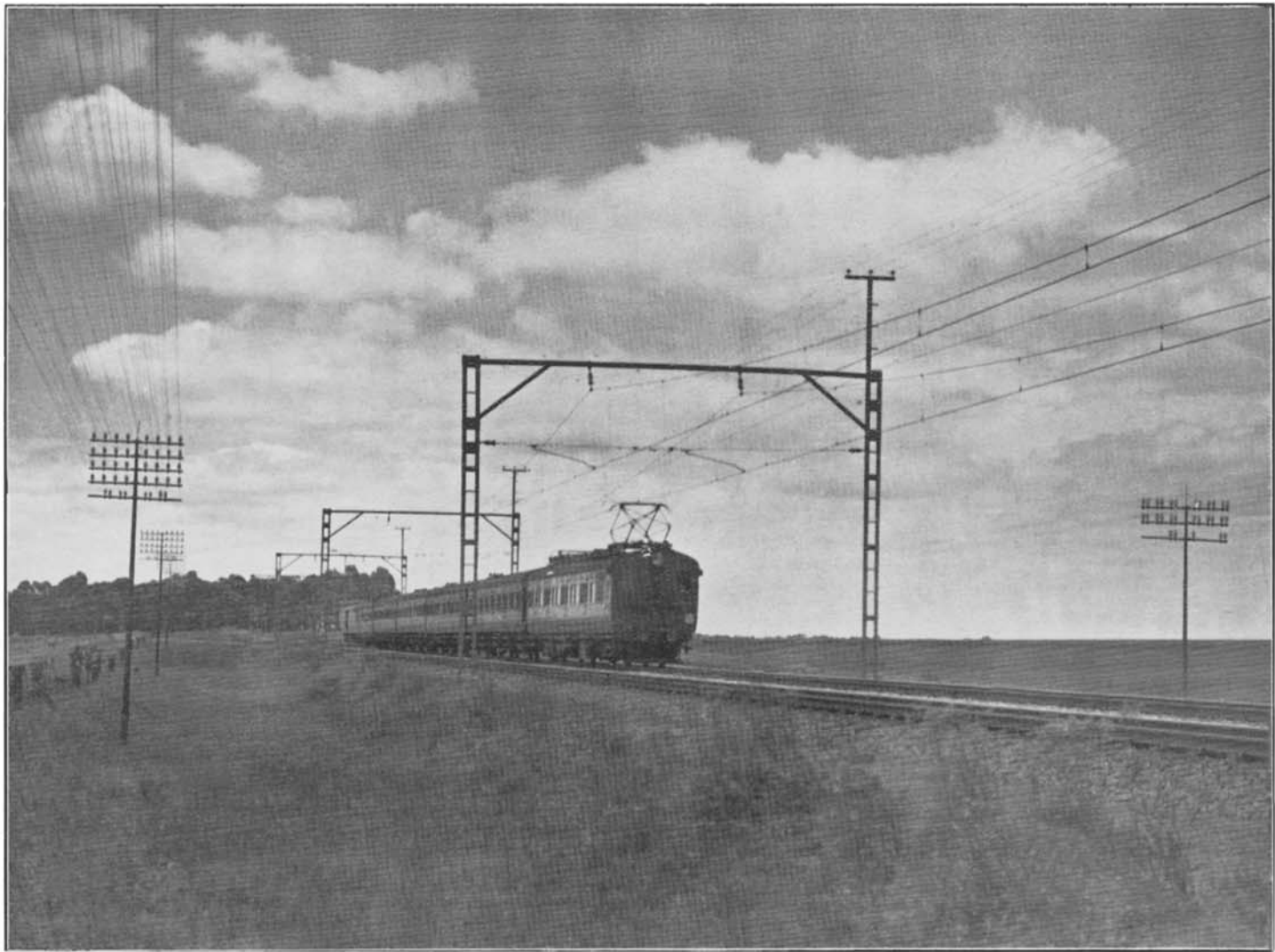
All classes of consumers showed substantial increases compared with the consumption in 1937, as reflected in the tabulation below. Railway traction showed the largest percentage increase (30·90 per cent.) due to an additional 52,587,004 units required for the Reef Electrification System in 1938.

Class of Supply.	1938.	1937.	Percentage Increase.
Bulk Supplies—			
*Mining, etc. ... ..	<b>2,290,455,578</b>	1,954,127,926	+ 17·21
†Municipal ... ..	<b>251,165,717</b>	228,218,591	+ 10·05
Direct Supplies for—			
Mining ... ..	<b>40,519,021</b>	36,644,566	+ 10·57
Industrial ... ..	<b>83,907,972</b>	72,335,557	+ 16·00
Domestic and Street Lighting	<b>10,520,028</b>	8,332,570	+ 26·25
Traction ... ..	<b>308,884,273</b>	235,961,538	+ 30·90
Totals ... ..	<b>2,985,452,589</b>	2,535,620,748	+ 17·74

\* The total consumption of electricity on the Reef by the gold mining and other industries and municipalities, etc., exceeded 4,400,000,000 units in 1938, and more than 52 per cent. was supplied from the Commission's power stations at Klip and Witbank; the balance being supplied from power stations owned by The Victoria Falls and Transvaal Power Company, Limited, three mining companies and the Johannesburg Municipality.

† A large proportion of the electricity supplied in bulk to municipalities is used for domestic and lighting purposes.

A summary of the sales of electricity under the above headings since 1925, when the Commission first commenced to supply, is given on page 11.



**Railway Electrification: Electric motor-coach of type used on the Germiston-Pretoria and the Reef sections.**

*Merl La Voy.*

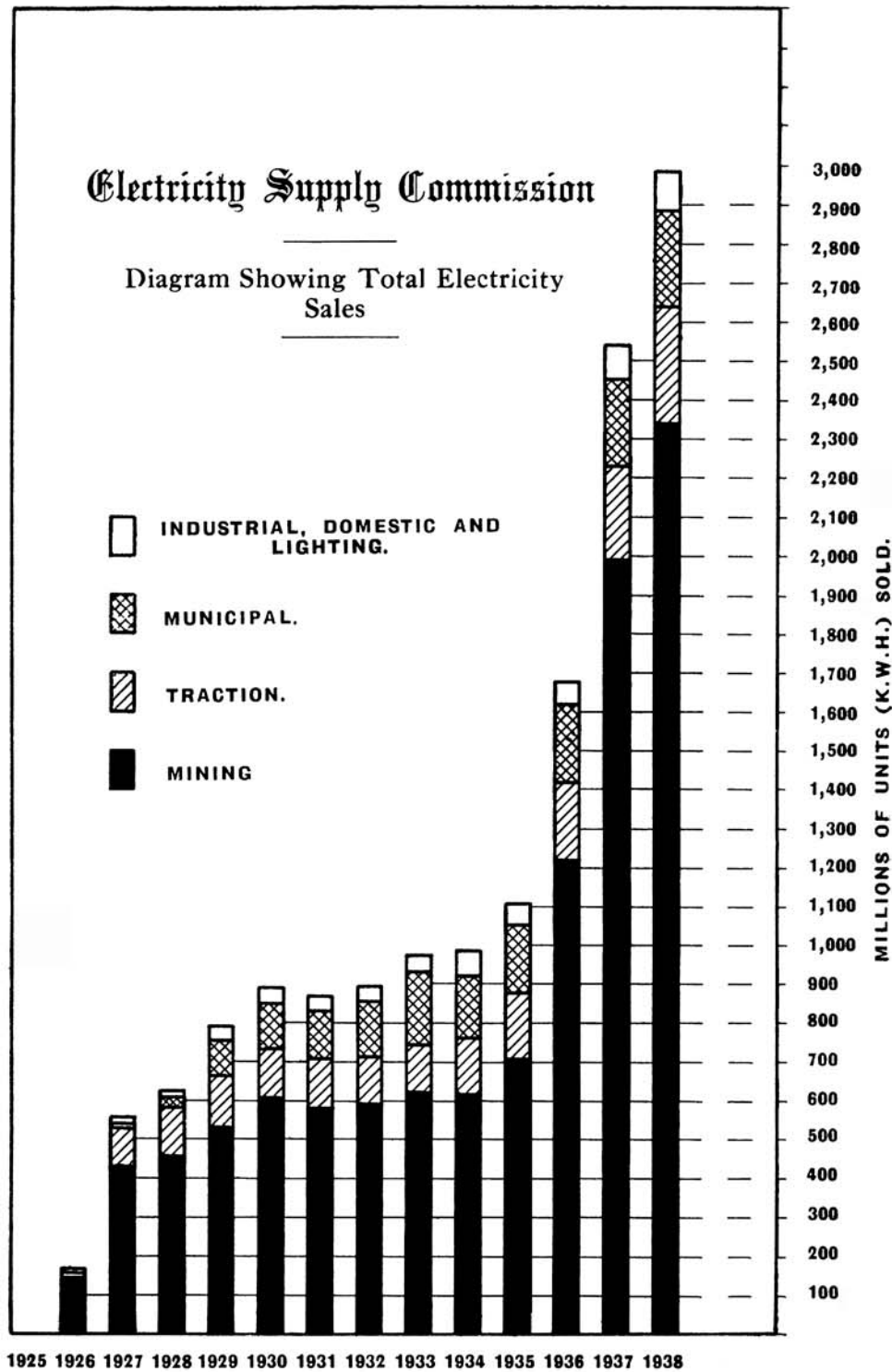
**SALES OF ELECTRICITY TO VARIOUS CLASSES OF CONSUMERS.**  
**1925-1938.**  
**(Kilowatt-Hours)**

Year.	BULK SUPPLIES.		DIRECT SUPPLIES.				Annual Total.	Percentage Increase over Previous Year.
	Mining.	Municipal.	Mining.	Industrial.	Domestic and Lighting.	Traction.		
1925 ...	Nil	Nil	75,943	Nil	Nil	Nil	75,943	—
1926 ...	159,532,156	755,882	651,458	743,083	Nil	Nil	161,682,579	—
1927 ...	425,672,389	4,063,846	2,629,266	16,923,084	106,022	101,624,126	551,018,733	240·8
1928 ...	444,317,209	23,803,250	16,189,019	19,140,132	400,625	124,062,060	627,912,295	14·0
1929 ...	513,360,023	93,270,744	16,654,619	33,154,615	656,220	139,902,130	796,998,351	26·9
1930 ...	583,989,147	117,296,480	20,732,779	36,792,584	1,009,170	129,791,764	889,611,924	11·6
1931 ...	565,546,259	124,547,716	23,532,863	38,244,526	1,346,979	113,867,926	867,086,269	-2·5
1932 ...	572,600,047	143,487,503	23,020,446	37,526,127	1,643,400	112,457,639	890,735,162	2·7
1933 ...	597,324,762	186,878,629	23,898,965	43,290,443	2,154,519	120,580,926	974,128,244	9·4
1934 ...	590,829,908	159,042,270	27,201,215	58,699,962	3,002,691	146,385,448	985,161,494	1·1
1935 ...	675,664,157	182,046,852	27,903,854	55,065,165	4,301,638	174,261,280	1,119,242,946	13·6
1936 ...	1,190,801,515	206,757,057	31,932,815	64,350,389	6,120,142	188,085,190	1,688,047,108	50·8
1937 ...	1,954,127,926	228,218,591	36,644,566	72,335,557	8,332,570	235,961,538	2,535,620,748	50·2
1938 ...	2,290,455,578	251,165,717	40,519,021	83,907,972	10,520,028	308,884,273	2,985,452,589	17·7
Per cent. 1938	76·72	8·41	1·36	2·81	0·35	10·35		

# Electricity Supply Commission

Diagram Showing Total Electricity Sales

-  INDUSTRIAL, DOMESTIC AND LIGHTING.
-  MUNICIPAL.
-  TRACTION.
-  MINING



All classes of consumers showed substantial increases compared with the consumption in 1937, as reflected in the tabulation below. Railway traction showed the largest percentage increase (30·90 per cent.) due to an additional 52,587,004 units required for the Reef Electrification System in 1938.

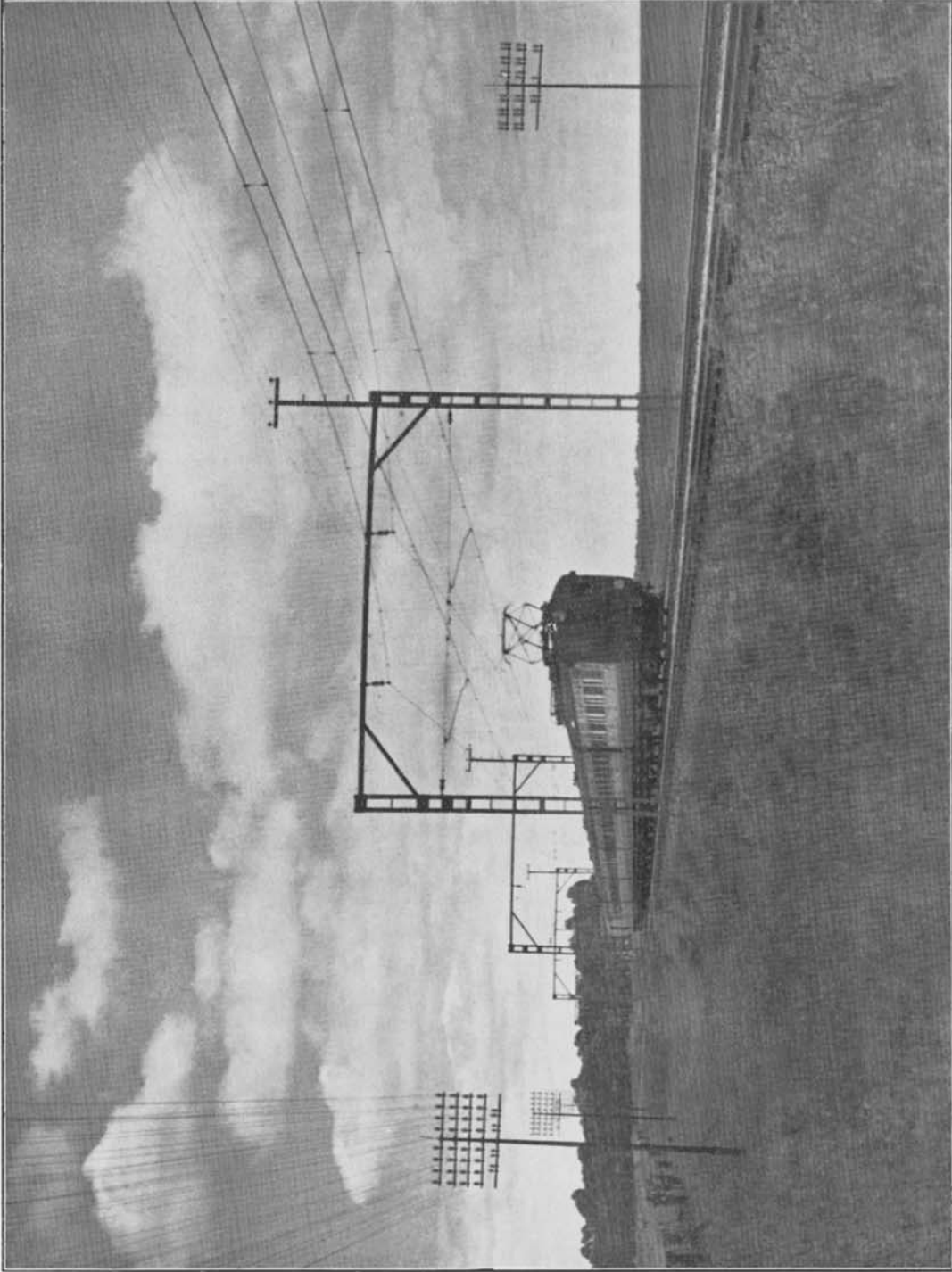
Class of Supply.	1938.	1937.	Percentage Increase.
Bulk Supplies—			
*Mining, etc. ... ..	<b>2,290,455,578</b>	1,954,127,926	+ 17·21
†Municipal ... ..	<b>251,165,717</b>	228,218,591	+ 10·05
Direct Supplies for—			
Mining ... ..	<b>40,519,021</b>	36,644,566	+ 10·57
Industrial ... ..	<b>83,907,972</b>	72,335,557	+ 16·00
Domestic and Street Lighting	<b>10,520,028</b>	8,332,570	+ 26·25
Traction ... ..	<b>308,884,273</b>	235,961,538	+ 30·90
Totals ... ..	<b>2,985,452,589</b>	2,535,620,748	+ 17·74

\* The total consumption of electricity on the Reef by the gold mining and other industries and municipalities, etc., exceeded 4,400,000,000 units in 1938, and more than 52 per cent. was supplied from the Commission's power stations at Klip and Witbank; the balance being supplied from power stations owned by The Victoria Falls and Transvaal Power Company, Limited, three mining companies and the Johannesburg Municipality.

† A large proportion of the electricity supplied in bulk to municipalities is used for domestic and lighting purposes.

A summary of the sales of electricity under the above headings since 1925, when the Commission first commenced to supply, is given on page 11.



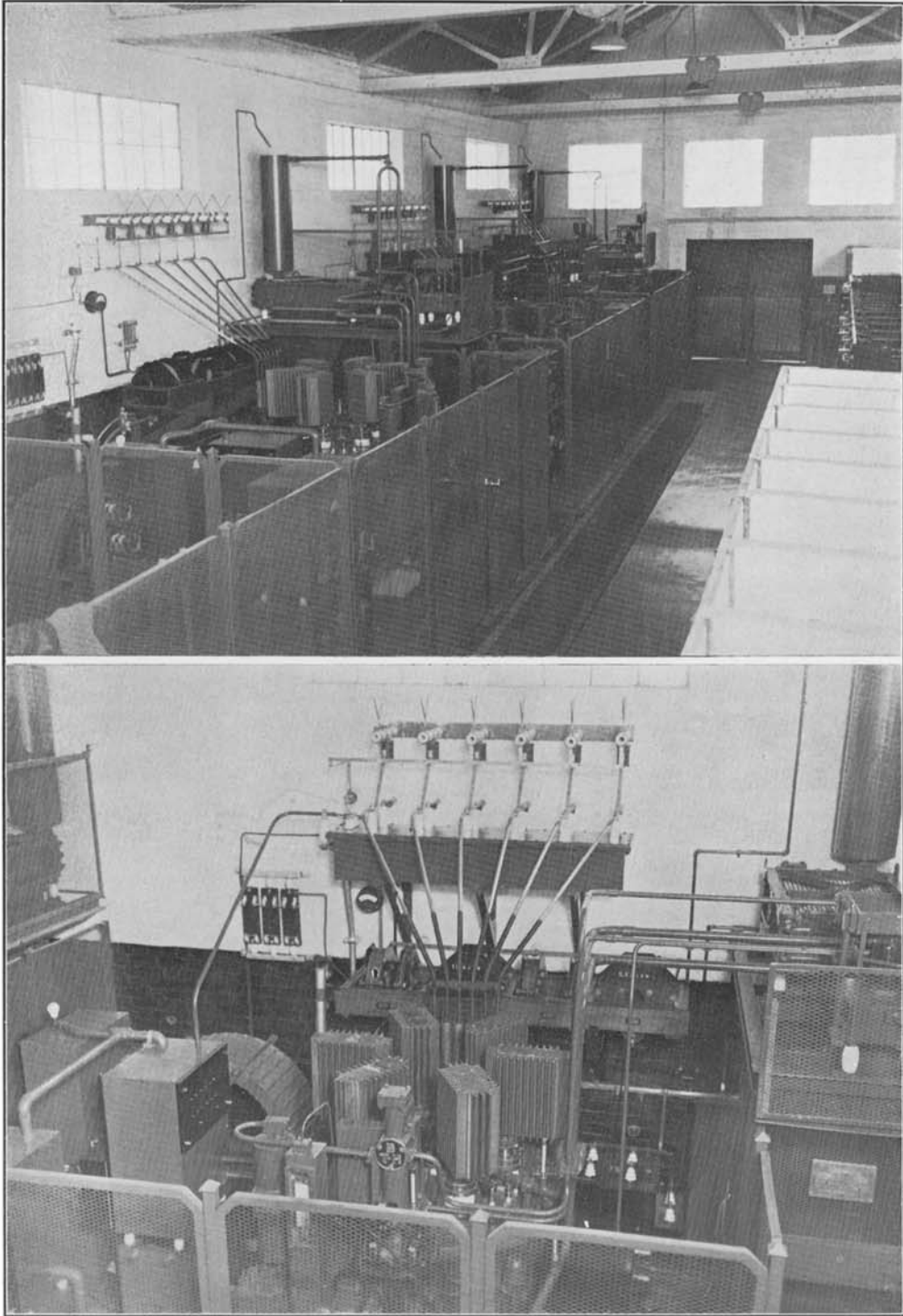


**Railway Electrification: Electric motor-coach of type used on the Germiston-Pretoria and the Reef sections.**

*Merl La Voie.*

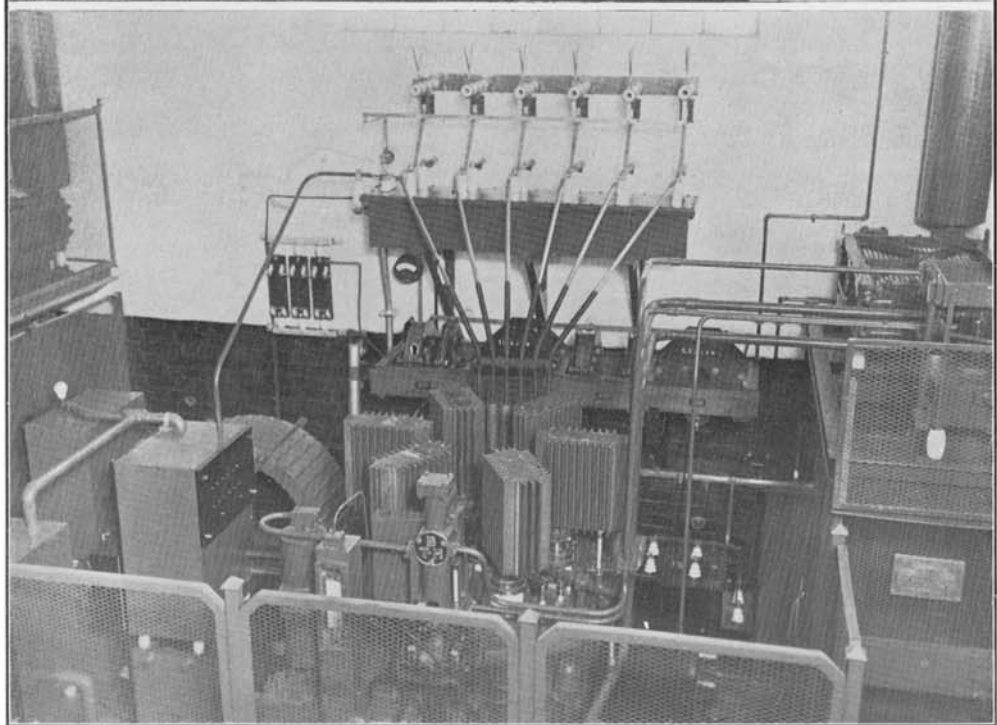
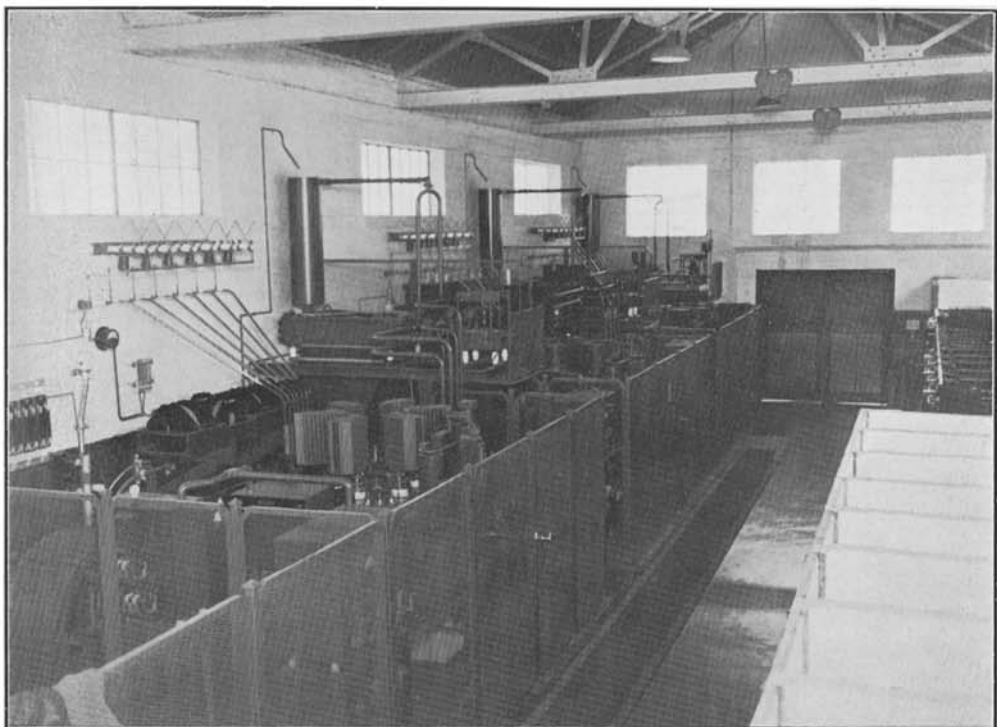
**SALES OF ELECTRICITY TO VARIOUS CLASSES OF CONSUMERS.**  
**1925-1938.**  
**(Kilowatt-Hours)**

Year.	BULK SUPPLIES.		DIRECT SUPPLIES.				Annual Total.	Percentage Increase over Previous Year.
	Mining.	Municipal.	Mining.	Industrial.	Domestic and Lighting.	Traction.		
1925	Nil	Nil	75,943	Nil	Nil	Nil	75,943	—
1926	159,532,156	755,882	651,458	743,083	Nil	Nil	161,682,579	—
1927	425,672,389	4,063,846	2,629,266	16,923,084	106,022	101,624,126	551,018,733	240.8
1928	444,317,209	23,803,250	16,189,019	19,140,132	400,625	124,062,060	627,912,295	14.0
1929	513,360,023	93,270,744	16,654,619	33,154,615	656,220	139,902,130	796,998,351	26.9
1930	583,989,147	117,296,480	20,732,779	36,792,584	1,009,170	129,791,764	889,611,924	11.6
1931	565,546,259	124,547,716	23,532,863	38,244,526	1,346,979	113,867,926	867,086,269	-2.5
1932	572,600,047	143,487,503	23,020,446	37,526,127	1,643,400	112,457,639	890,735,162	2.7
1933	597,324,762	186,878,629	23,898,965	43,290,443	2,154,519	120,580,926	974,128,244	9.4
1934	590,829,908	159,042,270	27,201,215	58,699,962	3,002,691	146,385,448	985,161,494	1.1
1935	675,664,157	182,046,852	27,903,854	55,065,165	4,301,638	174,261,280	1,119,242,946	13.6
1936	1,190,801,515	206,757,057	31,982,815	64,350,389	6,120,142	188,085,190	1,688,047,108	50.8
1937	1,954,127,926	238,218,591	36,644,566	72,335,557	8,332,570	235,961,538	2,535,620,748	50.2
1938	2,280,455,578	251,165,717	40,519,021	83,907,972	10,520,028	308,884,273	2,985,452,589	17.7
Per cent. 1938	76.72	8.41	1.36	2.81	0.35	10.35		



**Reef Electrification. Above: The mercury arc rectifier units at the Braamfontein sub-station. Below: Close up of one unit.**

*[Merl La Voy.]*



**Reef Electrification. Above: The mercury arc rectifier units at the Braamfontein sub-station. Below: Close up of one unit.**

*[Merl La Voy.]*

## RAILWAY ELECTRIFICATION.

Natal.

Construction work on the electrification of the Rossburgh-Hillcrest section of the Natal old main line (23 route miles) has been started. Two double unit Mercury Arc Rectifier Substations, to be located at Escombe and Kloof respectively, are being provided by the Commission. It is anticipated that this work will be completed during 1940.

The Durban Bluff line from Booth to Wests (7 route miles) was converted to electric traction on 30th May, 1938.

Transvaal.

The Germiston-Pretoria railway electrification was completed on 7th November, 1938. Construction progress on this section was considerably hampered by heavy traffic and extensive track and other improvement works.

The Railway Administration decided during the year to extend electrification to the goods yards at Pretoria West and Braamfontein to facilitate the handling of goods traffic between Johannesburg and Pretoria, and the work in this connection is proceeding.

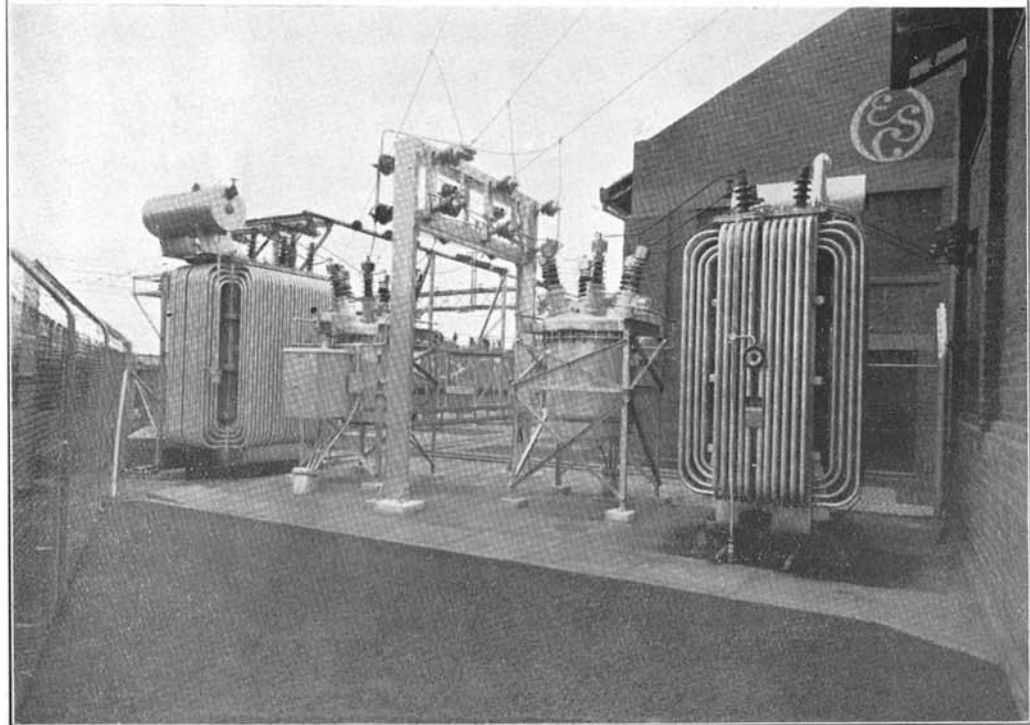
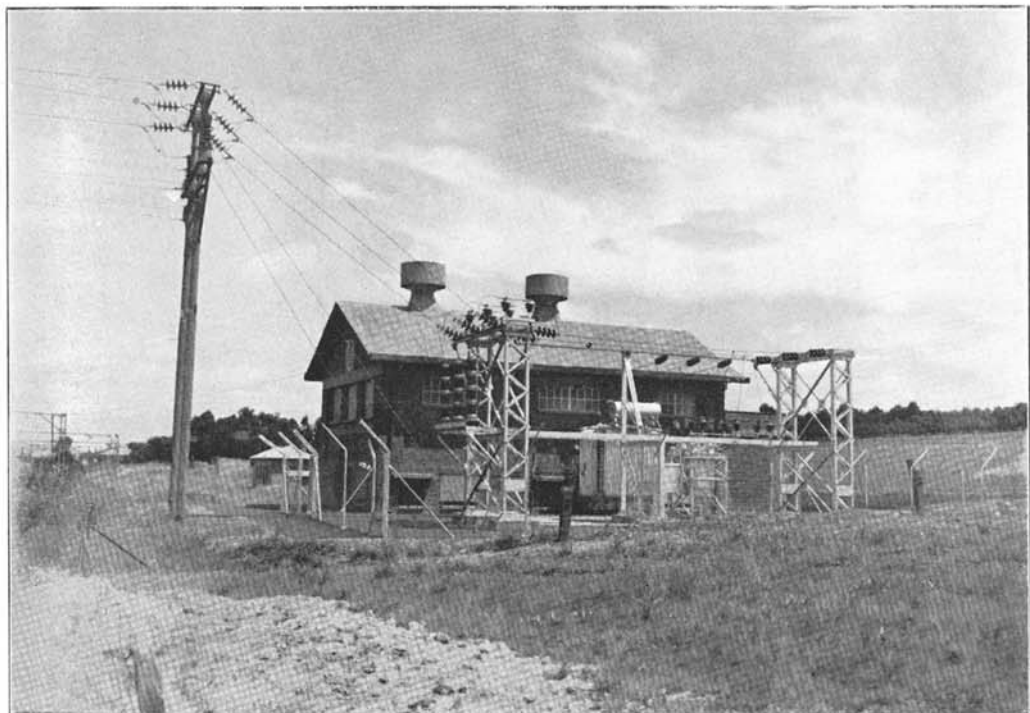
Cape.

The electrification of the line between Pinelands and Langa, a distance of 2½ route miles, was completed early in June, 1938.

More than 25 per cent. of the traffic handled by the South African Railways is now hauled by electric power.

The following summary indicates the approximate mileage of electrified railways completed or under construction in the Union of South Africa:—

	Route Miles.	Track Miles.
Natal—		
Durban-Volksrust ... ..	323	581
Booth-Wests ... ..	7	13
Rossburgh-Hillcrest ... ..	23	33
Orange Free State—		
Danskraal (Natal)-Harrismith (O.F.S.) ...	60	71
Cape—		
Cape Town-Simonstown ... ..	22	71
Cape Flats: Maitland-Diep River ... ..	13	15
Salt River-Bellville ... ..	10	31
Transvaal—		
Witwatersrand Gold Mining Area ... ..	95	306
Germiston-Pretoria ... ..	37	96
Total ... ..	<u>590</u>	<u>1,217</u>



**Railway Electrification. Above: The Birchleigh traction sub-station on the Germiston-Pretoria section. Below: Two 3,000 kW. local supply transformers at Braamfontein sub-station.**

*[Merl La Voy.]*

For comparative purposes the milages of main line railway electrification in other parts of the British Commonwealth of Nations and in the United States of America, are given below :—

Country.						Route Miles.
Australia	...	...	...	...	...	260·3
Canada	...	...	...	...	...	41·2
Great Britain	...	...	...	...	...	856·6
India	...	...	...	...	...	240·0
New Zealand	...	...	...	...	...	47·8
United States	...	...	...	...	...	2,411·6

Extracted from Universal Directory of Railway Officials and  
Railway Year Book, 1938-39.



## RAILWAY ELECTRIFICATION.

**Natal.** Construction work on the electrification of the Rossburgh-Hillcrest section of the Natal old main line (23 route miles) has been started. Two double unit Mercury Arc Rectifier Substations, to be located at Escombe and Kloof respectively, are being provided by the Commission. It is anticipated that this work will be completed during 1940.

The Durban Bluff line from Booth to Wests (7 route miles) was converted to electric traction on 30th May, 1938.

**Transvaal.** The Germiston-Pretoria railway electrification was completed on 7th November, 1938. Construction progress on this section was considerably hampered by heavy traffic and extensive track and other improvement works.

The Railway Administration decided during the year to extend electrification to the goods yards at Pretoria West and Braamfontein to facilitate the handling of goods traffic between Johannesburg and Pretoria, and the work in this connection is proceeding.

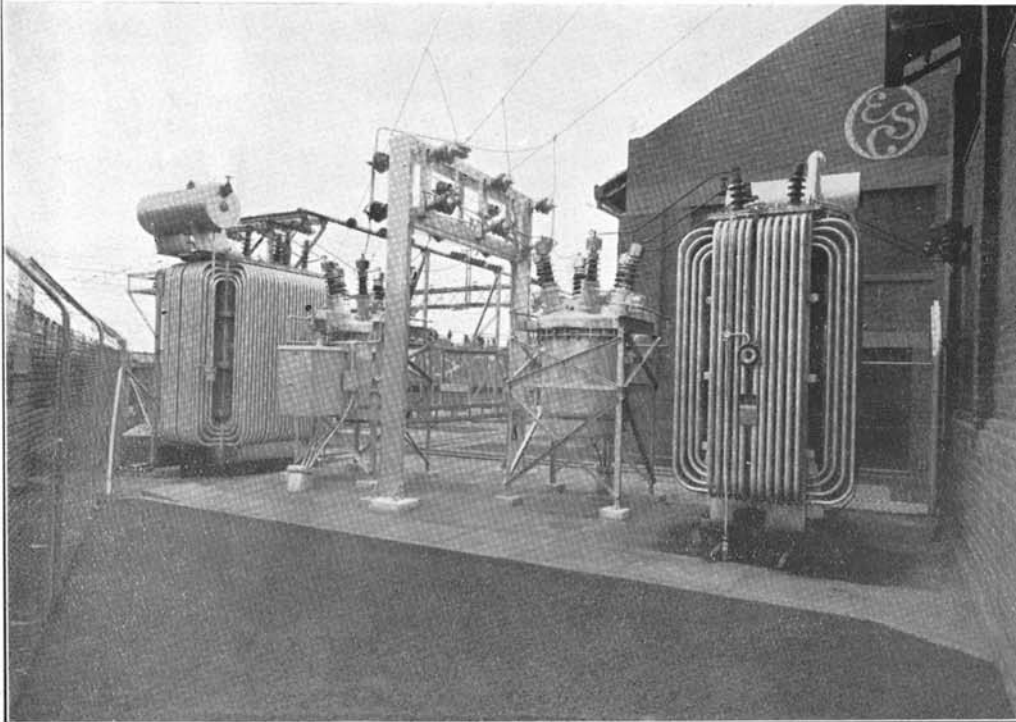
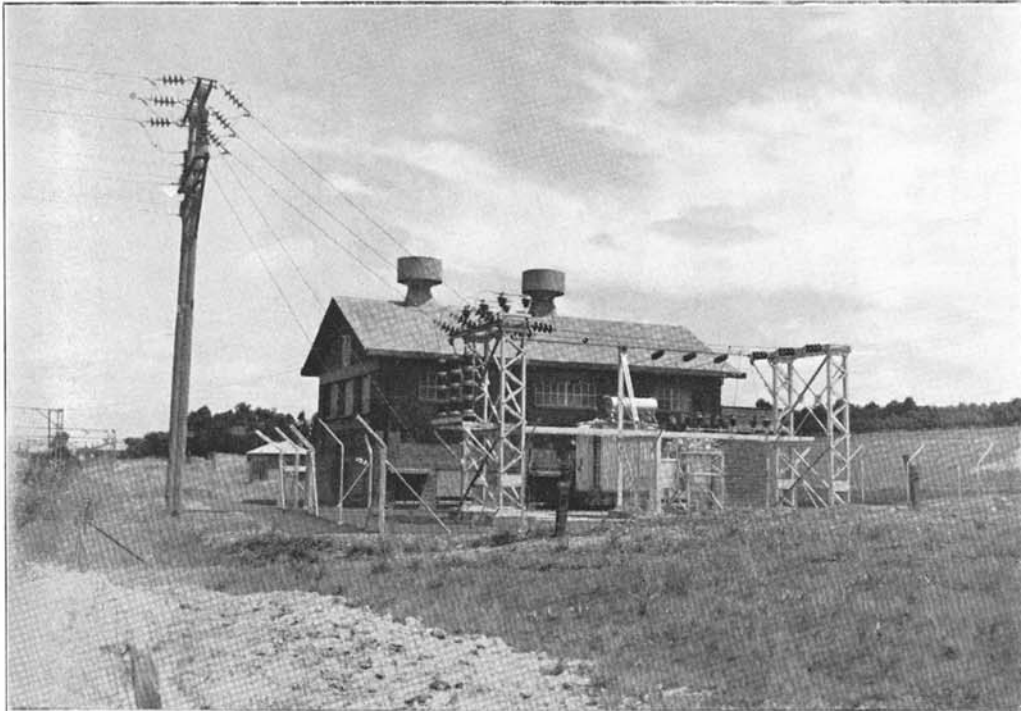
**Cape.** The electrification of the line between Pinelands and Langa, a distance of  $2\frac{1}{2}$  route miles, was completed early in June, 1938.

More than 25 per cent. of the traffic handled by the South African Railways is now hauled by electric power.

The following summary indicates the approximate mileage of electrified railways completed or under construction in the Union of South Africa:—

					Route Miles.	Track Miles.
Natal—						
	Durban-Volksrust	...	...	...	323	581
	Booth-Wests	...	...	...	7	13
	Rossburgh-Hillcrest	...	...	...	23	33
Orange Free State—						
	Danskraal (Natal)-Harrismith (O.F.S.)	...	...	...	60	71
Cape—						
	Cape Town-Simonstown	...	...	...	22	71
	Cape Flats: Maitland-Diep River	...	...	...	13	15
	Salt River-Bellville	...	...	...	10	31
Transvaal—						
	Witwatersrand Gold Mining Area	...	...	...	95	306
	Germiston-Pretoria	...	...	...	37	96
	Total	...	...	...	<u>590</u>	<u>1,217</u>





**Railway Electrification. Above: The Birchleigh traction sub-station on the Germiston-Pretoria section. Below: Two 3,000 kW. local supply transformers at Braamfontein sub-station.**

*[Merl La Voy.]*

For comparative purposes the milages of main line railway electrification in other parts of the British Commonwealth of Nations and in the United States of America, are given below:—

Country.	Route Miles.
Australia ... ..	260·3
Canada ... ..	41·2
Great Britain ... ..	856·6
India ... ..	240·0
New Zealand ... ..	47·8
United States ... ..	2,411·6

Extracted from Universal Directory of Railway Officials and Railway Year Book, 1938-39.

### RURAL ELECTRIFICATION.

Practically all the towns, villages and groups of farms within economic reach of the substations along the routes of the electrified railways in Natal and the Orange Free State are being supplied with electricity by the Commission. It was, therefore, decided early in the year to investigate the potentialities of the more remote areas, with the result that the Commission has embarked upon a scheme contemplating the supply of electricity to more than 1,000 scattered farms within an area of 15 miles on either side of the electrified railways, from an 11 kV. power line to be erected on the track structures and tapped at suitable points.

In view of the distances separating the farms, the capital cost of the power lines must be reduced to a minimum to make such supplies economically practicable, and to this end the Commission has adopted the policy of giving such consumers the opportunity to co-operate by providing transport and native labour for pole planting, etc. Furthermore, considerable practical experience has enabled the Commission's engineers to devise cheapened types of transmission lines and methods of construction.

Since the completion of the railway electrification to the border town of Volksrust, development of rural supplies from the Natal Central Undertaking has been extended to the township of Wakkerstroom, in the Transvaal, and extensions to other communities are under construction.

On the Natal Coast the Commission has extended its activities as far south as Margate, approximately 100 miles from Durban.

## RURAL ELECTRIFICATION.

Practically all the towns, villages and groups of farms within economic reach of the substations along the routes of the electrified railways in Natal and the Orange Free State are being supplied with electricity by the Commission. It was, therefore, decided early in the year to investigate the potentialities of the more remote areas, with the result that the Commission has embarked upon a scheme contemplating the supply of electricity to more than 1,000 scattered farms within an area of 15 miles on either side of the electrified railways, from an 11 kV. power line to be erected on the track structures and tapped at suitable points.

In view of the distances separating the farms, the capital cost of the power lines must be reduced to a minimum to make such supplies economically practicable, and to this end the Commission has adopted the policy of giving such consumers the opportunity to co-operate by providing transport and native labour for pole planting, etc. Furthermore, considerable practical experience has enabled the Commission's engineers to devise cheapened types of transmission lines and methods of construction.

Since the completion of the railway electrification to the border town of Volksrust, development of rural supplies from the Natal Central Undertaking has been extended to the township of Wakkerstroom, in the Transvaal, and extensions to other communities are under construction.

On the Natal Coast the Commission has extended its activities as far south as Margate, approximately 100 miles from Durban.

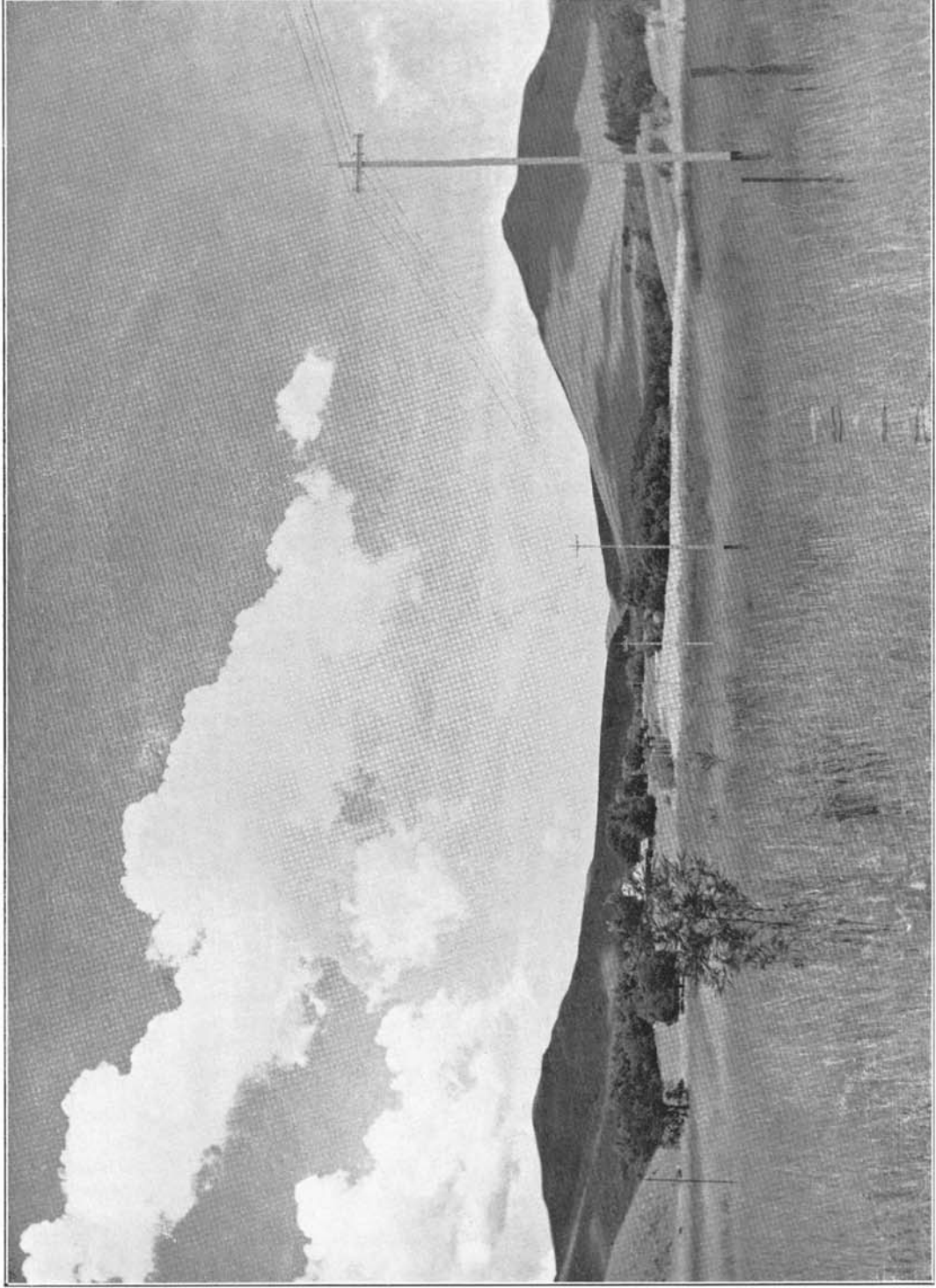


**Natal Central Undertaking: Typical rural supply low tension line.**

Most of the seaside resorts en route, and a number of industrial and domestic consumers farther inland, have been, or are in prospect of being, connected to the system supplied from the Commission's Durban Undertaking.

In the western Cape Province rural electrification has progressed steadily. Numerous extensions to farm supply schemes, especially in the fruit-growing areas, were carried out during the year.

The total number of towns and villages supplied with electricity by the Commission in the Union at 31st December, 1938, was 81, and the number of farms supplied was 355, showing increases during the year of 6 and 42 respectively.



**Natal Central Undertaking: Typical rural supply low tension line.**

Most of the seaside resorts en route, and a number of industrial and domestic consumers farther inland, have been, or are in prospect of being, connected to the system supplied from the Commission's Durban Undertaking.

In the western Cape Province rural electrification has progressed steadily. Numerous extensions to farm supply schemes, especially in the fruit-growing areas, were carried out during the year.

The total number of towns and villages supplied with electricity by the Commission in the Union at 31st December, 1938, was 81, and the number of farms supplied was 355, showing increases during the year of 6 and 42 respectively.

#### DOMESTIC DEVELOPMENT.

The average consumption of electricity for domestic purposes, per consumer supplied direct by the Commission, increased from 1,385 units in 1937 to 1,484 units in 1938, or 7·1 per cent. This figure is regarded as satisfactory since most of these consumers, aggregating 6,771, are spread over 75 different rural or semi-rural areas in the Union.

At the end of 1938 bulk supplies of electricity totalling 251,168,717 units were being taken from the Commission's various Undertakings by 16 local authorities. A large proportion of such bulk supplies was consumed for domestic purposes. The average annual domestic consumption per consumer in a number of towns taking a bulk supply of electricity from the Commission is tabulated below:—

Town.	Number of Consumers.	Average Annual Domestic Consumption.
Ladysmith ... ..	731	1,540
Mooi River ... ..	74	1,593
Malmesbury ... ..	302	489·6
Estcourt ... ..	300	1,527
Maritzburg ... ..	3,837	2,874
Stellenbosch ... ..	1,125	873
Newcastle ... ..	380	952
Bethlehem ... ..	707	685·1
Paarl ... ..	1,179	1,034
Glencoe ... ..	270	1,510

## DOMESTIC DEVELOPMENT.

The average consumption of electricity for domestic purposes, per consumer supplied direct by the Commission, increased from 1,385 units in 1937 to 1,484 units in 1938, or 7·1 per cent. This figure is regarded as satisfactory since most of these consumers, aggregating 6,771, are spread over 75 different rural or semi-rural areas in the Union.

At the end of 1938 bulk supplies of electricity totalling 251,168,717 units were being taken from the Commission's various Undertakings by 16 local authorities. A large proportion of such bulk supplies was consumed for domestic purposes. The average annual domestic consumption per consumer in a number of towns taking a bulk supply of electricity from the Commission is tabulated below :—

Town.	Number of Consumers.	Average Annual Domestic Consumption.
Ladysmith ... ..	731	1,540
Mooi River ... ..	74	1,593
Malmesbury ... ..	302	489·6
Estecourt ... ..	300	1,527
Maritzburg ... ..	3,837	2,874
Stellenbosch ... ..	1,125	873
Newcastle ... ..	380	952
Bethlehem ... ..	707	685·1
Paarl ... ..	1,179	1,034
Glencoe ... ..	270	1,510





**Electric cooking demonstration in the Lecture Theatre, Escom House.**

*[Merl La Vogt.]*



**Electric cooking demonstration in the Lecture Theatre, Escom House.**

## PROMOTIONAL WORK.

The Commission's monthly publication, *Escom Magazine*, is steadily gaining in popularity. It now has a national paid circulation of 22,000 copies per month.

Thirty-two municipalities are now co-operating with the Commission in the collection of the monthly subscriptions to the magazine from electricity consumers in their areas. Besides this, *Escom Magazine* is circulated at direct subscription in almost every other centre in the Union.

A standard size (35 m.m.) sound film, 3,500 feet in length, descriptive of the Commission's activities was produced during the year by its Publicity Department for exhibition to selected audiences overseas and locally. 16 m.m. copies are being prepared for presentation to the Union Education Department's Film Library for use in schools.

A series of well attended cooking demonstrations was held during the year in the Lecture Theatre, *Escom House*. A feature of one of the recent demonstrations was the attendance of domestic science pupils from Johannesburg schools. By arrangement with the Education Department this innovation is to be extended to future demonstrations.

A regular programme of similar demonstrations at various centres in Natal was carried out by the official Demonstrator attached to the staff of the Commission's Natal Undertakings.

Other promotional work included the publication of articles educating consumers of electricity in the better use of electrical appliances, and in this service the Commission has received the valuable co-operation of both national and country newspapers.

### PROMOTIONAL WORK.

The Commission's monthly publication, *Escom Magazine*, is steadily gaining in popularity. It now has a national paid circulation of 22,000 copies per month.

Thirty-two municipalities are now co-operating with the Commission in the collection of the monthly subscriptions to the magazine from electricity consumers in their areas. Besides this, *Escom Magazine* is circulated at direct subscription in almost every other centre in the Union.

A standard size (35 m.m.) sound film, 3,500 feet in length, descriptive of the Commission's activities was produced during the year by its Publicity Department for exhibition to selected audiences overseas and locally. 16 m.m. copies are being prepared for presentation to the Union Education Department's Film Library for use in schools.

A series of well attended cooking demonstrations was held during the year in the Lecture Theatre, *Escom House*. A feature of one of the recent demonstrations was the attendance of domestic science pupils from Johannesburg schools. By arrangement with the Education Department this innovation is to be extended to future demonstrations.

A regular programme of similar demonstrations at various centres in Natal was carried out by the official Demonstrator attached to the staff of the Commission's Natal Undertakings.

Other promotional work included the publication of articles educating consumers of electricity in the better use of electrical appliances, and in this service the Commission has received the valuable co-operation of both national and country newspapers.

### STAFF.

The staff employed by the Commission at its Head Office and at its various Undertakings, excluding the *Klip* and *Witbank* Power Stations, which are operated by *The Victoria Falls and Transvaal Power Company, Limited*, on behalf of the Commission, numbered 519 Europeans and 578 non-Europeans at 31st December, 1938, an increase of 33 and 40 respectively as compared with the numbers at the end of 1937.

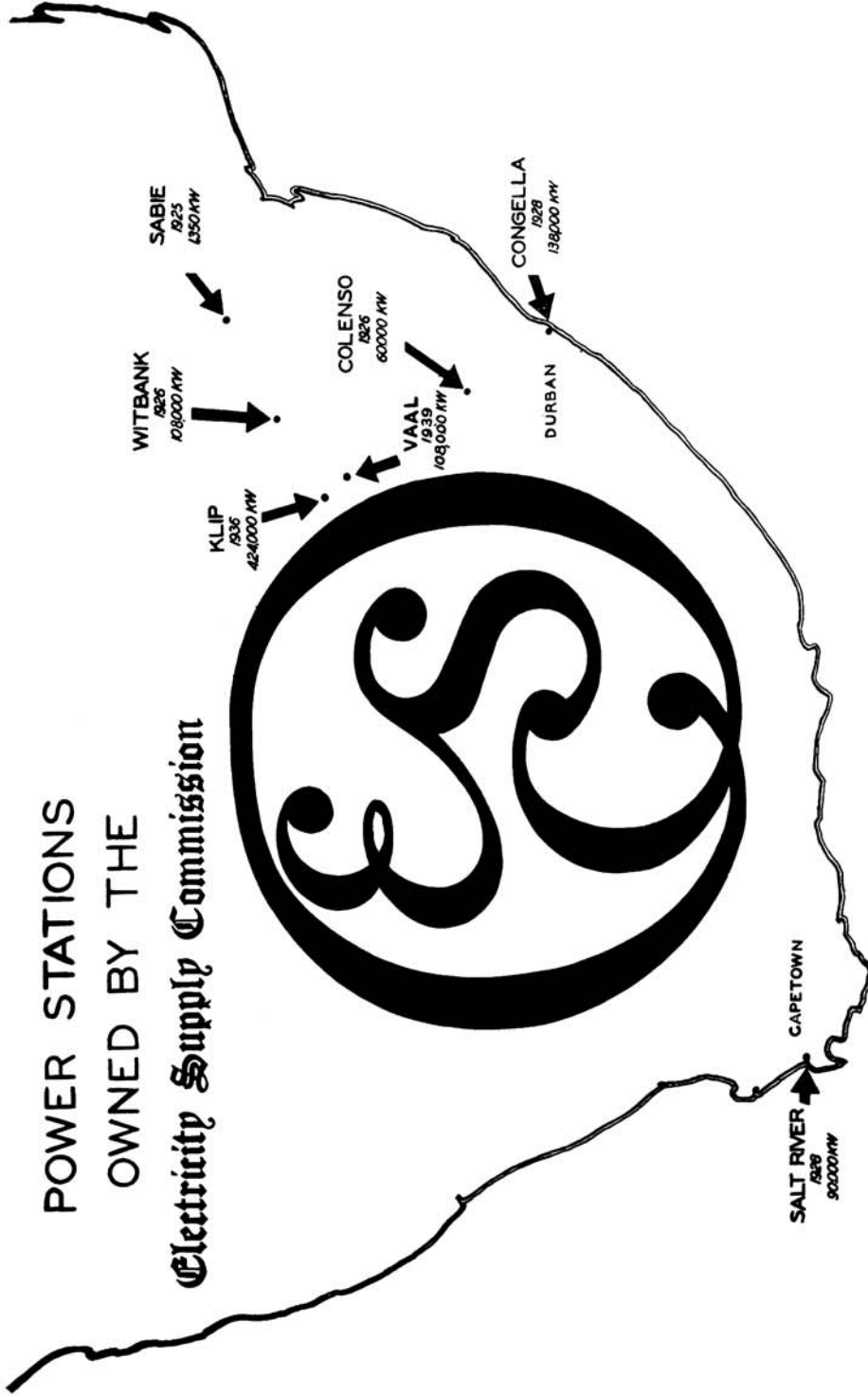
The Commission takes this opportunity of expressing its appreciation of the efficient and loyal services rendered by the Staff.

## STAFF.

The staff employed by the Commission at its Head Office and at its various Undertakings, excluding the Klip and Witbank Power Stations, which are operated by The Victoria Falls and Transvaal Power Company, Limited, on behalf of the Commission, numbered 519 Europeans and 578 non-Europeans at 31st December, 1938, an increase of 33 and 40 respectively as compared with the numbers at the end of 1937.

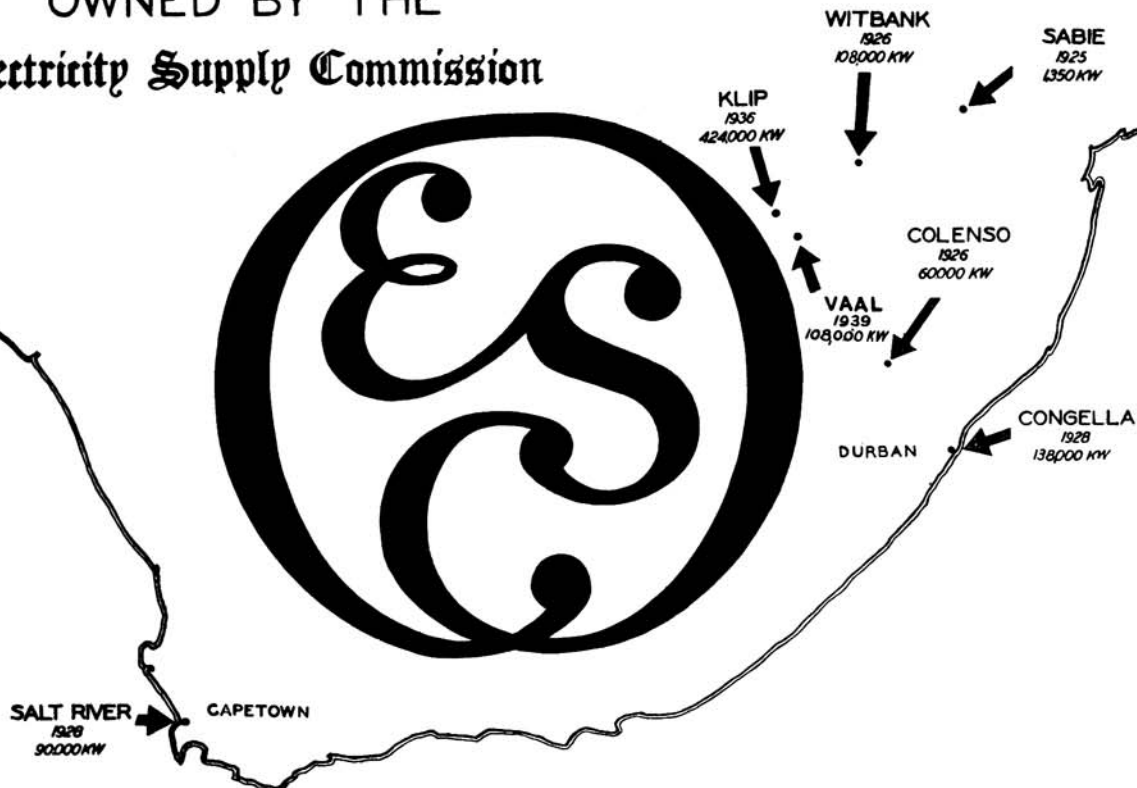
The Commission takes this opportunity of expressing its appreciation of the efficient and loyal services rendered by the Staff.

**POWER STATIONS  
OWNED BY THE  
Electricity Supply Commission**



*Station capacities shown refer to plant installed or on order.*

POWER STATIONS  
OWNED BY THE  
*Electricity Supply Commission*



*Station capacities shown refer to plant installed or on order.*

## COMMISSION'S UNDERTAKINGS.

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

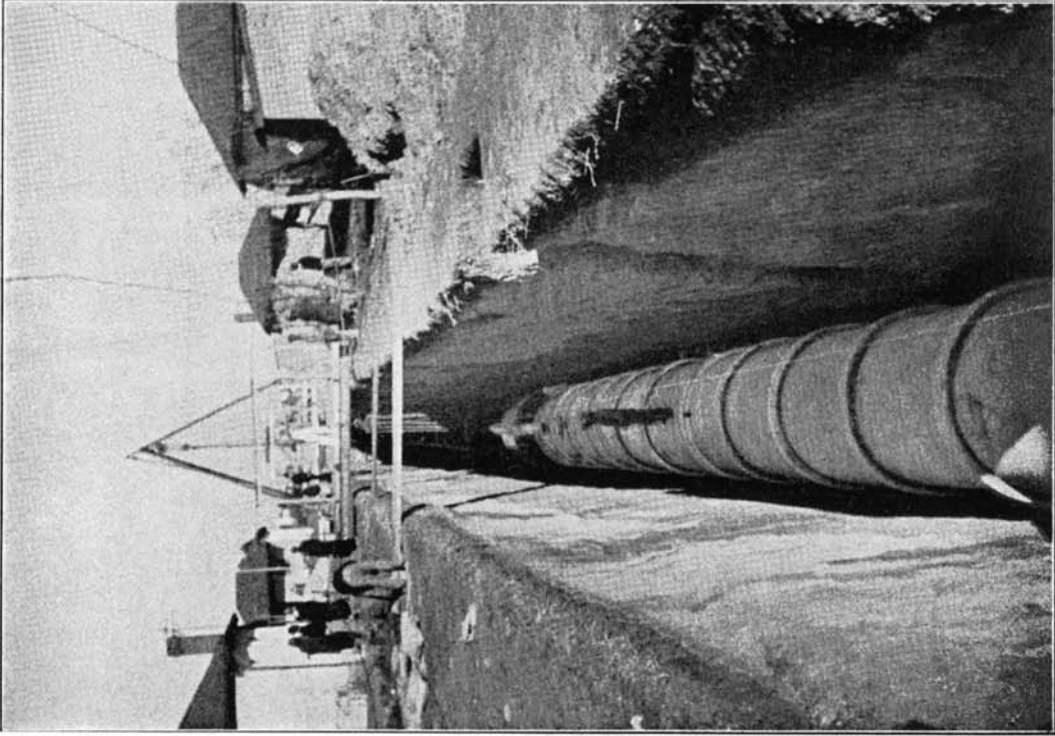
[General Note applicable to all Undertakings: The expression "Working Costs" includes Interest and Redemption Fund contributions on loan capital, and amounts set aside to Reserve Fund.]



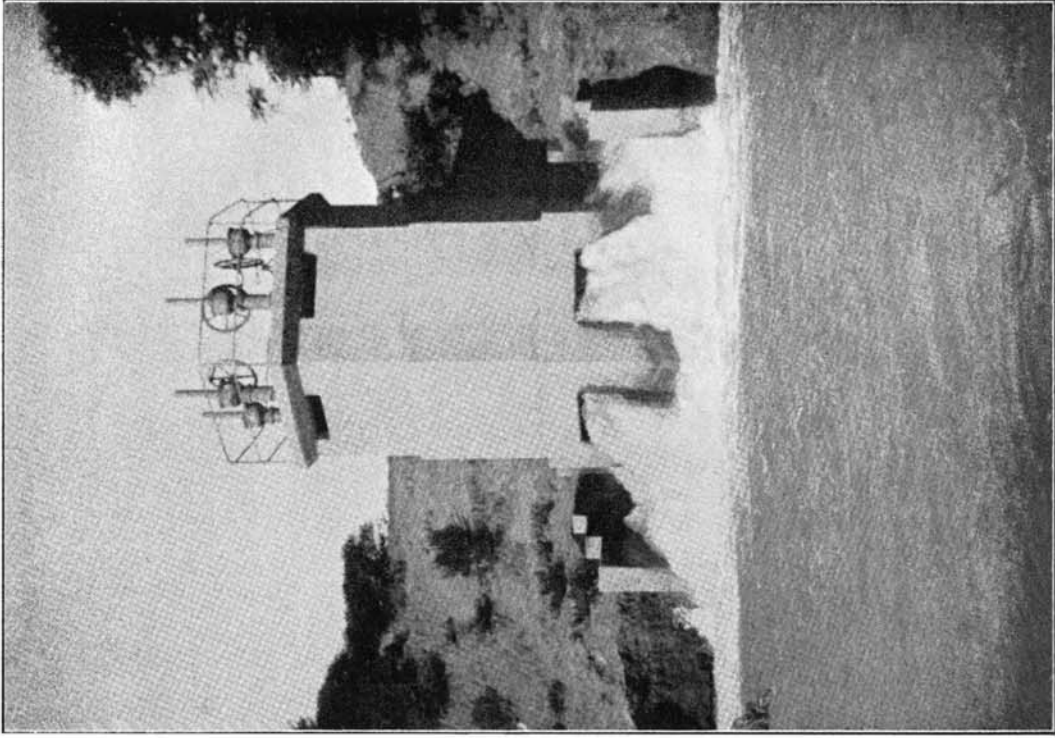
COMMISSION'S UNDERTAKINGS.

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

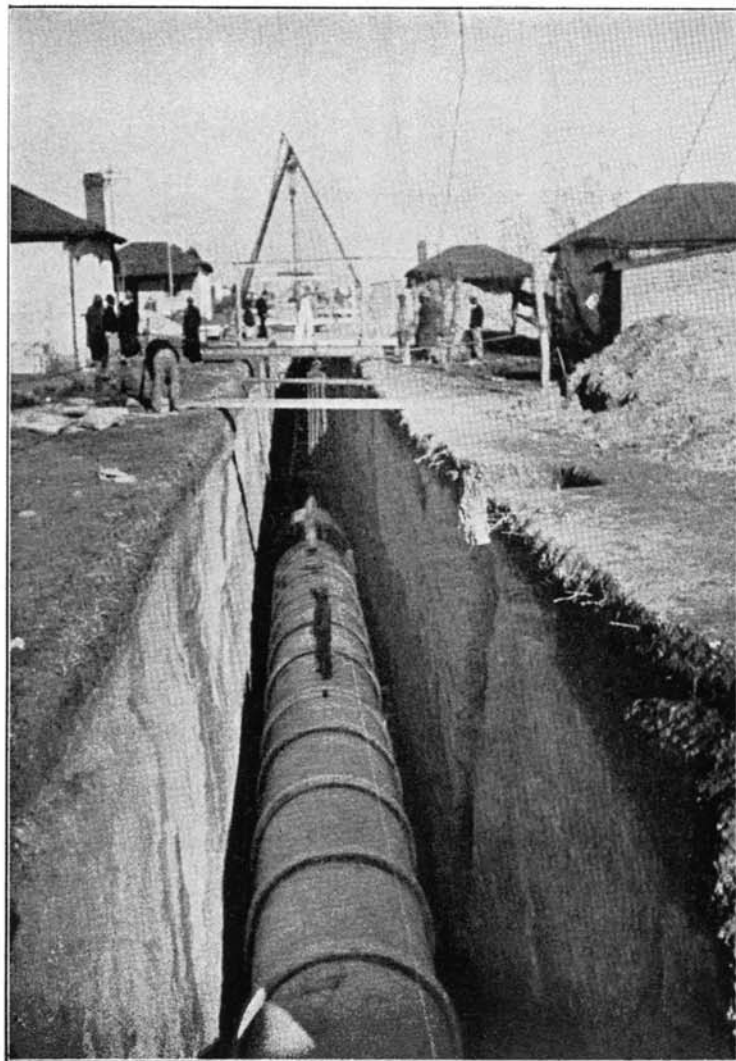
[General Note applicable to all Undertakings: The expression "Working Costs" includes Interest and Redemption Fund contributions on loan capital, and amounts set aside to Reserve Fund.]



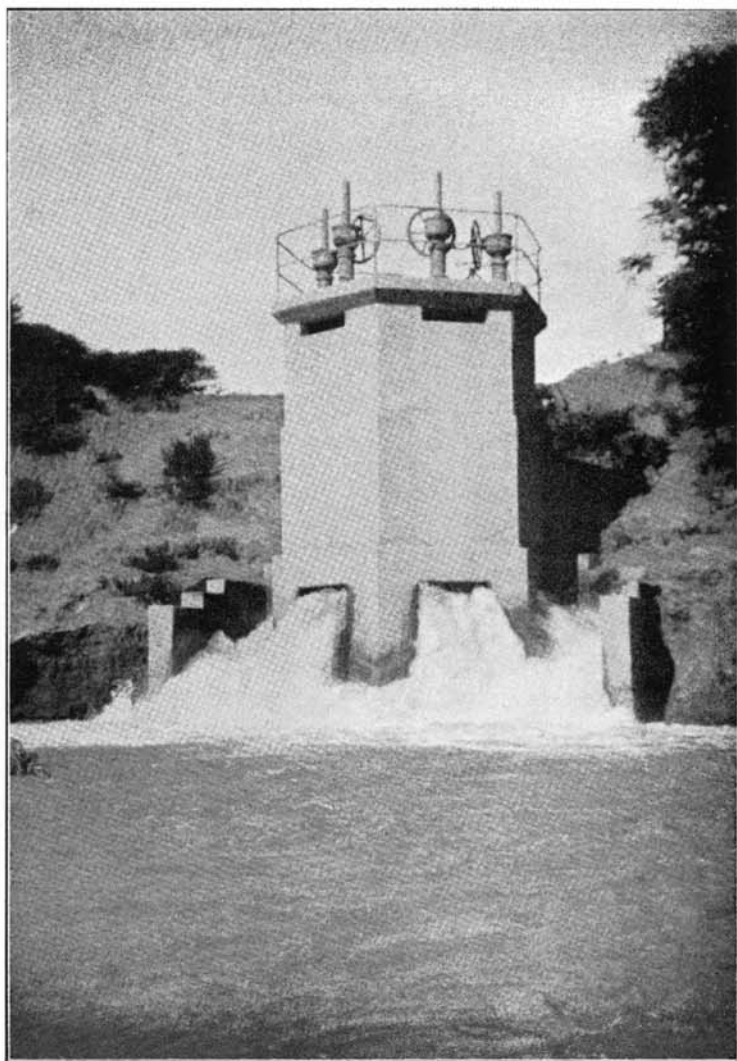
**Construction of circulating water discharge pipeline, Colenso Power Station.**



**The discharge from the new circulating water pipeline at Colenso.**



**Construction of circulating water discharge pipeline, Colenso Power Station.**



**The discharge from the new circulating water pipeline at Colenso.**

## NATAL CENTRAL UNDERTAKING.

Area of  
Supply.

The Colenso generating station, built in 1924, primarily to supply power for electrification of the Maritzburg-Glencoe section of the Natal main railway line, to-day supplies an enormously increased area, extending 186 miles south-eastwards to Durban, Natal, 135 miles northwards to Volksrust, Transvaal—shortly to be extended another 35 miles in that direction to Amersfoort—and 142 miles westwards to Bethlehem, Orange Free State.

Capacity  
of Colenso  
Power  
Station.

The plant at present installed at Colenso comprises five 12,000 kW. turbo generating sets and twelve 60,000 lbs./hr. boilers.

Circulating  
Water  
System.

With the growth of load on the Colenso Power Station the quantity of circulating water abstracted from the Tugela River for condensing purposes has increased considerably, and during periods of low river flow it was found that the volume of heated water discharged into the river created excessively high temperatures of the water at the intake, due to the surface area available between the intake and the barrage, with the discharge at a point about midway, being too small for efficient cooling under such conditions. It was, therefore, decided to provide an alternative discharge duct with outfall works at a point approximately one mile upstream, thereby increasing the cooling surface area by approximately 1,250,000 square feet and ensuring lower temperatures of circulating water in the river storage area during dry season water level. This work was completed in November, 1938.

Capital  
Expenditure.

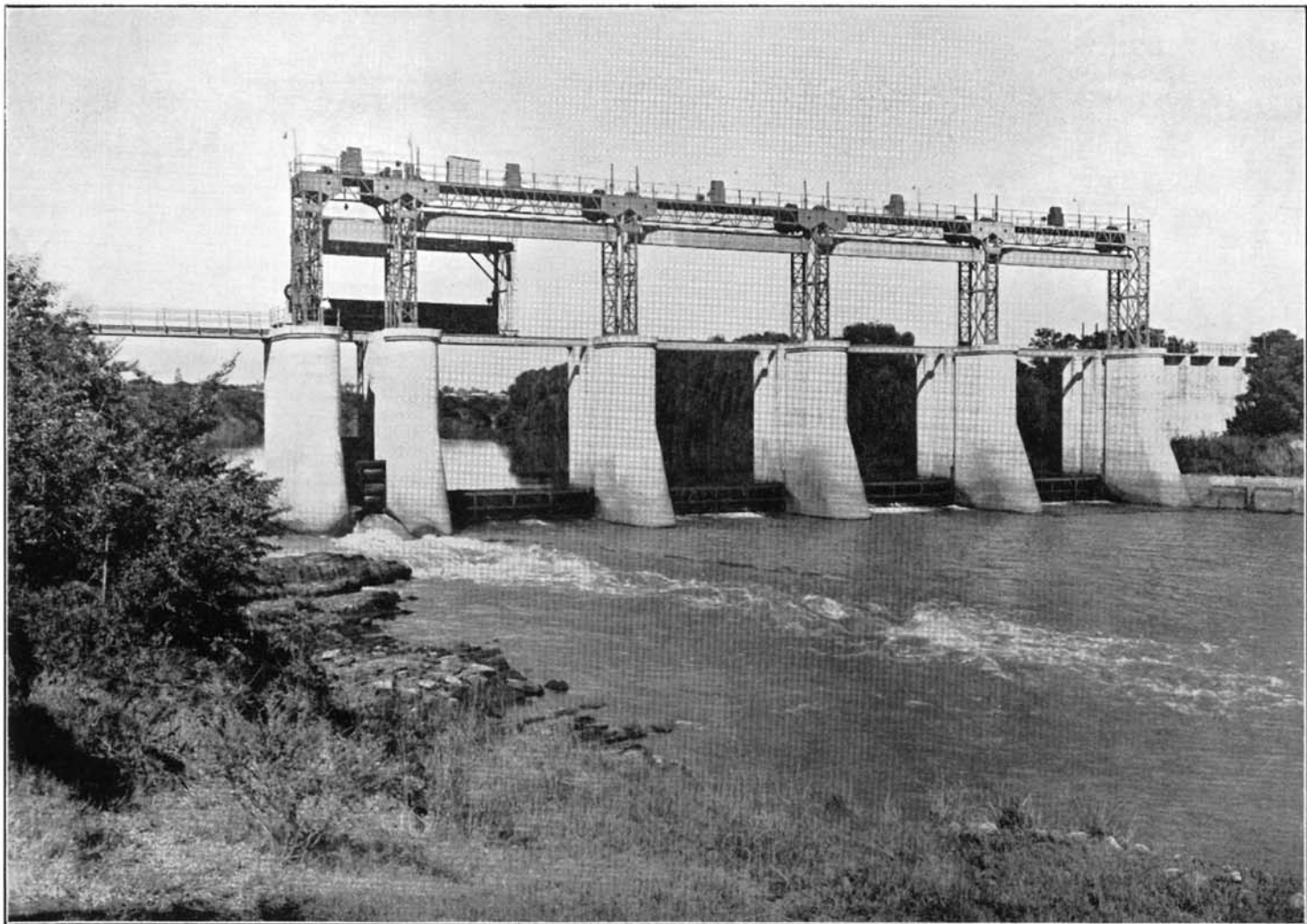
The capital expenditure on the Undertaking as at 31st December, 1938, was £4,084,465, an increase of £63,098, as compared with the figures for 1937.

Output  
and  
Sales.

The units sent out from the Colenso Power Station during the year totalled 253,080,056, an increase of 12·7 per cent. over the previous year. Of the total 193,515,650 units were sold for railway traction purposes, or 10·7 per cent. more than in 1937.

Sales for all purposes were as follows:—

	Units.	Percentage increase over 1937.
Bulk (10 consumers—municipal) ... ..	31,348,873	13·66
Industrial and Mining (110 consumers) ... ..	8,137,550	21·85
Domestic and Lighting (1,297 consumers) ... ..	1,951,084	26·17
Railway Traction . . . . .	193,515,650	10·70



**Natal Central Undertaking, Colenso Power Station: Barrage on Tugela River.**

The maximum half-hourly demand sent out was 47,220 kW., and the load factor 61·2 per cent. The thermal efficiency of the power station on units sent out was 17·7 per cent.

**Working  
Results.**

The revenue for the year was £494,871, and the working costs £493,115. The average price per unit sold decreased by 4·2 per cent. from 0·523d. in 1937 to 0·501d. in 1938.

**New  
Consumers.**

The following reticulation schemes in the area of supply of the Natal Central Undertaking were completed during the year:—

	Number of Consumers.
Weenen ... ..	96
Wakkerstroom ... ..	68
Hattingspruit ... ..	20
Nels Rust ... ..	10
Lions River ... ..	4

The townships of Amersfoort, in the Transvaal, and Kestell, in the Orange Free State, are also being connected to the system of this Undertaking and construction work on these schemes is now in progress.

The system was extended during the year to supply farmers in the districts of Howick, Merrivale, Richmond, Thornville, Thornybush, Umlaas Road and Weenen.

Seventy-six farms were being supplied with electricity from the Colenso Power Station at the end of 1938.

The total number of consumers supplied by the Undertaking at 31st December, 1938, was 1,418, including bulk supplies to ten local authorities, showing an increase of 291 consumers over the previous year.

**Domestic  
Electrical  
Appliances:  
Hire-  
Purchase  
Scheme.**

The sale of domestic electrical appliances under the hire-purchase scheme of the Natal Central Undertaking is largely confined to consumers in the rural areas, as the larger municipalities taking bulk supplies of electricity from the Commission operate their own hire-purchase schemes. At the end of 1938 a total of 110 electric ranges had been installed under the Commission's Natal Central Undertaking scheme.



## NATAL CENTRAL UNDERTAKING.

Area of  
Supply.

The Colenso generating station, built in 1924, primarily to supply power for electrification of the Maritzburg-Glencoe section of the Natal main railway line, to-day supplies an enormously increased area, extending 186 miles south-eastwards to Durban, Natal, 135 miles northwards to Volksrust, Transvaal—shortly to be extended another 35 miles in that direction to Amersfoort—and 142 miles westwards to Bethlehem, Orange Free State.

Capacity  
of Colenso  
Power  
Station.

The plant at present installed at Colenso comprises five 12,000 kW. turbo generating sets and twelve 60,000 lbs./hr. boilers.

Circulating  
Water  
System.

With the growth of load on the Colenso Power Station the quantity of circulating water abstracted from the Tugela River for condensing purposes has increased considerably, and during periods of low river flow it was found that the volume of heated water discharged into the river created excessively high temperatures of the water at the intake, due to the surface area available between the intake and the barrage, with the discharge at a point about mid-way, being too small for efficient cooling under such conditions. It was, therefore, decided to provide an alternative discharge duct with outfall works at a point approximately one mile upstream, thereby increasing the cooling surface area by approximately 1,250,000 square feet and ensuring lower temperatures of circulating water in the river storage area during dry season water level. This work was completed in November, 1938.

Capital  
Expenditure.

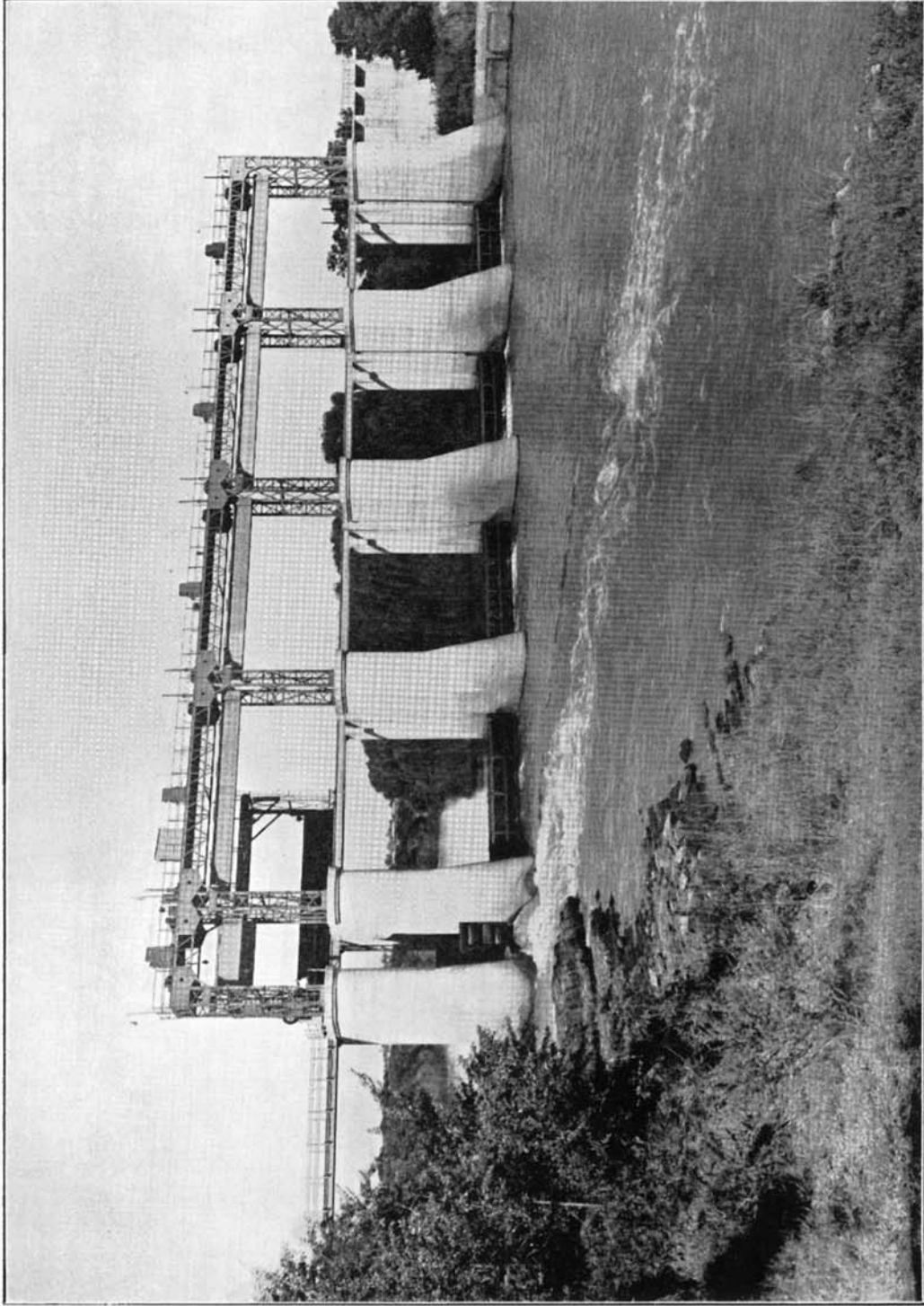
The capital expenditure on the Undertaking as at 31st December, 1938, was £4,084,465, an increase of £63,098, as compared with the figures for 1937.

Output  
and  
Sales.

The units sent out from the Colenso Power Station during the year totalled 253,080,056, an increase of 12·7 per cent. over the previous year. Of the total 193,515,650 units were sold for railway traction purposes, or 10·7 per cent. more than in 1937.

Sales for all purposes were as follows :—

	Units.	Percentage increase over 1937.
Bulk (10 consumers—municipal) ... ..	31,343,873	13·66
Industrial and Mining (110 consumers) ... ..	8,137,550	21·85
Domestic and Lighting (1,297 consumers) ... ..	1,951,084	26·17
Railway Traction . . . . .	193,515,650	10·70



**Natal Central Undertaking, Colenso Power Station: Barrage on Tugela River.**

*[Merl La Voy.]*



The maximum half-hourly demand sent out was 47,220 kW., and the load factor 61·2 per cent. The thermal efficiency of the power station on units sent out was 17·7 per cent.

**Working Results.**

The revenue for the year was £494,871, and the working costs £493,115. The average price per unit sold decreased by 4·2 per cent. from 0·523d. in 1937 to 0·501d. in 1938.

**New Consumers.**

The following reticulation schemes in the area of supply of the Natal Central Undertaking were completed during the year :—

					Number of Consumers.
Weenen ...	...	...	...	...	96
Wakkerstroom ...	...	...	...	...	68
Hattingspruit ...	...	...	...	...	20
Nels Rust ...	...	...	...	...	10
Lions River ...	...	...	...	...	4

The townships of Amersfoort, in the Transvaal, and Kestell, in the Orange Free State, are also being connected to the system of this Undertaking and construction work on these schemes is now in progress.

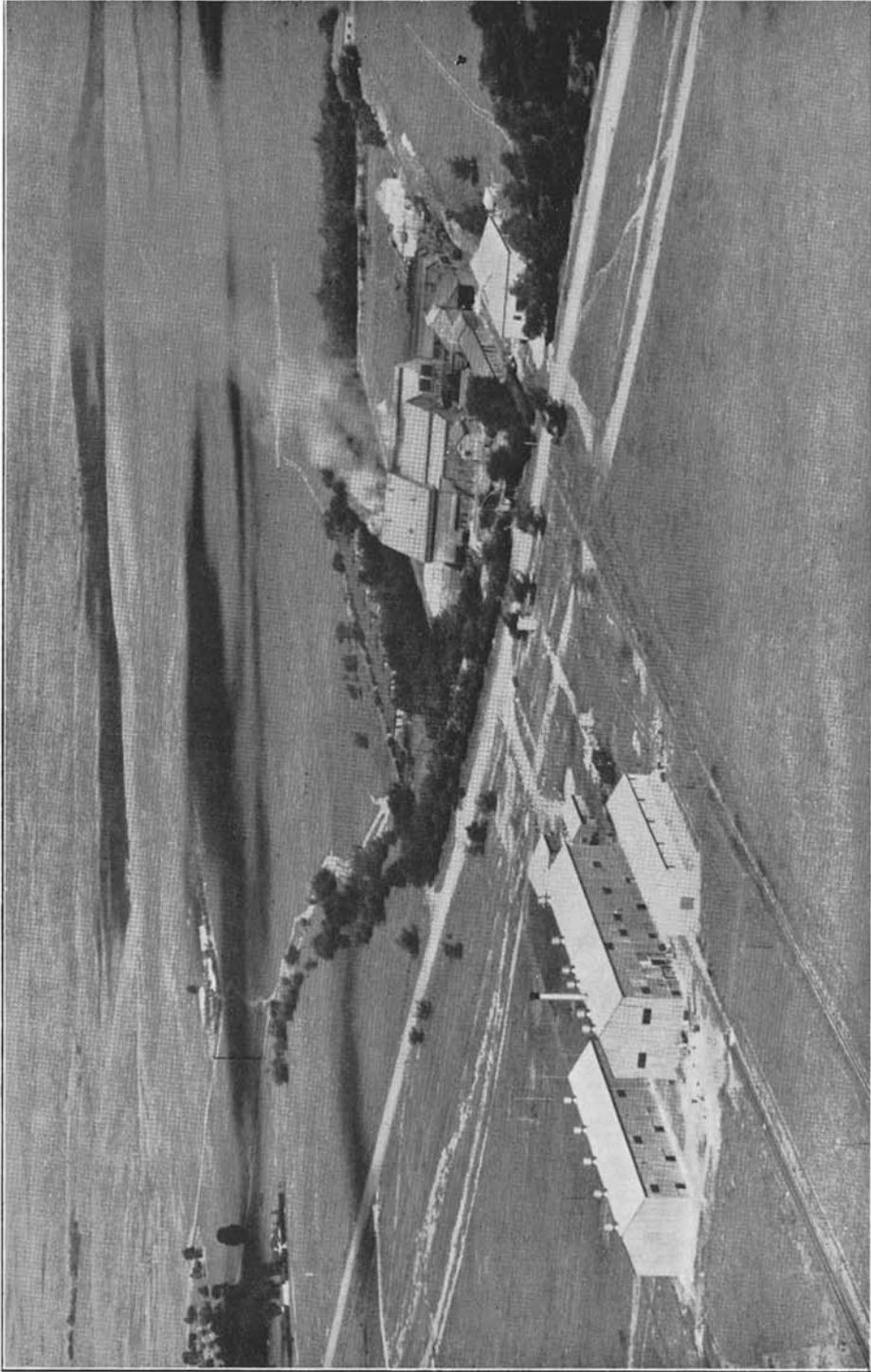
The system was extended during the year to supply farmers in the districts of Howick, Merrivale, Richmond, Thornville, Thornybush, Umlaas Road and Weenen.

Seventy-six farms were being supplied with electricity from the Colenso Power Station at the end of 1938.

The total number of consumers supplied by the Undertaking at 31st December, 1938, was 1,418, including bulk supplies to ten local authorities, showing an increase of 291 consumers over the previous year.

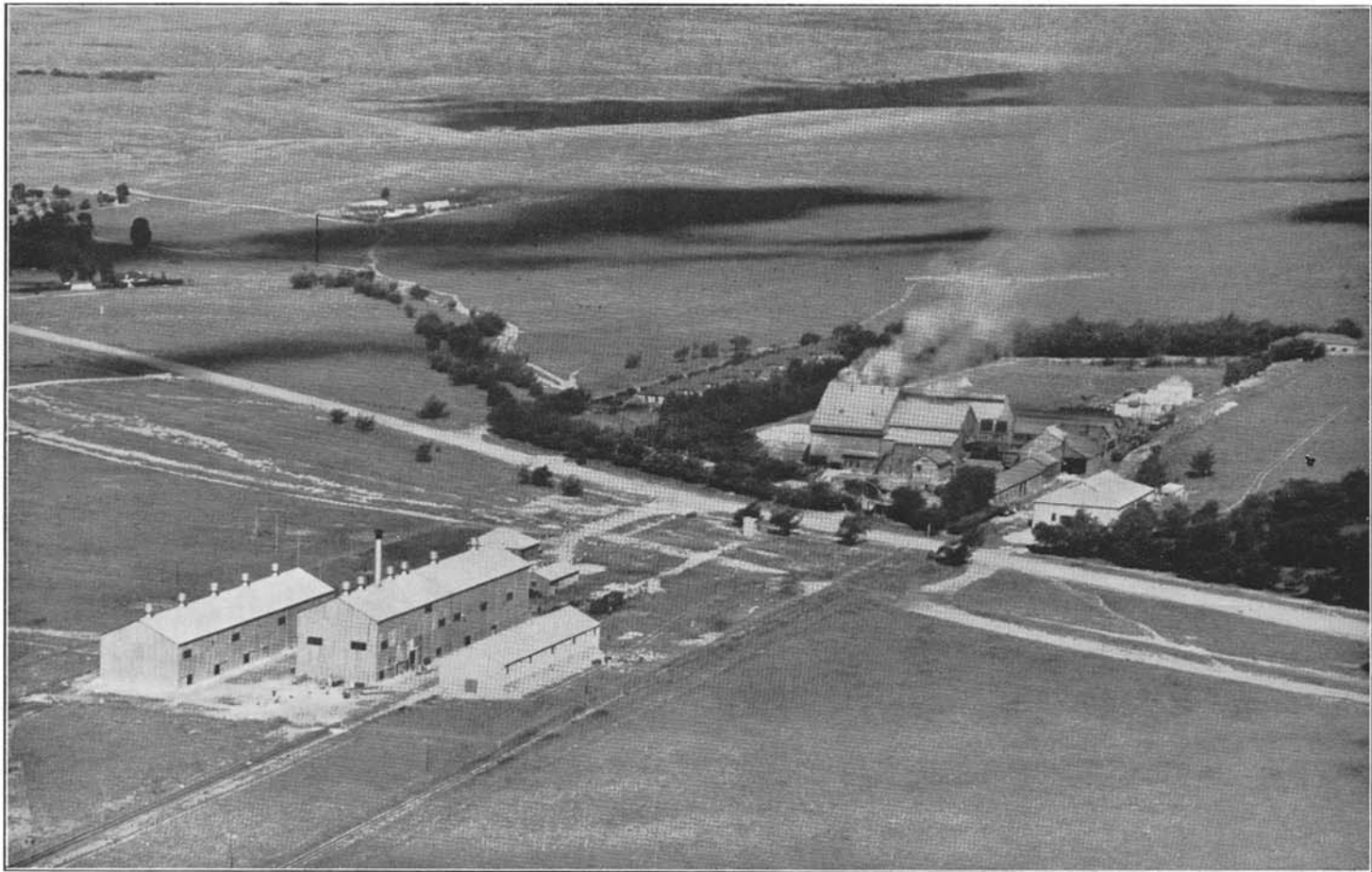
**Domestic Electrical Appliances: Hire-Purchase Scheme.**

The sale of domestic electrical appliances under the hire-purchase scheme of the Natal Central Undertaking is largely confined to consumers in the rural areas, as the larger municipalities taking bulk supplies of electricity from the Commission operate their own hire-purchase schemes. At the end of 1938 a total of 110 electric ranges had been installed under the Commission's Natal Central Undertaking scheme.



**Witbank Undertaking: Showing the electro-chemical works of two major consumers.**

*[Aircraft Operating Co., Ltd.]*



**Witbank Undertaking: Showing the electro-chemical works of two major consumers.**

*[Aircraft Operating Co., Ltd.]*

## WITBANK UNDERTAKING.

Witbank  
Power  
Station

An 8,000 kilowatt house turbine was ordered for the Witbank Power Station during the year and is now in course of erection. This set, which is expected to be ready for service by the middle of June, 1939, replaces a 1,000 kilowatt non-condensing house set originally installed in the station. It will be used to augment the output from the Power Station during periods when any of the main generating sets are out of commission for overhaul or condenser cleaning. An added advantage will accrue in that the house set will be capable of carrying the auxiliary plant load, and this will result in more stable and reliable operation of the main generating sets which will be relieved of that load. The house set will increase the installed plant capacity of the station to 108,000 kW., there being five main turbo-alternators of 20,000 kW. capacity each in the station.

It was also decided to replace the stators on the five main generating sets owing to the deterioration of the windings.

Grit extracting equipment was fitted to two of the original boilers in the power station. As the result of the successful operation of this plant, similar equipment was installed during the year on the remaining fourteen boilers, the last four boilers installed in the Power Station having been originally equipped with grit extracting plant. This installation has considerably reduced the deposit of grit on the outdoor high tension structure adjacent to the Power Station.

Capital  
Expenditure

The capital expenditure on this Undertaking was increased in 1938 by £39,247 to £2,479,782.

Output  
and  
Sales

The Witbank Power Station sent out 705,712,440 units of electricity in 1938, or 4·6 per cent. more than in 1937. The station is operated on behalf of the Commission by The Victoria Falls and Transvaal Power Company, Limited, and the bulk of the output is taken by that Company for supply to gold mines, industries and towns along the Reef. In 1938 sales of electricity to The Falls Company amounted to 623,602,984 units, which represents 88·4 per cent. of the output of the station, and reflects an increase of 3·2 per cent over the sales to this consumer in 1937.

The balance of the output from the Witbank Power Station, after allowing for transmission, distribution and transformation losses, was sold as follows:—

	Units.
Bulk (Middelburg Municipality) ... ..	933,150
Industrial and Mining (60 consumers) ... ..	78,858,247
Domestic and Lighting (679 consumers) ... ..	1,246,594
	<hr/>
	81,037,991
	<hr/> <hr/>

By comparison with the figures for 1937, sales to the industrial and mining consumers increased by 17·6 per cent., but sales to the Middelburg Municipality were down by 0·9 per cent., and domestic and lighting supplies show a reduction of 8·7 per cent., due to the transfer of a consumer from this class to the industrial class.

In addition to the above, the Witbank Undertaking sold to the Railway Administration for the Reef and Germiston-Pretoria railway electrification 63,473,297 units of electricity, which were purchased by the Commission as follows:—

	Units.
Victoria Falls and Transvaal Power Company, Limited	63,011,733
Pretoria Municipality ... ..	461,564
	<hr/>
	63,473,297
	<hr/> <hr/>

Total sales of electricity from the Witbank Undertaking in 1938 increased by 12·2 per cent. as compared with sales in the previous year.

The revenue for the year was £486,051, and the working costs amounted to £476,801.

The average price per unit sold for all supplies increased from 0·140d. in 1937 to 0·150d. in 1938, due to the greater number of units of electricity purchased by the Commission from the above outside sources for supply to the Railway Administration for traction purposes. Excluding the units sold for railway traction on the Reef and the Germiston-Pretoria section, the average price per unit sold decreased from 0·135d. in 1937 to 0·128d. in 1938.

The average maximum hourly demand sent out was 99,020 kW., and the load factor was 81·4 per cent.

The thermal efficiency of the station on units sent out was 16·20 per cent.

**New  
Consumers.**

During the period under review the supply of electricity was commenced to the newly established works of South African Cyanamid (Pty.), Limited, at Witbank, and to the Tavistock and Uitspan Collieries. In addition 65 new consumers were connected to the Witbank reticulation system, bringing the total number of consumers at the end of 1938 up to 742.

**Hire-  
Purchase  
Scheme.**

Sales of domestic electrical appliances under the hire-purchase scheme of the Witbank Undertaking up to 31st December, 1938, were as follows:—

Ranges	...	...	...	...	119
Refrigerators	...	...	...	...	45
Water Heaters	...	...	...	...	24
Miscellaneous small appliances	...	...	...	...	575

## WITBANK UNDERTAKING.

Witbank  
Power  
Station

An 8,000 kilowatt house turbine was ordered for the Witbank Power Station during the year and is now in course of erection. This set, which is expected to be ready for service by the middle of June, 1939, replaces a 1,000 kilowatt non-condensing house set originally installed in the station. It will be used to augment the output from the Power Station during periods when any of the main generating sets are out of commission for overhaul or condenser cleaning. An added advantage will accrue in that the house set will be capable of carrying the auxiliary plant load, and this will result in more stable and reliable operation of the main generating sets which will be relieved of that load. The house set will increase the installed plant capacity of the station to 108,000 kW., there being five main turbo-alternators of 20,000 kW. capacity each in the station.

It was also decided to replace the stators on the five main generating sets owing to the deterioration of the windings.

Grit extracting equipment was fitted to two of the original boilers in the power station. As the result of the successful operation of this plant, similar equipment was installed during the year on the remaining fourteen boilers, the last four boilers installed in the Power Station having been originally equipped with grit extracting plant. This installation has considerably reduced the deposit of grit on the outdoor high tension structure adjacent to the Power Station.

Capital  
Expenditure

The capital expenditure on this Undertaking was increased in 1938 by £39,247 to £2,479,782.

Output  
and  
Sales

The Witbank Power Station sent out 705,712,440 units of electricity in 1938, or 4·6 per cent. more than in 1937. The station is operated on behalf of the Commission by The Victoria Falls and Transvaal Power Company, Limited, and the bulk of the output is taken by that Company for supply to gold mines, industries and towns along the Reef. In 1938 sales of electricity to The Falls Company amounted to 623,602,984 units, which represents 88·4 per cent. of the output of the station, and reflects an increase of 3·2 per cent over the sales to this consumer in 1937.



The balance of the output from the Witbank Power Station, after allowing for transmission, distribution and transformation losses, was sold as follows:—

	Units.
Bulk (Middelburg Municipality) ... ..	933,150
Industrial and Mining (60 consumers) ... ..	78,858,247
Domestic and Lighting (679 consumers) ... ..	1,246,594
	<u>81,037,991</u>

By comparison with the figures for 1937, sales to the industrial and mining consumers increased by 17·6 per cent., but sales to the Middelburg Municipality were down by 0·9 per cent., and domestic and lighting supplies show a reduction of 8·7 per cent., due to the transfer of a consumer from this class to the industrial class.

In addition to the above, the Witbank Undertaking sold to the Railway Administration for the Reef and Germiston-Pretoria railway electrification 63,473,297 units of electricity, which were purchased by the Commission as follows:—

	Units.
Victoria Falls and Transvaal Power Company, Limited	63,011,733
Pretoria Municipality ... ..	461,564
	<u>63,473,297</u>

Total sales of electricity from the Witbank Undertaking in 1938 increased by 12·2 per cent. as compared with sales in the previous year.

**Working  
Results.**

The revenue for the year was £486,051, and the working costs amounted to £476,801.

The average price per unit sold for all supplies increased from 0·140d. in 1937 to 0·150d. in 1938, due to the greater number of units of electricity purchased by the Commission from the above outside sources for supply to the Railway Administration for traction purposes. Excluding the units sold for railway traction on the Reef and the Germiston-Pretoria section, the average price per unit sold decreased from 0·135d. in 1937 to 0·128d. in 1938.

The average maximum hourly demand sent out was 99,020 kW., and the load factor was 81·4 per cent.



The thermal efficiency of the station on units sent out was 16·20 per cent.

**New Consumers.**

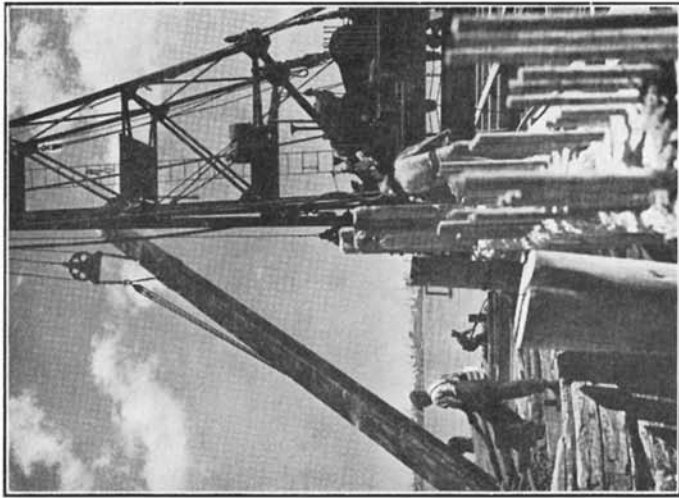
During the period under review the supply of electricity was commenced to the newly established works of South African Cyanamid (Pty.), Limited, at Witbank, and to the Tavistock and Uitspan Collieries. In addition 65 new consumers were connected to the Witbank reticulation system, bringing the total number of consumers at the end of 1938 up to 742.

**Hire-Purchase Scheme.**

Sales of domestic electrical appliances under the hire-purchase scheme of the Witbank Undertaking up to 31st December, 1938, were as follows:—

Ranges	...	...	...	...	119
Refrigerators	...	...	...	...	45
Water Heaters	...	...	...	...	24
Miscellaneous small appliances	...	...	...	...	575

---



**Construction of new Circulating Water Intake, Salt River Power Station. Pile-driver at work in Table Bay.**



**New Circulating Water Intake. View looking towards the Salt River Power Station.**

*[Neville Clayton.]*



**Construction of new Circulating Water Intake, Salt River Power Station.  
Pile-driver at work in Table Bay.**



**New Circulating Water Intake. View looking towards the Salt River Power Station.**

*[Neville Clayton.]*

## CAPE TOWN UNDERTAKING.

## General.

Favourable weather conditions and the absence of any major plant troubles, such as were experienced during the previous year, enabled the pooled power stations of the Commission and the Cape Town Corporation at Salt River and Dock Road respectively, to meet the increased electricity requirements of the Cape Town Undertaking without the anticipated assistance from the Cape Town Corporation's new Table Bay Power Station. This station, with an initial installed capacity of three 40,000/50,000 turbo-alternator sets, will supersede the old Dock Road station in the pool, and was expected to be ready for service before the incidence of the winter peak loads in 1938. Actually it commenced only partial operation almost a year later due largely to plant manufacturers overseas being unable to adhere to the delivery programme on account of rearmament activities.

## Output and Sales.

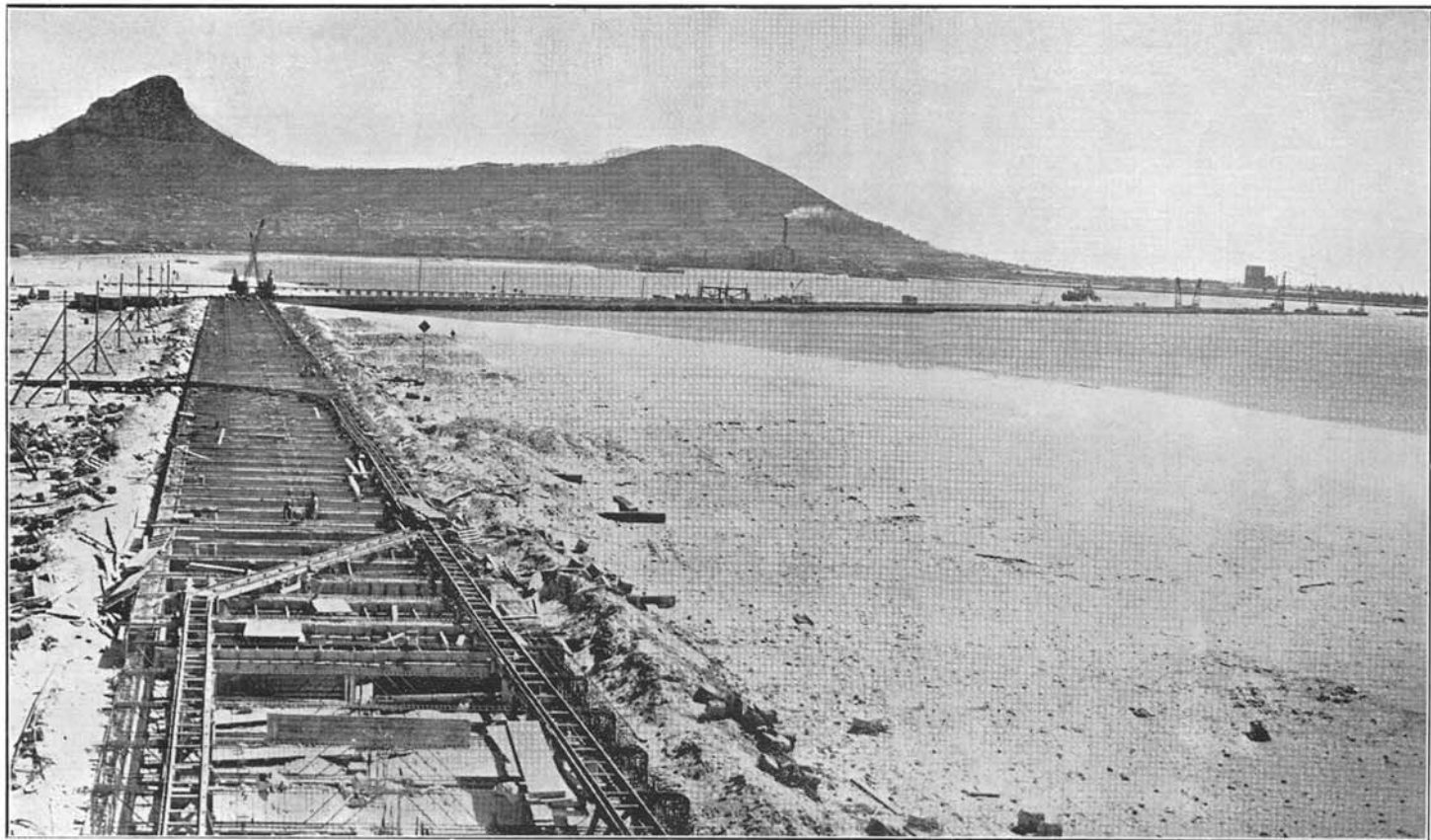
A record total of 333,587,582 units was sent out from the Commission's Salt River Power Station in 1938. The Dock Road Power Station supplied 11,315,782 units to the system, making the total units sent out from both stations 344,903,364, of which 239,422,907 units were supplied to the Cape Town Corporation under the pooling agreement between the parties. The balance, after allowing for losses in transmission and distribution, viz., 98,801,619 units, was sold as follows:—

	Units.	Percentage increase over 1937.
Bulk (three Municipalities) ... ..	12,324,733	+ 12·1
Railway Traction ... ..	51,895,326	+ 3·3
Industrial (237 consumers) ... ..	28,048,528	+ 0·4
Domestic and Lighting—direct supplies (4,289 consumers) ... ..	6,533,032	+ 34·1

The units sold in 1938, excluding those supplied to the Cape Town Corporation, represent an increase of 5·1 per cent. as compared with the sales for the previous year.

## Working Results.

The thermal efficiency of the Salt River Power Station on units sent out was 20·3 per cent. for the year 1938. The half-hourly maximum demand sent out was 78,000 kW., and the load factor 48·8 per cent.



**New Circulating Water Intake, Salt River Power Station, showing the new Table Bay Power Station in the distance.**

The revenue for the year was £327,072 and the working costs £326,430, which includes a proportion of the pooled costs consisting of the total costs of Salt River and Dock Road Power Stations, and £76,315 for Redemption Fund in respect of the loans raised specifically for the construction of the Capetown Corporation's Table Bay Power Station. Although this station was not in commission during 1938, provision for the redemption of the loans as from the dates they were raised was made by the Cape Town Corporation, and the amount charged to the Commission's costs covers its proportion for the year 1938. The Commission also made provision for a further amount of £12,616 representing its proportion of the redemption charges in respect of the period July to December, 1937. The manner in which these amounts have been dealt with is referred to in the Auditors' Report.

The average price per unit to all consumers shows a slight decrease from 0·793d. in 1937 to 0·781d. in 1938.

Salt River  
Power  
Station  
Circulating  
Water  
Works.

Good progress was made during the year on the construction of the hollow mole and other works in connection with the new supplementary circulating water system for the Salt River Power Station. This is being carried out in conjunction with the Cape Town foreshore and harbour development scheme of the Government. At the end of March about two-thirds of the concrete piling work had been completed and the pump house had been constructed to ground surface level.

Capital  
Expenditure.

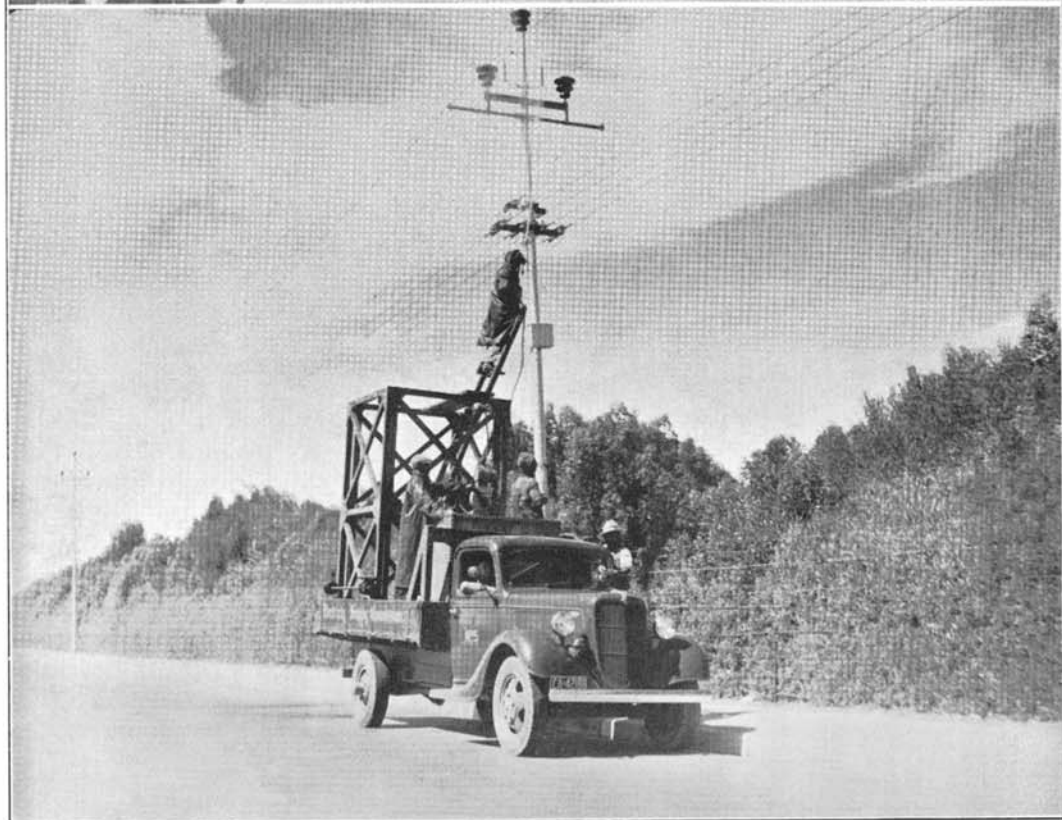
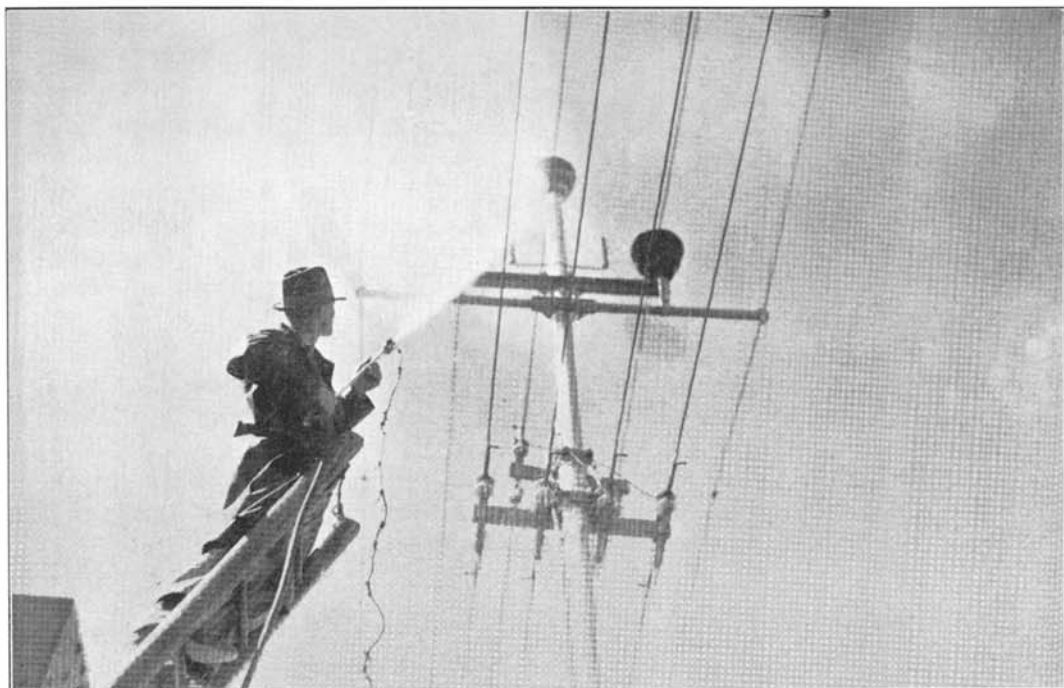
Capital Expenditure on the Cape Town Undertaking during the year amounted to £160,336, which was incurred mainly in connection with the new circulating water intake works, bringing the total capital expenditure on the Undertaking as at 31st December, 1938, up to £2,449,491.

New  
Consumers.

Negotiations were concluded during the year with the Citizens Housing League Utility Company for the reticulation of electricity by the Commission to 600 houses to be built by the Company under a sub-economic housing scheme at Epping Garden Village, Goodwood. Every house is to be wired for an electric range which the tenants will be able to acquire under the Commission's hire-purchase scheme. At 31st December, 1938, electricity was being supplied to 70 houses in the village.

During the year arrangements were made with the Caledon Municipality and the Darling Village Management Board for the supply of electricity to consumers in their respective areas of jurisdiction.





**Capetown Undertaking: Washing insulators on "live" 33 kV. transmission line to remove deposit by fog and salt-laden winds.**

*[Merl La Vog.]*

Fifty-two additional industrial consumers requiring 288½ horse-power, were connected to the supply system of the Cape Town Undertaking during the year.

Extensions were made to supply additional farmers at Devon Valley, Durbanville, Koelenhof, Vlottenberg and Wellington. The total number of farms supplied with electricity from the Cape Town Undertaking as at 31st December, 1938, was 279, showing an increase of 32 over the previous year. Consumers of all classes taking supplies from the Undertaking at that date totalled 4,531 or 635 more than in 1937.

**Hire-Purchase Scheme.**

Sales of domestic electric appliances under the hire-purchase scheme of the Cape Town Undertaking, up to 31st December, 1938, were as follows:—

Ranges	...	...	...	...	1,380
Refrigerators	...	...	...	...	170
Washing Machines	...	...	...	...	352
Hot Water Cylinders	...	...	...	...	147

The foregoing figures refer only to appliances sold by the Commission to consumers taking supplies of electricity from the Commission's Reticulation Systems in the Cape rural areas. Facilities for the hire-purchase of appliances in the municipal area of supply are provided by the Cape Town Corporation.



## CAPE TOWN UNDERTAKING.

**General.**

Favourable weather conditions and the absence of any major plant troubles, such as were experienced during the previous year, enabled the pooled power stations of the Commission and the Cape Town Corporation at Salt River and Dock Road respectively, to meet the increased electricity requirements of the Cape Town Undertaking without the anticipated assistance from the Cape Town Corporation's new Table Bay Power Station. This station, with an initial installed capacity of three 40,000/50,000 turbo-alternator sets, will supersede the old Dock Road station in the pool, and was expected to be ready for service before the incidence of the winter peak loads in 1938. Actually it commenced only partial operation almost a year later due largely to plant manufacturers overseas being unable to adhere to the delivery programme on account of rearmament activities.

**Output and Sales.**

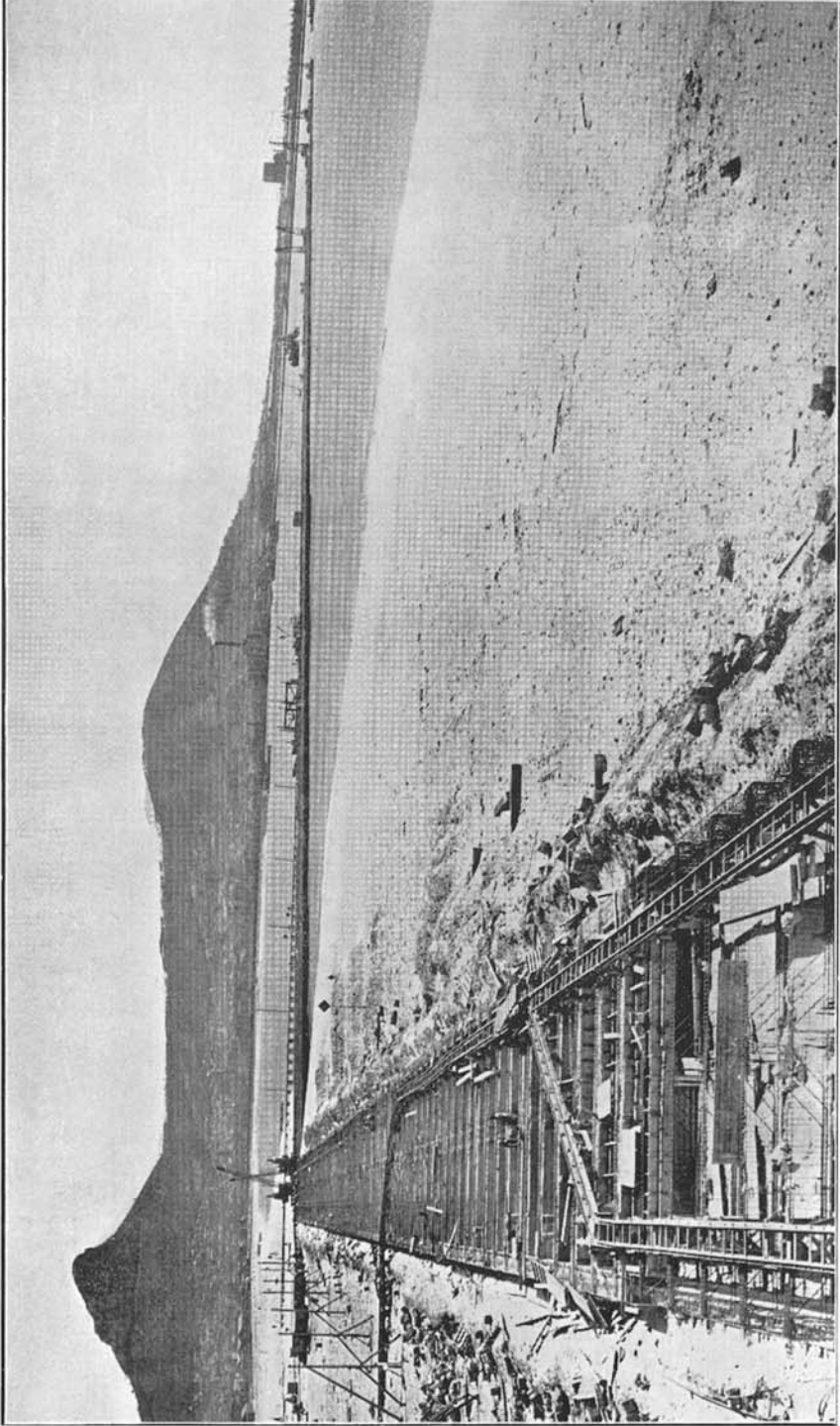
A record total of 333,587,582 units was sent out from the Commission's Salt River Power Station in 1938. The Dock Road Power Station supplied 11,315,782 units to the system, making the total units sent out from both stations 344,903,364, of which 239,422,907 units were supplied to the Cape Town Corporation under the pooling agreement between the parties. The balance, after allowing for losses in transmission and distribution, viz., 98,801,619 units, was sold as follows:—

	Units.	Percentage increase over 1937.
Bulk (three Municipalities) ... ..	12,324,733	+ 12·1
Railway Traction ... ..	51,895,326	+ 3·3
Industrial (237 consumers) ... ..	28,048,528	+ 0·4
Domestic and Lighting—direct supplies (4,289 consumers) ... ..	6,533,032	+ 34·1

The units sold in 1938, excluding those supplied to the Cape Town Corporation, represent an increase of 5·1 per cent. as compared with the sales for the previous year.

**Working Results.**

The thermal efficiency of the Salt River Power Station on units sent out was 20·3 per cent. for the year 1938. The half-hourly maximum demand sent out was 78,000 kW., and the load factor 48·8 per cent.



**New Circulating Water Intake, Salt River Power Station, showing the new Table Bay Power Station in the distance.**

*[Neville Clayton]*

The revenue for the year was £327,072 and the working costs £326,430, which includes a proportion of the pooled costs consisting of the total costs of Salt River and Dock Road Power Stations, and £76,315 for Redemption Fund in respect of the loans raised specifically for the construction of the Capetown Corporation's Table Bay Power Station. Although this station was not in commission during 1938, provision for the redemption of the loans as from the dates they were raised was made by the Cape Town Corporation, and the amount charged to the Commission's costs covers its proportion for the year 1938. The Commission also made provision for a further amount of £12,616 representing its proportion of the redemption charges in respect of the period July to December, 1937. The manner in which these amounts have been dealt with is referred to in the Auditors' Report.

The average price per unit to all consumers shows a slight decrease from 0·793d. in 1937 to 0·781d. in 1938.

Salt River  
Power  
Station  
Circulating  
Water  
Works.

Good progress was made during the year on the construction of the hollow mole and other works in connection with the new supplementary circulating water system for the Salt River Power Station. This is being carried out in conjunction with the Cape Town foreshore and harbour development scheme of the Government. At the end of March about two-thirds of the concrete piling work had been completed and the pump house had been constructed to ground surface level.

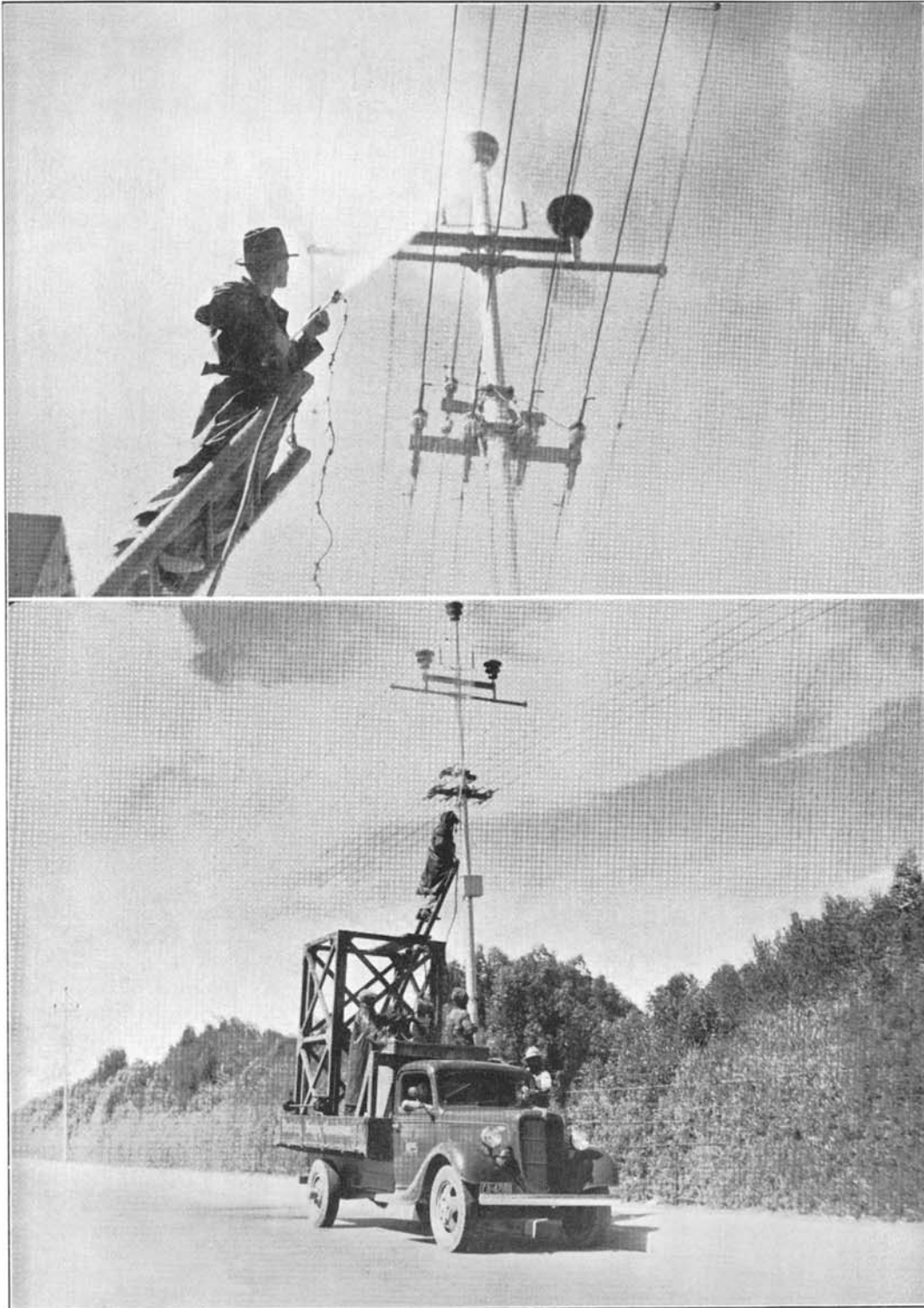
Capital  
Expenditure.

Capital Expenditure on the Cape Town Undertaking during the year amounted to £160,336, which was incurred mainly in connection with the new circulating water intake works, bringing the total capital expenditure on the Undertaking as at 31st December, 1938, up to £2,449,491.

New  
Consumers.

Negotiations were concluded during the year with the Citizens Housing League Utility Company for the reticulation of electricity by the Commission to 600 houses to be built by the Company under a sub-economic housing scheme at Epping Garden Village, Goodwood. Every house is to be wired for an electric range which the tenants will be able to acquire under the Commission's hire-purchase scheme. At 31st December, 1938, electricity was being supplied to 70 houses in the village.

During the year arrangements were made with the Caledon Municipality and the Darling Village Management Board for the supply of electricity to consumers in their respective areas of jurisdiction.



**Capetown Undertaking: Washing insulators on "live" 33 kV. transmission line to remove deposit by fog and salt-laden winds.**

*[Merl La Voy.]*

Fifty-two additional industrial consumers requiring 288½ horse-power, were connected to the supply system of the Cape Town Undertaking during the year.

Extensions were made to supply additional farmers at Devon Valley, Durbanville, Koelenhof, Vlottenberg and Wellington. The total number of farms supplied with electricity from the Cape Town Undertaking as at 31st December, 1938, was 279, showing an increase of 32 over the previous year. Consumers of all classes taking supplies from the Undertaking at that date totalled 4,531 or 635 more than in 1937.

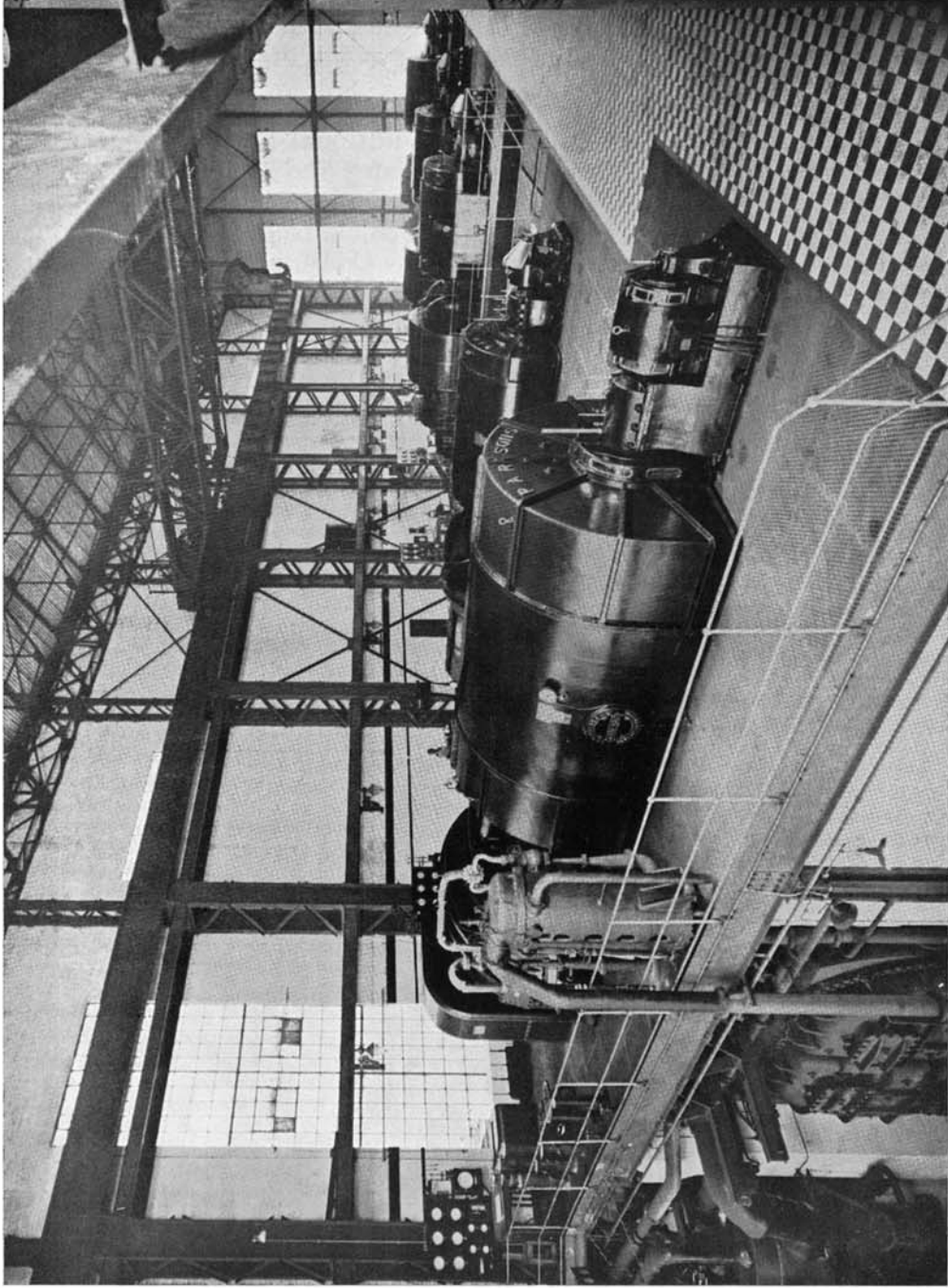
**Hire-Purchase Scheme.**

Sales of domestic electric appliances under the hire-purchase scheme of the Cape Town Undertaking, up to 31st December, 1938, were as follows:—

Ranges	...	...	...	...	1,380
Refrigerators	...	...	...	...	170
Washing Machines	...	...	...	...	352
Hot Water Cylinders	...	...	...	...	147

The foregoing figures refer only to appliances sold by the Commission to consumers taking supplies of electricity from the Commission's Reticulation Systems in the Cape rural areas. Facilities for the hire-purchase of appliances in the municipal area of supply are provided by the Cape Town Corporation.

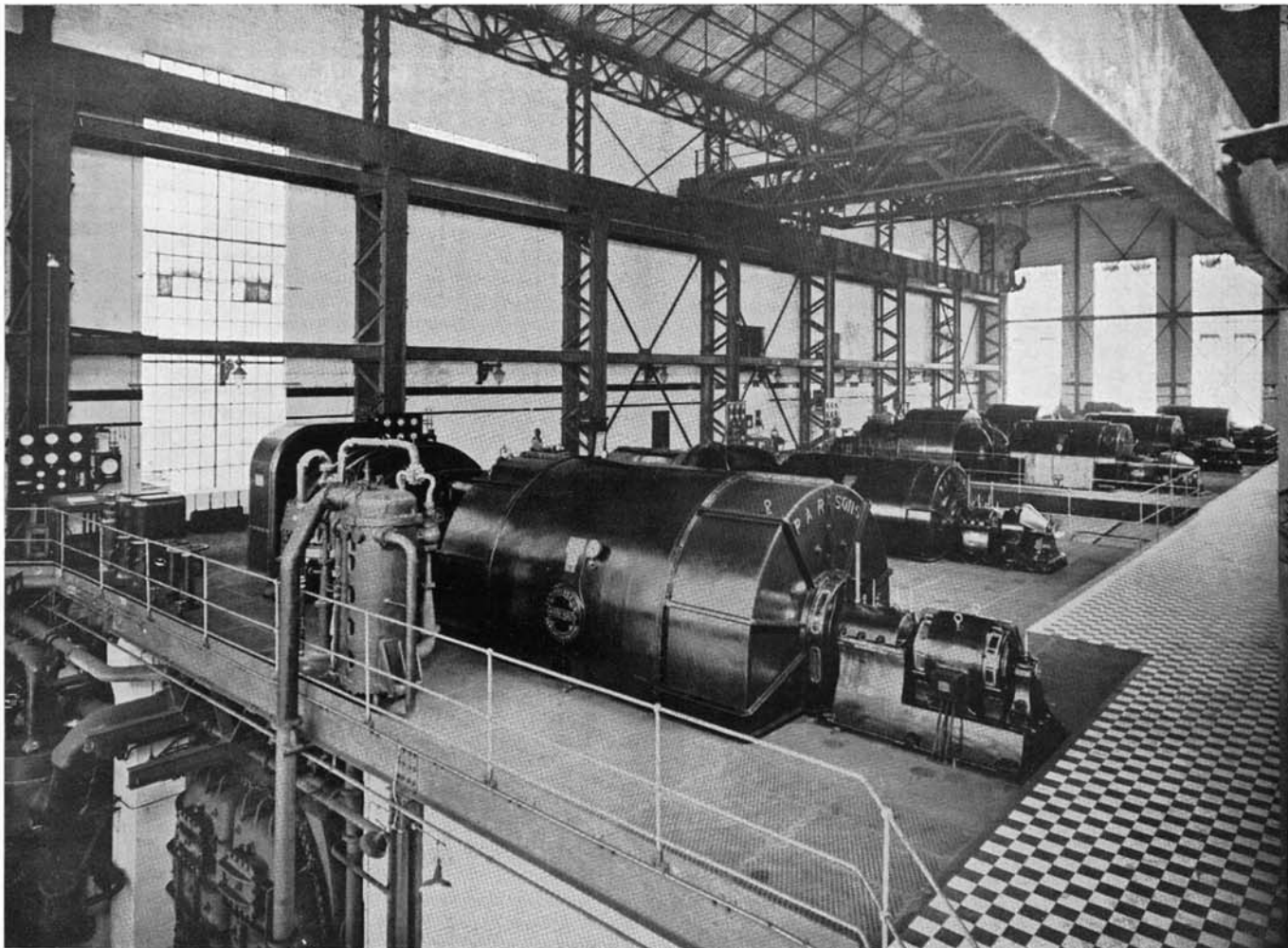
---



**Main Engine-room, Congella Power Station. New 30,000 k.W. 33k V. single-cylinder turbo-alternator set in foreground.**

*Lynn Acutt.*





**Main Engine-room, Congella Power Station. New 30,000 kW. 33kV. single-cylinder turbo-alternator set in foreground.**

*[Lynn Acutt.]*

## DURBAN UNDERTAKING.

Extension  
of Congella  
Power  
Station.

The electricity requirements of the Durban Corporation have necessitated a practically continuous programme of extensions to the Congella Power Station since it began operations ten years ago with an initial installed capacity of 24,000 kW.

The last extension, which added a 30,000 kW. turbo-alternator set and two 100,000/120,000 lbs./hr. boilers, was completed in November, 1938, and brought the total generating capacity up to 98,000 kW. It is estimated, however, that the present plant will only be sufficient to meet the demands of the Corporation and the expansion requirements of the Durban Undertaking up to the winter of 1941, and it has therefore been decided to proceed immediately with a further installation of a 40,000 kW. set and three 160,000/200,000 lbs./hr. boilers.

Capital  
Expenditure.

Capital expenditure on the Undertaking during the year amounted to £253,130, bringing the total up to £1,453,334 as at 31st December, 1938.

Supply to  
Railway  
Adminis-  
tration.

The electricity requirements of the South African Railways and Harbours for the Durban Workshops, Graving Docks, etc., hitherto supplied by the Durban Corporation, have, since November, 1938, been taken direct from the Commission at the Congella Power Station.

The effect of this arrangement was that the Corporation ceased to be the sole consumer of electricity from the Congella Power Station, and, in accordance with the provisions of the Agreement between the Corporation and the Commission, the maximum demand charge from that date was based on the actual, instead of the agreed, maximum demand, the charge being reduced from £3 6s. 6d. to £2 2s. 6d. per kilowatt per annum.

Output.

The units sent out from the Congella Power Station during 1938 totalled 208,529,561, showing an increase of 19,827,710 units over 1937, or 10.5 per cent.

Bulk sales to the Durban Corporation for distribution in the municipality and an area outside the municipal boundary in which the Corporation is authorised to supply electricity amounted to 206,563,961 units, or 9.5 per cent. more than in 1937. The balance of 1,965,600 units was sold to the South African Railways and Harbours Administration for the Railway Workshops, Graving Dock, etc.

South  
Coast  
Supplies.

The Commission purchased 1,326,050 units from the Durban Corporation in 1938, or 39 per cent. more than in 1937, for supply to consumers connected to the South Coast distribution system of



the Durban Undertaking. After allowing for losses in transmitting the current first over the Corporation's high tension line from Durban to Warner Beach, a distance of approximately 20 miles, and then over the Commission's system, these were sold as follows:

Reticulation System.	Industrial.		Domestic and Street Lighting.		Totals.	
	kW.H.	Number of Consumers.	kW.H.	Number of Consumers.	kW.H.	Number of Consumers.
Clansthal ...	—	—	5,543	7	5,543	7
Kelso Junction ...	—	—	8,476	6	8,476	6
Park Rynie ...	—	—	34,022	35	34,022	35
Pennington ...	592	1	3,796	14	4,388	15
Renishaw ...	42,298	1	38,206	23	80,504	24
Scottburgh ...	44,313	19	289,107	161	333,420	180
Sezela ...	1,780	1	—	—	1,780	1
Umkomaas ...	81,510	3	347,196	160	428,706	163
Umzinto (inc. Esperanza)	6,408	6	62,972	121	69,380	127
Totals ...	176,901	31	789,318	527	966,219	558

**New Consumers.**

In July, 1938, the Commission purchased the electricity undertaking of the South-Eastern Power Company, Limited, at Margate, and took over the distribution of electricity in the township. The supply is being continued from the existing generating plant pending the extension of the South Coast transmission system. Sales of electricity to 225 consumers at Margate totalled 137,588 units at the end of 1938.

Arrangements were concluded during the year for the supply of electricity in bulk to the Municipality of Port Shepstone. To give this supply the 33,000-volt South Coast line is being extended from Sezela along the railway line on masts fabricated from old rails and erected by the Railway Administration for the Commission.

**Working Results.**

The maximum half-hourly demand sent out from the Congella Power Station was 53,600 kW., and the load factor was 44·4 per cent. The thermal efficiency of the Power Station on units sent out was 18·9 per cent.

The revenue for the year was £279,577 and the working costs £277,881. The average price per unit sold decreased from 0·327d. in 1937 to 0·317d. in 1938.

**Hire-Purchase of Domestic Electrical Appliances.**

The Commission's scheme on the South Coast for the hire-purchase of domestic electrical appliances has so far been confined to electric ranges, and up to 31st December, 1938, a total of 21 had been installed under this scheme. Consumers in the Durban municipal area are provided with hire-purchase facilities by the City Corporation.

## DURBAN UNDERTAKING.

**Extension  
of Congella  
Power  
Station.**

The electricity requirements of the Durban Corporation have necessitated a practically continuous programme of extensions to the Congella Power Station since it began operations ten years ago with an initial installed capacity of 24,000 kW.

The last extension, which added a 30,000 kW. turbo-alternator set and two 100,000/120,000 lbs./hr. boilers, was completed in November, 1938, and brought the total generating capacity up to 98,000 kW. It is estimated, however, that the present plant will only be sufficient to meet the demands of the Corporation and the expansion requirements of the Durban Undertaking up to the winter of 1941, and it has therefore been decided to proceed immediately with a further installation of a 40,000 kW. set and three 160,000/200,000 lbs./hr. boilers.

**Capital  
Expenditure.**

Capital expenditure on the Undertaking during the year amounted to £253,130, bringing the total up to £1,453,334 as at 31st December, 1938.

**Supply to  
Railway  
Adminis-  
tration.**

The electricity requirements of the South African Railways and Harbours for the Durban Workshops, Graving Docks, etc., hitherto supplied by the Durban Corporation, have, since November, 1938, been taken direct from the Commission at the Congella Power Station.

The effect of this arrangement was that the Corporation ceased to be the sole consumer of electricity from the Congella Power Station, and, in accordance with the provisions of the Agreement between the Corporation and the Commission, the maximum demand charge from that date was based on the actual, instead of the agreed, maximum demand, the charge being reduced from £3 6s. 6d. to £2 2s. 6d. per kilowatt per annum.

**Output.**

The units sent out from the Congella Power Station during 1938 totalled 208,529,561, showing an increase of 19,827,710 units over 1937, or 10·5 per cent.

Bulk sales to the Durban Corporation for distribution in the municipality and an area outside the municipal boundary in which the Corporation is authorised to supply electricity amounted to 206,563,961 units, or 9·5 per cent. more than in 1937. The balance of 1,965,600 units was sold to the South African Railways and Harbours Administration for the Railway Workshops, Graving Dock, etc.

**South  
Coast  
Supplies.**

The Commission purchased 1,326,050 units from the Durban Corporation in 1938, or 39 per cent. more than in 1937, for supply to consumers connected to the South Coast distribution system of

the Durban Undertaking. After allowing for losses in transmitting the current first over the Corporation's high tension line from Durban to Warner Beach, a distance of approximately 20 miles, and then over the Commission's system, these were sold as follows:

Reticulation System.	Industrial.		Domestic and Street Lighting.		Totals.	
	kW.H.	Number of Consumers.	kW.H.	Number of Consumers.	kW.H.	Number of Consumers.
Clansthal ...	—	—	5,543	7	5,543	7
Kelso Junction ...	—	—	8,476	6	8,476	6
Park Rynie ...	—	—	34,022	35	34,022	35
Pennington ...	592	1	3,796	14	4,388	15
Renishaw ...	42,298	1	38,206	23	80,504	24
Scottburgh ...	44,313	19	289,107	161	333,420	180
Sezela ...	1,780	1	—	—	1,780	1
Umkomaas ...	81,510	3	347,196	160	428,706	163
Umzinto (inc. Esperanza)	6,408	6	62,972	121	69,380	127
Totals ...	176,901	31	789,318	527	966,219	558

**New Consumers.**

In July, 1938, the Commission purchased the electricity undertaking of the South-Eastern Power Company, Limited, at Margate, and took over the distribution of electricity in the township. The supply is being continued from the existing generating plant pending the extension of the South Coast transmission system. Sales of electricity to 225 consumers at Margate totalled 137,588 units at the end of 1938.

Arrangements were concluded during the year for the supply of electricity in bulk to the Municipality of Port Shepstone. To give this supply the 33,000-volt South Coast line is being extended from Sezela along the railway line on masts fabricated from old rails and erected by the Railway Administration for the Commission.

**Working Results.**

The maximum half-hourly demand sent out from the Congella Power Station was 53,600 kW., and the load factor was 44.4 per cent. The thermal efficiency of the Power Station on units sent out was 18.9 per cent.

The revenue for the year was £279,577 and the working costs £277,881. The average price per unit sold decreased from 0.327d. in 1937 to 0.317d. in 1938.

**Hire-Purchase of Domestic Electrical Appliances.**

The Commission's scheme on the South Coast for the hire-purchase of domestic electrical appliances has so far been confined to electric ranges, and up to 31st December, 1938, a total of 21 had been installed under this scheme. Consumers in the Durban municipal area are provided with hire-purchase facilities by the City Corporation.

## SABIE UNDERTAKING.

The Sabie Power Station is the only hydro-electric generating plant owned by the Commission. The whole of the output of the station is supplied to two gold mining companies operating in the district.

The installed capacity of the station is 1,350 kW., consisting of three 450 kW. generators, two of which are normally in operation.

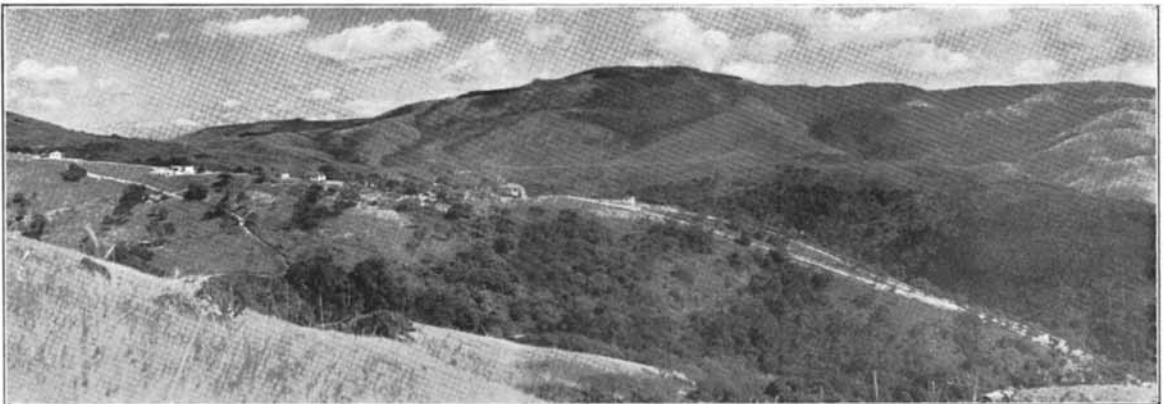
Electricity sent out from the station in 1938 amounted to 7,671,900 units.

The maximum half-hourly demand was 1,240 kW., and the load factor was 70·63.

The total working costs were reduced from £13,750 in 1937 to £13,311 in 1938. Revenue for the year amounted to £13,293.

The average price per unit sold decreased from 0·461d. in 1937 to 0·441d. in 1938.

The capital expenditure on the Undertaking as at 31st December, 1938, remained unchanged at £96,145.



**Sabie Undertaking: Sabie Ridge showing staff quarters and the run of the pipe line to the gorge below.**

[Merl La Voy.]



**Klip Power Station showing the completed cooling system—ten hyperbolic-type cooling towers.**

*Mert La Vogt.*





**Klip Power Station showing the completed cooling system—ten hyperbolic-type cooling towers.**

## KLIP GENERATING STATION UNDERTAKING.

### Construction Progress.

Eight of the twelve 33,000 kW. generating sets to be installed in the Klip Power Station were in operation at the end of December, 1938, and three of the four 7,000 kW. house sets were running at that date. The ninth 33,000 kW. machine was placed in commercial service on 8th February, 1939. Nos. 10 and 11 generators are expected to be ready for service in June and November, 1939, respectively, and No. 12 in February, 1940.

Of the 22 boilers, each with a normal steaming capacity of 180,000 lbs. per hour at 355 lbs. gauge, 18 were in operation at the end of 1938, and the remaining four were under construction.

The full complement of ten hyperbolic-type cooling towers, 220 feet high, designed to deal with 2,000,000 gallons of water per hour each, has been completed.

### Capital Expenditure.

The capital expenditure on the Klip Generating Station Undertaking during 1938 amounted to £1,397,573, bringing the total as at 31st December, 1938, to £5,611,448.

### Output.

Electricity sent out from the Klip Power Station in 1938 amounted to 1,666,852,594 units, or 23·5 per cent. more than in 1937. This station is operated for the Commission by The Victoria Falls and Transvaal Power Company, Limited, and the whole of the output is sold to that Company for supply to the gold mining industry and other consumers on the Witwatersrand.

### Costs.

The operating costs and capital charges (interest, redemption and reserve) which are paid by The Falls Company, amounted to £603,789 in 1938.

### Working Results.

Other working results for 1938, with corresponding figures for 1937, were as follows:—

	1938.	1937.
Average maximum hourly demand sent out ...	218,645 kW.	198,990 kW.
Average load factor ... ..	87·0%	85·1%
Station thermal efficiency (units sent out) ...	21·38%	21·74%
Average price per unit sold ... ..	0·086d.	0·081d.

## KLIP GENERATING STATION UNDERTAKING.

**Construction Progress.** Eight of the twelve 33,000 kW. generating sets to be installed in the Klip Power Station were in operation at the end of December, 1938, and three of the four 7,000 kW. house sets were running at that date. The ninth 33,000 kW. machine was placed in commercial service on 8th February, 1939. Nos. 10 and 11 generators are expected to be ready for service in June and November, 1939, respectively, and No. 12 in February, 1940.

Of the 22 boilers, each with a normal steaming capacity of 180,000 lbs. per hour at 355 lbs. gauge, 18 were in operation at the end of 1938, and the remaining four were under construction.

The full complement of ten hyperbolic-type cooling towers, 220 feet high, designed to deal with 2,000,000 gallons of water per hour each, has been completed.

**Capital Expenditure.** The capital expenditure on the Klip Generating Station Undertaking during 1938 amounted to £1,397,573, bringing the total as at 31st December, 1938, to £5,611,448.

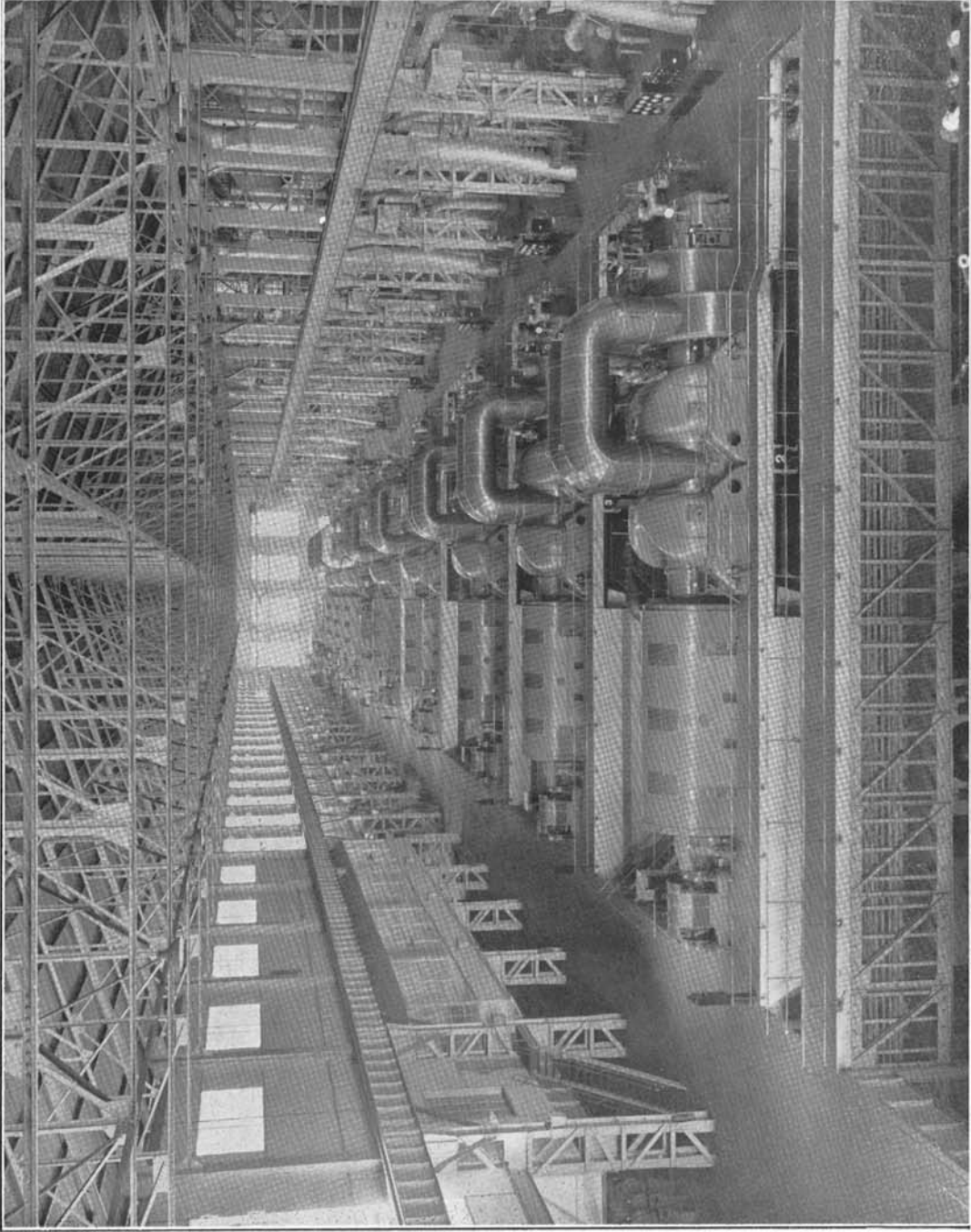
**Output.** Electricity sent out from the Klip Power Station in 1938 amounted to 1,666,852,594 units, or 23·5 per cent. more than in 1937. This station is operated for the Commission by The Victoria Falls and Transvaal Power Company, Limited, and the whole of the output is sold to that Company for supply to the gold mining industry and other consumers on the Witwatersrand.

**Costs.** The operating costs and capital charges (interest, redemption and reserve) which are paid by The Falls Company, amounted to £603,789 in 1938.

**Working Results.** Other working results for 1938, with corresponding figures for 1937, were as follows:—

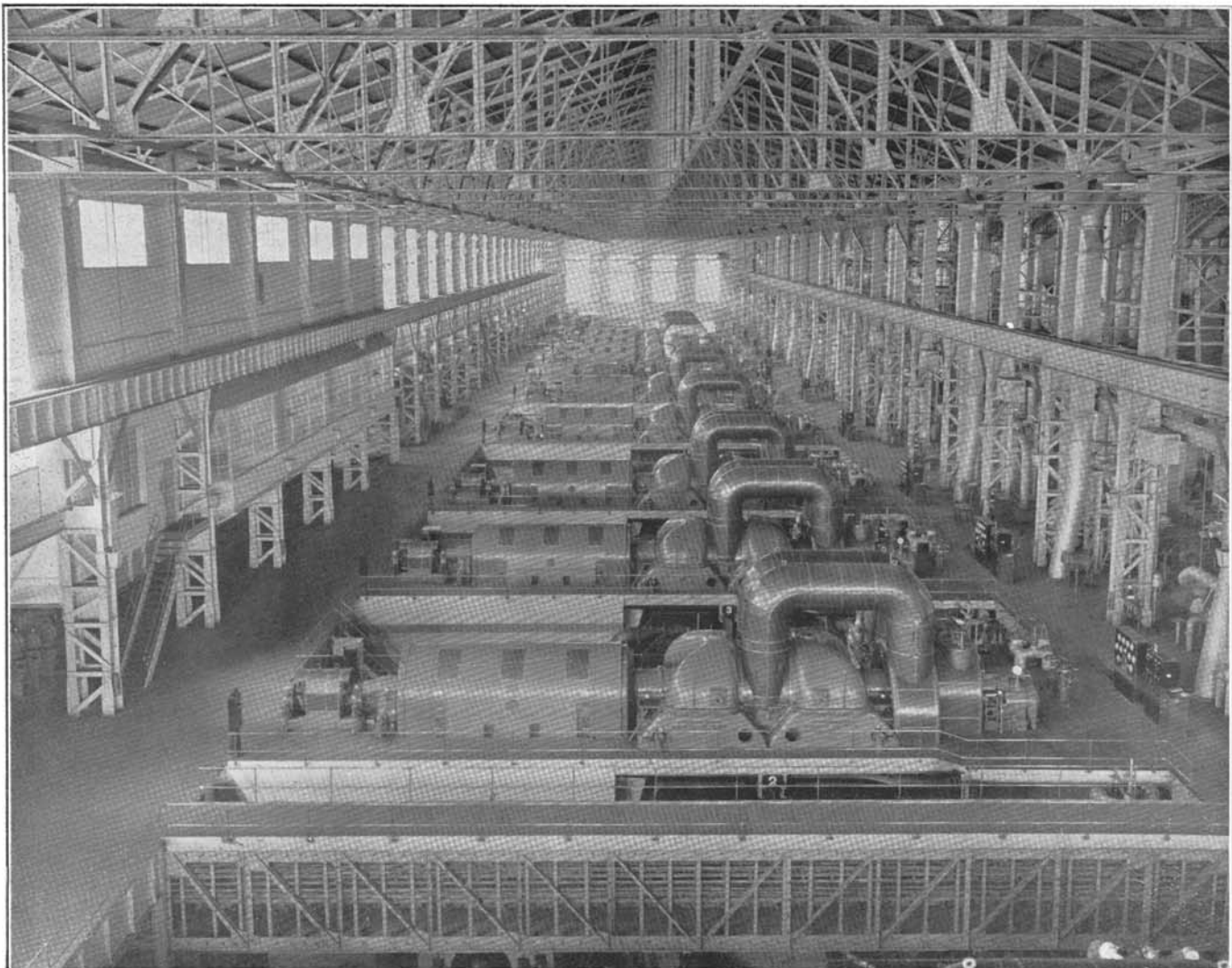
	1938.	1937.
Average maximum hourly demand sent out ...	218,645 kW.	198,990 kW.
Average load factor ... ..	87·0%	85·1%
Station thermal efficiency (units sent out) ...	21·38%	21·74%
Average price per unit sold ... ..	0·086d.	0·081d.





The Engine-room, Klip Power Station, showing eight of the twelve 33,000 kW. turbo-generators to be installed.

[Merl] I.a You.



**The Engine-room, Klip Power Station, showing eight of the twelve 33,000 kW. turbo-generators to be installed.**

## RAND EXTENSION UNDERTAKING.

The Rand Extension Undertaking comprises a transmission and distribution system and is operated as part of the Witwatersrand grid system by The Victoria Falls and Transvaal Power Company, Limited, under a licence granted to the Commission and ceded to The Falls Company.

All capital expenditure on this Undertaking is financed by the Commission and the charges for interest, redemption, reserve and administration are recovered from the Company. These charges in respect of the year ended 31st December, 1938, amounted to £27,369. The Company also bears its own costs of operating and maintaining the system.

During the year 1938 capital expenditure on the Undertaking was increased by £202,342 to a total of £582,697.

The transmission lines and cables serving this Undertaking at 31st December, 1938, totalled approximately 342 route miles, and the installed transformer capacity at that date was 104,350 kVa.

### RAND EXTENSION UNDERTAKING.

The Rand Extension Undertaking comprises a transmission and distribution system and is operated as part of the Witwatersrand grid system by The Victoria Falls and Transvaal Power Company, Limited, under a licence granted to the Commission and ceded to The Falls Company.

All capital expenditure on this Undertaking is financed by the Commission and the charges for interest, redemption, reserve and administration are recovered from the Company. These charges in respect of the year ended 31st December, 1938, amounted to £27,369. The Company also bears its own costs of operating and maintaining the system.

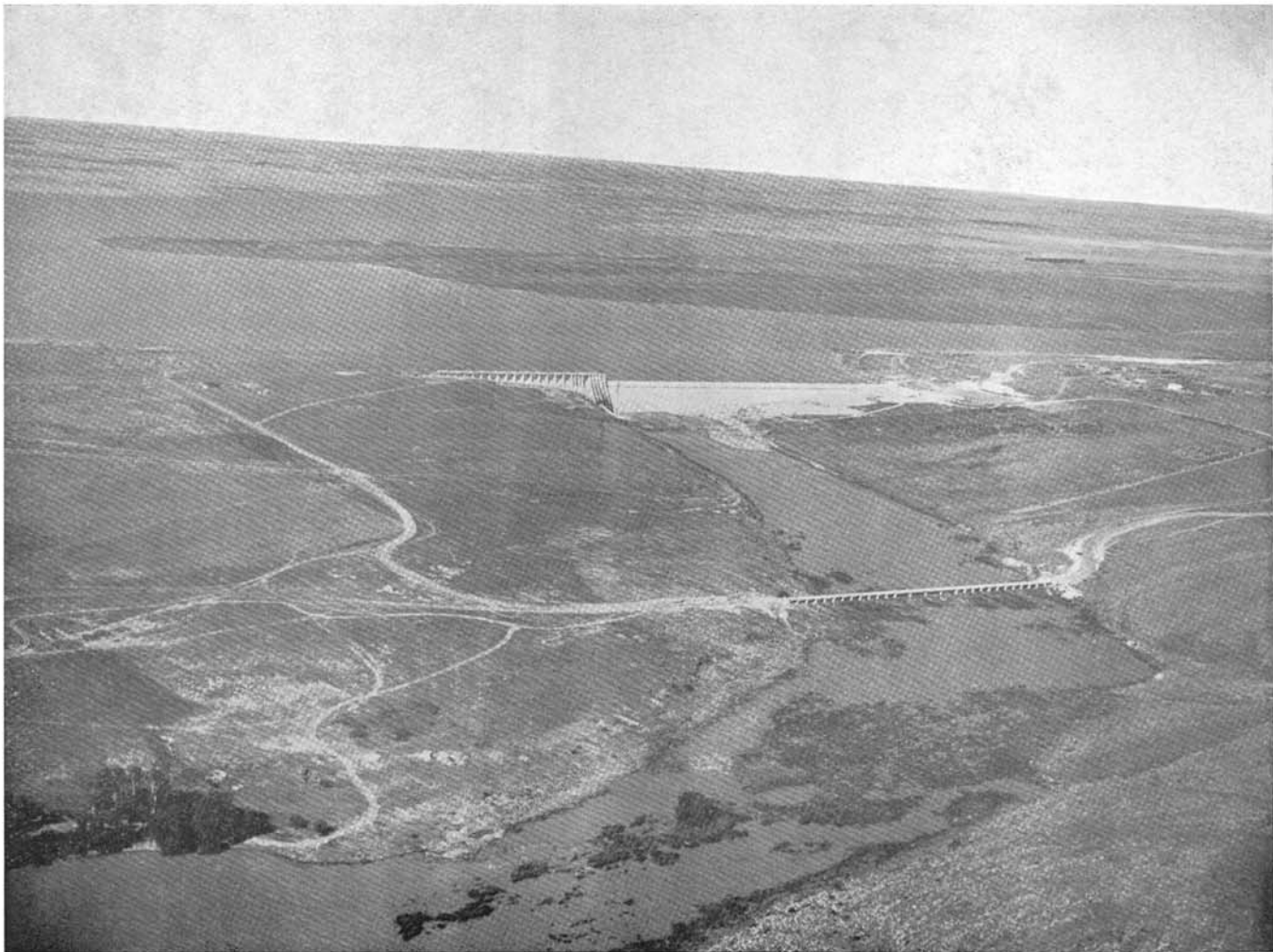
During the year 1938 capital expenditure on the Undertaking was increased by £202,342 to a total of £582,697.

The transmission lines and cables serving this Undertaking at 31st December, 1938, totalled approximately 342 route miles, and the installed transformer capacity at that date was 104,350 kVa.



**The Vaal Bank Dam on the Vaal River—source of water supply for the Klip and Vaal Power Stations.**

*[Aircraft Operating Co., Ltd.]*



**The Vaal Bank Dam on the Vaal River—source of water supply for the Klip and Vaal Power Stations.**

*[Aircraft Operating Co., Ltd.]*



## VAAL GENERATING STATION UNDERTAKING.

Construction work on the new Vaal Generating Station, which will form yet another link in the chain of stations supplying the Witwatersrand gold mines, towns and industries, was inaugurated by the Chairman of the Commission on 23rd March, 1939, at a ceremony held on the site in the presence of a representative gathering.

The design and engineering of the Vaal station is being carried out by the Commission and The Victoria Falls and Transvaal Power Company, Limited, in co-operation. As in the case of the Witbank and Klip Power Stations, the new station will be financed and owned by the Commission, and The Falls Company will operate it as part of the joint power supply system on the Witwatersrand. This system is at present being supplied by six power stations with an installed generating plant capacity of 665,000 kilowatts. The capacity is being increased by plant in course of installation or on order for the Commission's Klip and Witbank Power Stations, which will bring the total installed capacity up to 812,000 kilowatts in 1940.

The system demand established at the end of 1938 was 566,400 kilowatts which is expected to increase to 659,000 kilowatts in 1939, and 692,000 kilowatts in 1940. Beyond 1940 the demand is estimated to increase to a minimum of 763,000 kilowatts.

To meet this growth of load the Vaal station will have an initial installation of 108,000 kilowatts of generating plant, but the station is being designed so as to be capable of extension to a capacity of 400,000 kW.

The site of the Vaal station is on the farm Bankfontein, in the Heilbron district of the Orange Free State, and is ideally situated for the economic generation of electricity. A plentiful supply of coal is available on that and adjoining farms, and water is obtainable from the Vaal River by arrangement with the Rand Water Board.

A special feature of the station will be two hyperbolic cooling towers, 320 feet high. Each tower is designed to deal with 4,000,000 gallons of water per hour.

The initial expenditure on the station is estimated to be £2,039,000.

## VAAL GENERATING STATION UNDERTAKING.

Construction work on the new Vaal Generating Station, which will form yet another link in the chain of stations supplying the Witwatersrand gold mines, towns and industries, was inaugurated by the Chairman of the Commission on 23rd March, 1939, at a ceremony held on the site in the presence of a representative gathering.

The design and engineering of the Vaal station is being carried out by the Commission and The Victoria Falls and Transvaal Power Company, Limited, in co-operation. As in the case of the Witbank and Klip Power Stations, the new station will be financed and owned by the Commission, and The Falls Company will operate it as part of the joint power supply system on the Witwatersrand. This system is at present being supplied by six power stations with an installed generating plant capacity of 665,000 kilowatts. The capacity is being increased by plant in course of installation or on order for the Commission's Klip and Witbank Power Stations, which will bring the total installed capacity up to 812,000 kilowatts in 1940.

The system demand established at the end of 1938 was 566,400 kilowatts which is expected to increase to 659,000 kilowatts in 1939, and 692,000 kilowatts in 1940. Beyond 1940 the demand is estimated to increase to a minimum of 763,000 kilowatts.

To meet this growth of load the Vaal station will have an initial installation of 108,000 kilowatts of generating plant, but the station is being designed so as to be capable of extension to a capacity of 400,000 kW.

The site of the Vaal station is on the farm Bankfontein, in the Heilbron district of the Orange Free State, and is ideally situated for the economic generation of electricity. A plentiful supply of coal is available on that and adjoining farms, and water is obtainable from the Vaal River by arrangement with the Rand Water Board.

A special feature of the station will be two hyperbolic cooling towers, 320 feet high. Each tower is designed to deal with 4,000,000 gallons of water per hour.

The initial expenditure on the station is estimated to be £2,039,000.



## MUNICIPAL ELECTRICITY SUPPLY SCHEMES.

In terms of Section 38 of the Electricity Act, the Commission is required to report to the Administrators of the various provinces on the proposals of urban local authorities to establish electricity undertakings or to enlarge existing undertakings, and up to 31st December, 1938, 394 reports and 203 supplementary reports on tenders had been submitted.

During the year 1938 the following schemes were reported on by the Commission :—

## TRANSVAAL.

<u>New Scheme.</u>	<u>Extension.</u>	<u>Tenders.</u>
Belfast.	Barberton.	Edenvale.
Delmas.	Carolina.	Ermelo.
Edenvale.	Ermelo.	Nylstroom.
Tzaneen.	Lichtenburg.	Potgietersrust.
	Nylstroom.	Ventersdorp.
	Pietersburg.	
	Piet Retief.	
	Potgietersrust.	
	Ventersdorp.	

## NATAL.

Port Shepstone.  
Paulpietersburg.

## ORANGE FREE STATE.

Bethulie.	Lindley.	Bethulie.
Kopjes.	Marquard.	Lindley.
Trompsburg.		Marquard.
Vredefort.		Trompsburg.
		Ventersburg.

## CAPE.

Amsterdam.	Britstown.	Alice.	Matatiele.
Murraysburg.	East London.	Bredasdorp.	Murraysburg.
Van Rhyndorp.	Fort Beaufort.	Britstown.	Oudtshoorn.
	Grahamstown.	Calvinia.	Port Alfred.
	Heidelberg.	Cathcart.	Port Elizabeth.
	Mafeking.	Fraserburg.	Rawsonville.
	Oudtshoorn.	Fort Beaufort.	Richmond.
	Port Alfred.	Hanover.	Rivier Zonder End.
	Port Elizabeth.	Jansenville.	Umtata.
	Victoria West.	Maclear.	Van Rhyndorp.

Of the total of 394 municipal electricity supply schemes reported upon by the Commission, 154 were new schemes.

## ANNEXURES.

---

The Commission submits for the year 1938, with this Report:—

### ANNEXURE " A. "

- The Report of the Auditors.
- Balance Sheet.
- Schedule of Expenditure on Capital Account.
- Statement showing the Investments of the Redemption Fund.
- Account No. 1.—Redemption Fund Account.
- Account No. 2.—Reserve Fund Account.
- Revenue and Expenditure Accounts in respect of:—
  - Account No. 3.—Natal Central Undertaking.
  - Account No. 4.—Witbank Undertaking.
  - Account No. 5.—Cape Town Undertaking.
  - Statement of Pooled Costs—Cape Town.
  - Account No. 6.—Durban Undertaking.
  - Account No. 7.—Sabie Undertaking.
  - Account No. 8.—Klip Generating Station Undertaking.
  - Account No. 9.—Rand Extension Undertaking.

---

### ANNEXURE " B. "

- Statement No. 1.—Summary of principal plant and equipment installed at the Commission's several Undertakings as at 31st December, 1938.
- Statement No. 2.—Summary of principal plant and equipment in course of installation or on order as at 31st December, 1938.
- Statement No. 3.—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 1938.
- Statement No. 4.—Units sold to all consumers during the past fourteen years.
- Statement No. 5.—Distribution of units sold during 1938 as between the various classes of consumers.
- Statement No. 6.—Power Station Statistics, 1938.
- Statement No. 7.—Particulars of coal used at the Commission's Steam-raising Power Stations during 1938.

## ANNEXURES.

---

The Commission submits for the year 1938, with this Report:—

### ANNEXURE "A."

The Report of the Auditors.

Balance Sheet.

Schedule of Expenditure on Capital Account.

Statement showing the Investments of the Redemption Fund.

Account No. 1.—Redemption Fund Account.

Account No. 2.—Reserve Fund Account.

Revenue and Expenditure Accounts in respect of:—

Account No. 3.—Natal Central Undertaking.

Account No. 4.—Witbank Undertaking.

Account No. 5.—Cape Town Undertaking.

Statement of Pooled Costs—Cape Town.

Account No. 6.—Durban Undertaking.

Account No. 7.—Sabie Undertaking.

Account No. 8.—Klip Generating Station Undertaking.

Account No. 9.—Rand Extension Undertaking.

---

### ANNEXURE "B."

Statement No. 1.—Summary of principal plant and equipment installed at the Commission's several Undertakings as at 31st December, 1938.

Statement No. 2.—Summary of principal plant and equipment in course of installation or on order as at 31st December, 1938.

Statement No. 3.—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 1938.

Statement No. 4.—Units sold to all consumers during the past fourteen years.

Statement No. 5.—Distribution of units sold during 1938 as between the various classes of consumers.

Statement No. 6.—Power Station Statistics, 1938.

Statement No. 7.—Particulars of coal used at the Commission's Steam-raising Power Stations during 1938.

**ANNEXURE " C. "**

Union Statistics relating to the production and distribution of electricity. This information, which was extracted from the 1936/37 Industrial Census, is published in this Report by the courtesy of the Union Census and Statistics Office.

I have the honour to be

Sir,

Your obedient servant,

A handwritten signature in black ink, appearing to read "J. Francis". The signature is written in a cursive style with a long horizontal stroke at the end.

CHAIRMAN.

**ANNEXURE "C."**

Union Statistics relating to the production and distribution of electricity. This information, which was extracted from the 1936/37 Industrial Census, is published in this Report by the courtesy of the Union Census and Statistics Office.

I have the honour to be

Sir,

Your obedient servant,

A handwritten signature in black ink, appearing to read "J. G. Francis". The signature is written in a cursive style with a horizontal line underneath the name.

CHAIRMAN.

## INDEX TO ANNEXURE "A" (ACCOUNTS).

	Pages.
Auditors' Report ... ..	50-52
Balance Sheet ... ..	54-55
Expenditure on Capital Account ... ..	56-57
Details of Investments of Redemption Fund ... ..	58-59
Redemption Fund Account ... ..	61
Reserve Fund Account ... ..	64-65
Revenue Accounts:—	
Natal Central Undertaking ... ..	66-67
Witbank Undertaking ... ..	68-69
Cape Town Undertaking ... ..	70-71
Statement of Pooled Costs—Cape Town ... ..	72-73
Durban Undertaking ... ..	74-75
Sabie Undertaking ... ..	76-77
Klip Generating Station Undertaking ... ..	78-79
Rand Extension Undertaking ... ..	80-81

**ANNEXURE " A. "****THE REPORT OF THE AUDITORS.**

Johannesburg,  
15th May, 1938.

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, 1938.

**REDEMPTION FUND.**

In accordance with the provisions of the Schedule to the Electricity Act, the Commission has established a redemption fund to provide for the redemption of the securities issued by the Commission.

Clause 16 of the Schedule to the Act lays down a maximum period of redemption, but the Commission has adopted the policy of providing for redemption, not only from the date legally requisite to date of repayment, but in certain cases over shorter periods.

After investigation of the position of each loan we are satisfied that, on a  $3\frac{1}{2}$  per cent. interest basis:—

- (1) An adequate sinking fund has been provided to redeem each loan at maturity.
- (2) Provision has been made to cover the excess obligations of the fund in view of the shorter and conservative terms of redemption, which are in certain cases adopted by the Commission. This provision is made as from the dates the various works are brought into commercial use.

**PROPOSED VAAL POWER STATION.**

Certain investigational and preliminary expenditure has been incurred during 1938 in connection with the establishment of this station. Such expenditure, comprising fees accruing to The Victoria Falls and Transvaal Power Company, Limited, and the Commission aggregating £22,500, has been carried forward in suspense pending allocation to the requisite Capital Accounts.

**HEAD OFFICE ADMINISTRATION, ENGINEERING AND GENERAL EXPENSES, INCLUDING PUBLICITY.**

The gross amount of this expenditure is slightly more than the corresponding figure for the previous year. It includes, inter alia (1) cost of the publicity department, including the running of the Escom Magazine; (2) cost of operating Escom House, less rents received; and (3) certain expenditure in connection with the establishment of the London Office.

## ANNEXURE " A. "

THE REPORT OF THE AUDITORS.

Johannesburg,  
15th May, 1938.

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, 1938.

## REDEMPTION FUND.

In accordance with the provisions of the Schedule to the Electricity Act, the Commission has established a redemption fund to provide for the redemption of the securities issued by the Commission.

Clause 16 of the Schedule to the Act lays down a maximum period of redemption, but the Commission has adopted the policy of providing for redemption, not only from the date legally requisite to date of repayment, but in certain cases over shorter periods.

After investigation of the position of each loan we are satisfied that, on a  $3\frac{1}{2}$  per cent. interest basis:—

- (1) An adequate sinking fund has been provided to redeem each loan at maturity.
- (2) Provision has been made to cover the excess obligations of the fund in view of the shorter and conservative terms of redemption, which are in certain cases adopted by the Commission. This provision is made as from the dates the various works are brought into commercial use.

## PROPOSED VAAL POWER STATION.

Certain investigational and preliminary expenditure has been incurred during 1938 in connection with the establishment of this station. Such expenditure, comprising fees accruing to The Victoria Falls and Transvaal Power Company, Limited, and the Commission aggregating £22,500, has been carried forward in suspense pending allocation to the requisite Capital Accounts.

## HEAD OFFICE ADMINISTRATION, ENGINEERING AND GENERAL EXPENSES, INCLUDING PUBLICITY.

The gross amount of this expenditure is slightly more than the corresponding figure for the previous year. It includes, inter alia (1) cost of the publicity department, including the running of the Escom Magazine; (2) cost of operating Escom House, less rents received; and (3) certain expenditure in connection with the establishment of the London Office.



Against the total amount has been set off or credited:—

- (1) Fees accruing to the Commission in connection with the establishment of the Klip, Rand Extension and Vaal Undertakings in terms of agreements with The Victoria Falls and Transvaal Power Company, Limited.
- (2) Other amounts transferred to cost of capital works at Undertakings for services of Head Office Staff.
- (3) Fees for Reporting on Power Schemes of Local Authorities.
- (4) Amounts chargeable to Revenue Accounts under other headings.

The amount remaining has been allocated against the Revenue Accounts of all the Undertakings. In the case of the Klip, Rand Extension and Witbank (Power Station) Undertakings, the amount is determined by agreement with The Victoria Falls and Transvaal Power Company, Limited. The expenditure charged to the other Undertakings has been apportioned by the Commission on a basis considered equitable. We have no reason to take exception to this basis of apportionment, which is the same as during 1937.

#### CAPE TOWN UNDERTAKING.

The funds for the construction of the new Table Bay Power Station have, in accordance with arrangements made between the Commission and the City of Cape Town, been provided by the latter. In terms of agreement between the two parties for the joint working of their respective Power Stations and pooling of results, the cost of redemption of capital funds raised by either party for the pooled stations is shared on a certain agreed basis.

In the latter half of 1938 the City of Cape Town put forward a charge against the pooled stations for redemption of the funds raised for the Table Bay Station. This charge covered the period from July 1st, 1937, to June 30th, 1938, although during that period no portion of the new station had come into beneficial operation. The proportion of this charge applicable to the Commission for the last half of 1937 amounted to the sum of £12,615 15s. 6d. This amount relating to the year 1937 and not previously provided for has been deducted in the accounts from the excess of Revenue over Expenditure brought forward from that year.

Although the charge made for redemption by the City of Cape Town only accrues at the 30th June in each year, the commitment of the Commission in respect of this redemption charge has been provided for in their 1938 accounts to the end of that year.

#### RESERVE FUND.

At the end of 1937 the unused moneys set aside for the Reserve Fund were more than fully invested. At the end of 1938 the balance of the Fund amounted to £1,255,223 12s. 3d., while the investments on behalf of the Fund only amounted to £1,155,110 17s. 4d., a difference of £100,112 14s. 11d.

During 1938 the Capital Expenditure of the Commission exceeded the loan funds available. The excess capital expenditure was provided by temporary advances from Bankers and by utilising portion of the uninvested moneys from the Reserve Fund—the Fund receiving interest on the moneys so utilised.

This procedure was purely of a temporary character pending the raising of further Loan Capital by the Commission. The Commission has, since the end of 1938, raised a further loan of £2,000,000 (No. 9) and from the funds so raised has replenished the uninvested moneys of the Reserve Fund.

#### GENERAL.

As the result of our audit of the Books and Accounts of the Commission for the year 1938, and, subject to the foregoing remarks, in terms of Clause 13 (4) of the Electricity Act, 1922, we certify as follows:—

- (a) We have found the Accounts of the Commission to be in order.
- (b) The Accounts issued present a true and correct view of the financial position of the Commission and of its transactions and of the result of trading.
- (c) Due provision has been made for the redemption and repayment of moneys borrowed.
- (d) As formerly, the Land and Rights, Buildings and Civil Works and Machinery and Plant are set out in the Balance Sheet on a cost basis. This expenditure will be amortised over a period not exceeding the currency of the loans by the operation of the Redemption Fund.

The value of the other assets of the Commission is correctly stated.

- (e) Sums fixed by the Commission have been set aside to the Reserve Fund under Section 9 as prescribed.
- (f) All our requirements and recommendations as Auditors have been complied with and carried out.

Yours faithfully,

(Signed) B. HALSEY,

ALEX. AIKEN & CARTER.

Against the total amount has been set off or credited:—

- (1) Fees accruing to the Commission in connection with the establishment of the Klip, Rand Extension and Vaal Undertakings in terms of agreements with The Victoria Falls and Transvaal Power Company, Limited.
- (2) Other amounts transferred to cost of capital works at Undertakings for services of Head Office Staff.
- (3) Fees for Reporting on Power Schemes of Local Authorities.
- (4) Amounts chargeable to Revenue Accounts under other headings.

The amount remaining has been allocated against the Revenue Accounts of all the Undertakings. In the case of the Klip, Rand Extension and Witbank (Power Station) Undertakings, the amount is determined by agreement with The Victoria Falls and Transvaal Power Company, Limited. The expenditure charged to the other Undertakings has been apportioned by the Commission on a basis considered equitable. We have no reason to take exception to this basis of apportionment, which is the same as during 1937.

#### CAPE TOWN UNDERTAKING.

The funds for the construction of the new Table Bay Power Station have, in accordance with arrangements made between the Commission and the City of Cape Town, been provided by the latter. In terms of agreement between the two parties for the joint working of their respective Power Stations and pooling of results, the cost of redemption of capital funds raised by either party for the pooled stations is shared on a certain agreed basis.

In the latter half of 1938 the City of Cape Town put forward a charge against the pooled stations for redemption of the funds raised for the Table Bay Station. This charge covered the period from July 1st, 1937, to June 30th, 1938, although during that period no portion of the new station had come into beneficial operation. The proportion of this charge applicable to the Commission for the last half of 1937 amounted to the sum of £12,615 15s. 6d. This amount relating to the year 1937 and not previously provided for has been deducted in the accounts from the excess of Revenue over Expenditure brought forward from that year.

Although the charge made for redemption by the City of Cape Town only accrues at the 30th June in each year, the commitment of the Commission in respect of this redemption charge has been provided for in their 1938 accounts to the end of that year.

#### RESERVE FUND.

At the end of 1937 the unused moneys set aside for the Reserve Fund were more than fully invested. At the end of 1938 the balance of the Fund amounted to £1,255,223 12s. 3d., while the investments on behalf of the Fund only amounted to £1,155,110 17s. 4d., a difference of £100,112 14s. 11d.

During 1938 the Capital Expenditure of the Commission exceeded the loan funds available. The excess capital expenditure was provided by temporary advances from Bankers and by utilising portion of the uninvested moneys from the Reserve Fund—the Fund receiving interest on the moneys so utilised.

This procedure was purely of a temporary character pending the raising of further Loan Capital by the Commission. The Commission has, since the end of 1938, raised a further loan of £2,000,000 (No. 9) and from the funds so raised has replenished the uninvested moneys of the Reserve Fund.

GENERAL.

As the result of our audit of the Books and Accounts of the Commission for the year 1938, and, subject to the foregoing remarks, in terms of Clause 13 (4) of the Electricity Act, 1922, we certify as follows:—

- (a) We have found the Accounts of the Commission to be in order.
- (b) The Accounts issued present a true and correct view of the financial position of the Commission and of its transactions and of the result of trading.
- (c) Due provision has been made for the redemption and repayment of moneys borrowed.
- (d) As formerly, the Land and Rights, Buildings and Civil Works and Machinery and Plant are set out in the Balance Sheet on a cost basis. This expenditure will be amortised over a period not exceeding the currency of the loans by the operation of the Redemption Fund.  
The value of the other assets of the Commission is correctly stated.
- (e) Sums fixed by the Commission have been set aside to the Reserve Fund under Section 9 as prescribed.
- (f) All our requirements and recommendations as Auditors have been complied with and carried out.

Yours faithfully,

(Signed) B. HALSEY,

ALEX. AIKEN & CARTER.

## Electricity Supply

Incorporated under the  
**BALANCE SHEET at**

<b>Loan Capital</b> ... ..		£16,250,000	0	0
Loan No. 1: Government of the Union of South Africa	£3,000,000		0	0
Loan No. 2: Government of the Union of South Africa	5,000,000		0	0
	£8,000,000		0	0
<i>Less</i> —Repaid during 1933 and 1934	8,000,000		0	0
	£8,000,000		0	0
Local Registered Stocks—				
Loan No. 3: 4½ per cent., 1953/63	500,000		0	0
Loan No. 4: 4½ per cent., 1953	2,500,000		0	0
Loan No. 5: 3½ per cent., 1954/64	6,750,000		0	0
Loan No. 6: 3½ per cent., 1959/64	2,500,000		0	0
Loan No. 7: 3½ per cent., 1956/66	2,000,000		0	0
Loan No. 8: 3½ per cent., 1957/67	2,000,000		0	0
	69,264		11	1
<b>Interest Accrued on Loan Capital</b>				
<b>Sundry Loans and Amounts Outstanding for Rights Acquired</b>		156,916	6	7
Umkomaas Town Board	9,380		0	0
Volksrust Municipality	25,666		1	3
Rand Water Board	121,870		5	4
	418,975		3	7
<b>Sundry Creditors and Credit Balances</b>				
<b>Barclays Bank (Dominion, Colonial &amp; Overseas): Temporary Advances, less Cash on Current Account</b>		543,304	13	11
<b>Pension Fund</b>		102,113	13	1
<b>Redemption Fund</b> (as per Account No. 1)		1,910,213	19	9
<b>Sinking Fund</b> (Umkomaas Town Board Loans)		2,487	7	7
<b>Sundry Loans Repaid</b>		6,603	17	3
<b>Reserve Fund</b> (as per Account No. 2)		1,255,223	12	3
<b>Balance on Revenue Accounts</b>		80,415	4	9
(As per Accounts Nos. 3 to 7.)				
Natal Central Undertaking	29,582		14	6
Witbank Undertaking	29,933		19	4
Capetown Undertaking	4,464		7	8
Durban Undertaking	15,372		3	2
Sabie Undertaking	1,062		0	1
	£20,795,518		9	10

NOTE.—In addition to the liabilities shown above, the Commission is committed to the extent of approximately £3,435,000 for expenditure on Capital Account; also £59,100 chargeable against Reserve Fund.

£20,795,518 9 10

Johannesburg,  
31st March, 1939.

H. J. VAN DER BIJL, Chairman.  
A. E. HARTE, C.A. (S.A.), Chief Accountant.

## Commission.

Electricity Act, 1922.

31st DECEMBER, 1938.

<b>Expenditure on Capital Account—</b>		£17,148,484	7	7
(As per Schedule attached)				
Land and Rights	£275,896		0	3
Buildings and Civil Works	4,464,073		16	4
Machinery and Plant	12,408,514		11	0
	63,773		2	11
<b>Movable Plant and Equipment</b> (less depreciation)				
Workshop Equipment, Instruments, Tools and Loose Plant	31,693		19	3
Transportation Equipment	4,285		1	11
Furniture, Fixtures and Fittings	27,794		1	9
	166,174		19	7
<b>Stores and Materials</b>				
<b>Sundry Debtors and Debit Balances</b>		252,984	15	7
<b>Investment of Pension Fund</b>				
Amount invested in Municipal and Electricity Supply				
Commission Stocks	95,352		1	2
Interest Accrued	445		16	1
	1,910,775		14	6
<b>Investment of Redemption Fund</b>				
(As per Statement attached.)				
<b>Investment of Sinking Fund</b>				
Amount invested in Municipal and Electricity Supply				
Commission Stocks	2,404		0	0
Interest Accrued	12		15	1
	1,155,110		17	4
<b>Investment of Reserve Fund</b>				
Amount invested in Stocks of the Government of the Union of South Africa, Municipalities and Electricity Supply Commission and Debentures guaranteed by the Government of the Union of South Africa	1,149,364		18	4
Interest Accrued	5,745		19	0

£20,795,518 9 10

Referred to in our Report of 15th May, 1939.

ALEX. AIKEN & CARTER, }  
B. HALSEY, } Auditors.

## Electricity Supply

## SCHEDULE OF EXPENDITURE ON CAPITAL

Expenditure in connection with Electricity Undertakings.	Total to 31st December, 1937.	Year ended 31st December, 1938.	Total to 31st December, 1938.
<b>NATAL CENTRAL UNDERTAKING:</b>			
Land and Rights ... ..	£20,352 3 5	£797 6 6	£21,149 9 11
Buildings and Civil Works ... ..	789,473 13 5	Cr. 33,832 18 7	755,640 14 10
Machinery and Plant ... ..	3,335,555 6 6	Cr. 27,880 8 11	3,307,674 17 7
Net Revenue during Construction ...	Cr. 4,145,381 3 4 363 10 8	Cr. 60,916 1 0 363 10 8	4,084,465 2 4
Provision made prior to Financial Adjustments Act, 1930, for repayment of Advances, appropriated in reduction of Capital Expenditure ...	Cr. 123,650 1 10	123,650 1 10	--
	<b>£4,021,367 10 10</b>	<b>£63,097 11 6</b>	<b>£4,084,465 2 4</b>
<b>WITBANK UNDERTAKING:</b>			
Land and Rights ... ..	£9,512 4 11	£136 4 2	£9,648 9 1
Buildings and Civil Works ... ..	610,630 10 6	Cr. 23,099 10 8	582,530 19 10
Machinery and Plant ... ..	1,923,850 3 10	Cr. 36,247 15 9	1,887,602 8 1
Net Revenue during Construction ...	Cr. 2,543,992 19 3 103,458 8 4	Cr. 64,211 2 3 103,458 8 4	2,479,781 17 0
	<b>£2,440,534 10 11</b>	<b>£39,247 6 1</b>	<b>£2,479,781 17 0</b>
<b>CAPETOWN UNDERTAKING:</b>			
Land and Rights ... ..	£23,601 2 3	£317 9 0	£23,918 11 3
Buildings and Civil Works ... ..	681,897 10 6	94,221 12 11	776,119 3 5
Machinery and Plant ... ..	1,588,675 7 4	60,778 6 10	1,649,453 14 2
Net Revenue during Construction ...	Cr. 2,294,174 0 1 5,019 2 1	155,317 8 9 5,019 2 1	2,449,491 8 10
	<b>£2,289,154 18 0</b>	<b>£160,336 10 10</b>	<b>£2,449,491 8 10</b>
<b>DURBAN UNDERTAKING:</b>			
Land and Rights ... ..	£29,810 16 4	£1,200 0 0	£31,010 16 4
Buildings and Civil Works ... ..	378,304 4 3	13,671 11 3	391,975 15 6
Machinery and Plant ... ..	807,211 2 6	223,136 8 3	1,030,347 10 9
Net Revenue during Construction ...	Cr. 1,215,326 3 1 15,121 15 4	238,007 19 6 15,121 15 4	1,453,334 2 7
	<b>£1,200,204 7 9</b>	<b>£253,129 14 10</b>	<b>£1,453,334 2 7</b>

Johannesburg,  
31st March, 1939.

## Commission.

## ACCOUNT TO 31st DECEMBER, 1938.

Expenditure in connection with Electricity Undertakings.	Total to 31st December, 1937.	Year ended 31st December, 1938.	Total to 31st December, 1938.
<b>SABIE UNDERTAKING:</b>			
Land and Rights ... ..	£510 0 0	—	£510 0 0
Buildings and Civil Works ... ..	65,458 1 8	Cr. £4,993 3 3	60,464 18 5
Machinery and Plant ... ..	39,301 7 5	Cr. 4,131 12 7	35,169 14 10
Net Revenue during Construction ...	Cr. 105,269 9 1 9,124 15 10	Cr. 9,124 15 10 9,124 15 10	96,144 13 3
	<b>£96,144 13 3</b>	<b>—</b>	<b>£96,144 13 3</b>
<b>KLIP GENERATING STATION UNDERTAKING:</b>			
Land and Rights ... ..	£3,116 0 3	£124,877 12 6	£127,993 12 9
Buildings and Civil Works ... ..	1,301,732 12 0	257,494 17 10	1,559,227 9 10
Machinery and Plant ... ..	2,909,026 9 6	1,015,200 11 6	3,924,227 1 0
	<b>£4,213,875 1 9</b>	<b>£1,397,573 1 10</b>	<b>£5,611,448 3 7</b>
<b>RAND EXTENSION UNDERTAKING:</b>			
Land and Rights ... ..	£1,375 1 6	£704 16 5	£2,079 17 11
Buildings and Civil Works ... ..	—	6,578 4 8	6,578 4 8
Machinery and Plant ... ..	378,979 19 5	195,059 5 2	574,039 4 7
	<b>£380,355 0 11</b>	<b>£202,342 6 3</b>	<b>£582,697 7 2</b>
<b>ESCOM HOUSE:</b>			
Land ... ..	£59,585 3 0	—	£59,585 3 0
Building and Equipment ... ..	323,731 18 4	£7,804 11 6	331,536 9 10
	<b>£383,317 1 4</b>	<b>£7,804 11 6</b>	<b>£391,121 12 10</b>
<b>SUMMARY:</b>			
Land and Rights ... ..	£147,862 11 8	£128,033 8 7	£275,896 0 3
Buildings and Civil Works ... ..	4,151,228 10 8	312,845 5 8	4,464,073 16 4
Machinery and Plant ... ..	10,982,599 16 6	1,425,914 14 6	12,408,514 11 0
Net Revenue during Construction ...	Cr. 15,281,690 18 10 133,087 12 3	1,866,793 8 9 133,087 12 3	17,148,484 7 7
Provision made prior to Financial Adjustments Act, 1930, for repayment of Advances, appropriated in reduction of Capital Expenditure ...	Cr. 123,650 1 10	123,650 1 10	—
	<b>£15,024,953 4 9</b>	<b>£2,123,531 2 10</b>	<b>£17,148,484 7 7</b>

A. E. HARTE, C.A. (S.A.), Chief Accountant.



## Electricity Supply

### Statement showing details of Investments of the

	Nominal Amount.	Loan No. 3. £500,000 4½% Local Registered Stock, 1953/63.	Loan No. 4. £2,500,000 4½% Local Registered Stock, 1953.
Electricity Supply Commission 4½ per cent. Local Registered Stock, 1953/63 ... ..	£93,700 0 0	£39,103 4 5	—
Electricity Supply Commission 4½ per cent. Local Registered Stock, 1953 ... ..	195,520 0 0	—	£191,020 0 0
Electricity Supply Commission 3½ per cent. Local Registered Stock, 1954/64 ... ..	570,150 0 0	10,000 0 0	—
Electricity Supply Commission 3½ per cent. Local Registered Stock, 1959/64 ... ..	35,750 0 0	—	—
Electricity Supply Commission 3½ per cent. Local Registered Stock, 1956/66 ... ..	330,300 0 0	16,490 0 0	98,940 0 0
Electricity Supply Commission 3½ per cent. Local Registered Stock, 1957/67 ... ..	305,900 0 0	24,287 10 0	93,406 10 0
Union of South Africa 4½ per cent. Local Registered Stock, 1953 ... ..	326,215 0 0	—	326,215 0 0
South African Iron and Steel Industrial Corporation, Limited, 5 per cent. Guaranteed First Mortgage Registered Debentures, 1946/71 ...	61,200 0 0	—	51,200 0 0
	£1,918,735 0 0	£89,880 14 5	£760,781 10 0
Interest Accrued ... ..	—	351 10 0	3,983 4 7
	£1,918,735 0 0	£90,232 4 5	£764,764 14 7

Johannesburg,  
31st March, 1939.

## Commission.

### Redemption Fund as at 31st December, 1938.

Loan No. 5. £6,750,000 3½% Local Registered Stock, 1954/64.	Loan No. 6. £2,500,000 3½% Local Registered Stock, 1959/64.	Loan No. 7. £2,000,000 3½% Local Registered Stock, 1956/66.	Loan No. 8. £2,000,000 3½% Local Registered Stock, 1957/67.	Loan No. 9. (Not yet raised).	Totals.
£56,950 0 0	—	—	—	—	£96,053 4 5
—	£4,500 0 0	—	—	—	195,520 0 0
490,392 0 2	51,300 0 0	£17,000 0 0	£1,000 0 0	—	569,692 0 2
—	35,610 1 10	—	—	—	35,610 1 10
143,560 0 0	19,400 0 0	40,972 8 7	—	—	319,362 8 7
78,182 0 0	60,043 0 0	21,922 0 0	18,037 10 0	£1,072 10 0	296,951 0 0
—	—	—	—	—	326,215 0 0
9,975 0 0	—	—	—	—	61,175 0 0
£779,059 0 2	£170,853 1 10	£79,894 8 7	£19,037 10 0	£1,072 10 0	£1,900,578 15 0
4,797 16 2	595 0 4	463 2 1	6 6 4	—	10,196 19 6
£783,856 16 4	£171,448 2 2	£80,357 10 8	£19,043 16 4	£1,072 10 0	£1,910,775 14 6

A. E. HARTE, C.A. (S.A.), Chief Accountant.



## Electricity Supply Commission.

## Redemption Fund Account for the Year ended 31st December, 1938.

	Loan No. 3. £500,000 4½% Local Registered Stock, 1953/63.	Loan No. 4. £2,500,000 4½% Local Registered Stock, 1953.	Loan No. 5. £6,750,000 3½% Local Registered Stock, 1954/64.	Loan No. 6. £2,500,000 3½% Local Registered Stock, 1959/64.	Loan No. 7. £2,000,000 3½% Local Registered Stock, 1956/66.	Loan No. 8. £2,000,000 3½% Local Registered Stock, 1957/67.	Loan No. 9. (Not yet raised.)	Totals.
<b>Cr.</b>								
<b>By Balance at 31st December, 1937, brought forward—</b>								
Natal Central Undertaking ... ..	£231 1 0	£10,463 14 7	£258,684 18 9	—	£850 7 7	—	—	£270,230 1 11
Witbank Undertaking ... ..	377 15 4	442,930 9 0	158,714 5 0	—	1,850 3 7	£2 0 1	—	603,874 13 0
Capetown Undertaking ... ..	48,844 10 11	20,894 9 3	133,617 0 1	—	216 3 8	—	—	203,572 3 11
Durban Undertaking ... ..	22,543 11 9	163,290 16 10	52,368 9 10	—	48 3 3	20 19 7	—	238,272 1 3
Sabie Undertaking ... ..	—	30,103 14 8	9,909 10 10	—	—	—	—	40,013 5 6
Klip Generating Station Undertaking ... ..	—	—	—	£93,284 17 7	24,246 8 1	—	—	117,531 5 8
Rand Extension Undertaking ... ..	—	—	—	9,758 15 7	760 13 8	26 15 7	—	10,546 4 10
Head Office ... ..	—	1,177 3 8	2,528 18 6	—	4,394 0 8	—	—	8,100 2 10
	£71,996 19 0	£668,860 8 0	£615,823 3 0	£103,043 13 2	£32,366 0 6	£49 15 3	—	£1,492,139 18 11
<b>.. Amounts Contributed during the Year out of Revenue—</b>								
Natal Central Undertaking ... ..	£53 18 0	£3,401 9 9	£75,394 11 1	—	£3,486 9 8	£316 18 11	£8 19 0	£82,662 6 5
Witbank Undertaking ... ..	93 9 1	37,794 17 6	18,185 4 4	—	4,090 3 8	360 6 8	—	60,524 1 3
Capetown Undertaking ... ..	11,198 11 3	6,472 2 9	36,850 17 6	—	1,095 13 8	83 14 0	127 13 9	55,828 12 11
Durban Undertaking ... ..	4,287 13 8	19,801 7 8	8,047 4 2	—	240 15 3	1,591 15 11	—	33,968 16 9
Sabie Undertaking ... ..	—	2,643 7 9	882 6 8	—	—	—	—	3,525 14 5
Klip Generating Station Undertaking ... ..	—	—	—	£58,978 4 4	30,213 5 1	14,434 4 1	—	103,625 13 6
Rand Extension Undertaking ... ..	—	—	—	5,605 16 1	1,298 11 0	2,044 18 3	878 17 5	9,828 2 9
Head Office ... ..	—	166 9 8	2,761 13 8	—	5,882 5 2	—	—	8,810 8 6
	£15,633 12 0	£70,279 15 1	£142,121 17 6	£64,584 0 5	£46,307 3 6	£18,831 17 10	£1,015 10 2	£358,773 16 6
<b>.. Net Proceeds of Sales of Fixed Property—</b>								
Natal Central Undertaking ... ..	—	—	£303 14 3	—	—	—	—	£303 14 3
Witbank Undertaking ... ..	—	£791 4 6	—	—	—	—	—	791 4 6
Capetown Undertaking ... ..	—	—	400 0 0	—	—	—	—	400 0 0
Durban Undertaking ... ..	—	—	200 0 0	—	—	—	—	200 0 0
	—	£791 4 6	£903 14 3	—	—	—	—	£1,694 18 9
<b>.. Net Interest Earned on Investments, after Deducting Amounts Appropriated in Reduction of Premiums on Investments Purchased—</b>								
Natal Central Undertaking ... ..	£8 1 9	£421 5 0	£10,724 7 10	—	£66 2 5	1 11	—	£11,219 18 11
Witbank Undertaking ... ..	13 4 7	16,256 11 9	6,151 7 10	—	107 10 9	2 5	—	22,528 17 4
Capetown Undertaking ... ..	1,709 11 5	836 14 3	5,512 8 1	—	19 4 7	2 2	—	8,078 0 6
Durban Undertaking ... ..	789 0 1	6,079 17 9	2,059 12 3	—	3 8 10	£1 6 9	—	8,933 5 8
Sabie Undertaking ... ..	—	1,106 0 9	380 3 10	—	—	—	—	1,486 4 7
Klip Generating Station Undertaking ... ..	—	—	—	£3,389 2 8	1,166 5 4	15 10 1	—	4,570 18 1
Rand Extension Undertaking ... ..	—	—	—	348 12 0	39 7 4	2 17 8	—	390 17 0
Head Office ... ..	—	44 4 1	136 2 6	—	216 16 11	—	—	397 3 6
	£2,519 17 10	£24,744 13 7	£24,964 2 4	£3,737 14 8	£1,618 16 2	£20 1 0	—	£57,605 5 7
<b>Grand Total</b>	<b>£90,150 8 10</b>	<b>£764,676 1 2</b>	<b>£783,812 17 1</b>	<b>£171,365 8 3</b>	<b>£80,292 0 2</b>	<b>£18,901 14 1</b>	<b>£1,015 10 2</b>	<b>£1,910,213 19 9</b>
<b>Dr.</b>								
<b>To Balance as per Balance Sheet—</b>								
Natal Central Undertaking ... ..	£293 0 9	£14,286 9 4	£345,107 11 11	—	£4,402 19 8	£317 0 10	£8 19 0	£364,416 1 6
Witbank Undertaking ... ..	484 9 0	497,773 2 9	183,050 17 2	—	6,047 18 0	362 9 2	—	687,718 16 1
Capetown Undertaking ... ..	61,752 13 7	28,203 6 3	176,380 5 8	—	1,331 1 11	83 16 2	127 13 9	267,878 17 4
Durban Undertaking ... ..	27,620 5 6	189,172 2 3	62,675 6 4	—	292 7 4	1,614 2 3	—	281,374 3 8
Sabie Undertaking ... ..	—	33,853 3 2	11,172 1 4	—	—	—	—	45,025 4 6
Klip Generating Station Undertaking ... ..	—	—	—	£155,652 4 7	55,625 18 6	14,449 14 2	—	225,727 17 3
Rand Extension Undertaking ... ..	—	—	—	15,713 3 8	2,098 12 0	2,074 11 6	878 17 5	20,765 4 7
Head Office ... ..	—	1,387 17 5	5,426 14 8	—	10,493 2 9	—	—	17,307 14 10
	£90,150 8 10	£764,676 1 2	£783,812 17 1	£171,365 8 3	£80,292 0 2	£18,901 14 1	£1,015 10 2	£1,910,213 19 9

A. E. HARTE, C.A. (S.A.), Chief Accountant.

We hereby certify that we are satisfied, both as to the correctness of the Accounts and Books of the Redemption Fund and as to the Maintenance of the Fund at the amount required by the Schedule to the Electricity Act, 1922, subject to the remarks contained in our report dated 15th May, 1939.

Johannesburg,  
31st March, 1939.

ALEX. AIKEN & CARTER, }  
B. HALSEY. } Auditors

## Electricity Supply

Dr.

### Reserve Fund Account for the

<b>To</b>	<b>Expenditure during the Year on Replacements and Betterment</b>				
	Natal Central Undertaking	£41,253	5	11	
	Witbank Undertaking	9,495	4	0	
	Capetown Undertaking	716	7	8	
	Durban Undertaking	14,782	7	5	
	Sabie Undertaking	491	6	8	
	Klip Generating Station Undertaking	454	18	5	
					£67,193 10 1
	<b>Balance as per Balance Sheet</b>				1,255,223 12 3
	Natal Central Undertaking	491,854	0	10	
	Witbank Undertaking	271,534	6	10	
	Capetown Undertaking	252,678	10	10	
	Durban Undertaking	132,330	0	11	
	Sabie Undertaking	9,851	6	10	
	Klip Generating Station Undertaking	88,739	0	0	
	Rand Extension Undertaking	8,236	6	0	
					£1,322,417 2 4

Johannesburg,  
31st March, 1939.

## Commission.

### Year ended 31st December, 1938.

Cr.

<b>By</b>	<b>Balance at 31st December, 1937, brought forward</b>				
	Natal Central Undertaking	£461,902	4	6	
	Witbank Undertaking	226,045	1	5	
	Capetown Undertaking	224,551	2	11	
	Durban Undertaking	123,758	5	1	
	Sabie Undertaking	9,358	12	5	
	Klip Generating Station Undertaking	46,240	6	7	
	Rand Extension Undertaking	4,175	10	10	
					£1,096,031 3 9
	<b>Amounts set aside during the Year as per Revenue Accounts</b>				179,150 3 2
	Natal Central Undertaking	52,000	0	0	
	Witbank Undertaking	45,000	0	0	
	Capetown Undertaking	19,000	0	0	
	Durban Undertaking	18,360	0	0	
	Sabie Undertaking	600	0	0	
	Klip Generating Station Undertaking	40,362	2	1	
	Rand Extension Undertaking	3,828	1	1	
					3,119 0 3
	<b>Profit on Sales of Investments</b>				44,116 15 2
	<b>Interest Earned on Investments</b>				47,957 17 3
	Interest earned	47,957	17	3	
	Less—Premium on Investments written off	3,841	2	1	
					£1,322,417 2 4

A. E. HARTE, C.A. (S.A.), Chief Accountant.

## Electricity Supply

### NATAL CENTRAL

#### Revenue Account for the Year

Dr.					Cr.
<b>Generation of Electricity.</b>					
To Operation—					
Fuel ... ..	£105,671	11	4		
Water, Oil, Waste and Stores ... ..	1,351	3	10		
Salaries and Wages ... ..	18,681	12	3		
Other Expenses ... ..	64	4	2		
„ Maintenance—					
Stores ... ..	6,860	17	9		
Salaries and Wages ... ..	9,884	15	7		
Other Expenses ... ..	860	0	4		
„ Electricity Purchased ... ..				£143,374	5 3
				300	0 0
<b>Distribution of Electricity.</b>					
„ Operation and Maintenance—					
Stores ... ..	4,907	19	11		
Salaries and Wages ... ..	18,557	5	3		
Other Expenses ... ..	4,325	18	0		
				27,791	3 2
<b>General Expenses.</b>					
„ Local Administration and Technical Management ... ..	9,241	0	2		
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, Payment to Durban Undertaking under Agreement, etc.) ... ..	12,807	10	0		
„ Investigations and Development Expenses ... ..	20	7	0		
„ Head Office Administration and General Expenses, including Publicity ... ..	7,077	15	9		
„ Engineering Expenses ... ..	3,676	19	6		
„ Deferred Payment Scheme, including Propaganda and Showroom Expenses ... ..				32,823	12 5
				254	6 2
				204,543	7 0
„ Interest ... ..	152,822	10	5		
„ Redemption Fund ... ..	82,662	6	5		
„ Instalments paid on Volksrust Municipality Loan ... ..	1,085	19	1		
„ Amount set aside to Reserve Fund ... ..	52,000	0	0		
„ Balance carried down ... ..	1,756	6	0		
	£494,870	8	11		
To Balance as per Balance Sheet ... ..	£29,582	14	6		
	£29,582	14	6		

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,  
31st March, 1939.

## Commission.

### UNDERTAKING

#### ended 31st December, 1938.

				Cr.
By Sales of Electricity—				
Traction Supplies ... ..	£379,383	3	9	
Bulk Supplies ... ..	70,699	16	10	
Industrial Supplies ... ..	24,587	12	3	
Domestic and Lighting Supplies ... ..	16,244	13	4	
				£490,915
„ Deferred Payment Scheme ... ..				58
„ Other Revenue ... ..				3,896
				10 0
				£494,870
				8 11
By Balance at 31st December, 1937, brought forward ... ..				
„ Balance brought down ... ..	£27,826	8	6	
	1,756	6	0	
	£29,582	14	6	

Referred to in our Report of 15th May, 1939.

ALEX. AIKEN & CARTER, }  
B. HALSEY. } Auditors.

## Electricity Supply

WITBANK

Dr. Revenue Account for the Year

Generation of Electricity.			
To Operation—			
Fuel ... ..	£70,830 19 0		
Water, Oil, Waste and Stores ... ..	6,444 7 5		
Salaries and Wages ... ..	27,447 7 3		
Other Expenses ... ..	1,475 4 8		
„ Maintenance—			
Stores ... ..	11,912 5 5		
Salaries and Wages ... ..	15,821 10 1		
Other Expenses ... ..	5,593 7 7		
„ Electricity Purchased ... ..		£139,525 1 5	
		90,376 7 3	
Distribution of Electricity.			
„ Operation and Maintenance—			
Stores ... ..	1,639 15 6		
Salaries and Wages ... ..	3,758 13 11		
Other Expenses ... ..	559 6 4		
		5,957 15 9	
General Expenses.			
„ Local Administration and Technical Management ...	7,456 16 2		
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.) ... ..	8,257 8 3		
„ Administration, Engineering and General Expenses of Operating Party (The Victoria Falls and Transvaal Power Company, Limited) ... ..	7,000 0 0		
„ Head Office Administration and General Expenses, including Publicity ... ..	5,754 19 8		
„ Engineering Expenses ... ..	2,989 15 4		
		31,458 19 5	
„ Deferred Payment Scheme, including Propaganda and Showroom Expenses ... ..		236 19 0	
		267,555 2 10	
„ Interest ... ..		103,720 19 5	
„ Redemption Fund ... ..		61,524 1 3	
„ Amount set aside to Reserve Fund ... ..		45,000 0 0	
„ Balance carried down ... ..		9,250 9 5	
		£486,050 12 11	
To Balance as per Balance Sheet ... ..		£29,933 19 4	
		£29,933 19 4	

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,  
31st March, 1939.

## Commission.

UNDERTAKING.

ended 31st December, 1938.

Cr.

By Sales of Electricity—			
Traction Supplies ... ..	£105,862 13 5		
Bulk Supplies ... ..	275,358 10 1		
Industrial Supplies ... ..	92,282 10 5		
Domestic and Lighting Supplies ... ..	6,744 7 4		
		£480,248 1 3	
„ Deferred Payment Scheme ... ..		437 3 0	
„ Other Revenue ... ..		5,365 8 8	
		£486,050 12 11	
By Balance at 31st December, 1937, brought forward ...		£19,725 5 0	
„ Adjustment in respect of Bulk Supplies for the period prior to 31st December, 1937 ... ..		958 4 11	
„ Balance brought down ... ..		9,250 9 5	
		£29,933 19 4	

Referred to in our Report of 15th May, 1939.

ALEX. AIKEN & CARTER, }  
B. HALSEY. } Auditors.

## Electricity Supply CAPETOWN

### Revenue Account for the Year

Dr.				
	<b>Generation of Electricity.</b>			
To Proportion of Pooled Costs ...	(As per attached Statement.)	£157,003	17	11
Less — Adjustment of redemption charges in respect of loans raised by City of Capetown ...		688	2	0
		£156,315	15	11
	<b>Distribution of Electricity.</b>			
„ Operation and Maintenance—				
Stores ...		2,477	13	0
Salaries and Wages ...		14,548	0	9
Other Expenses ...		4,686	3	5
		21,661	17	2
	<b>General Expenses.</b>			
„ Local Administration and Technical Management ...		8,672	11	4
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.) ...		9,547	7	9
„ Head Office Administration and General Expenses, including Publicity ...		5,828	15	4
„ Engineering Expenses ...		3,028	1	11
		27,076	16	4
Less—Charged to Pooled Costs ...		2,597	11	8
		24,479	4	8
„ Deferred Payment Scheme, including Propaganda and Showroom Expenses ...		4,247	6	10
		206,704	4	7
„ Interest ...		92,762	7	4
„ Redemption Fund ...		55,828	12	11
„ Amount set aside to Reserve Fund ...		19,000	0	0
		167,591	0	3
Less—Charged to Pooled Costs ...		47,865	1	9
		119,725	18	6
„ Balance carried down ...		641	14	11
		£327,071	18	0
To Balance as per Balance Sheet ...		£4,464	7	8
		£4,464	7	8

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,  
31st March, 1939.

## Commission.

### UNDERTAKING.

### ended 31st December, 1938.

	Cr.
By Sales of Electricity—	
Traction Supplies ...	£153,488 1 5
Bulk Supplies ...	34,526 3 10
Industrial Supplies ...	86,893 12 3
Domestic and Lighting Supplies ...	46,786 6 4
	£321,694 3 10
„ Deferred Payment Scheme ...	4,649 12 2
„ Other Revenue ...	2,570 14 11
Less—Credited to Pooled Costs ...	1,842 12 11
	728 2 0
	£327,071 18 0
By Balance at 31st December, 1937, brought forward ...	£16,433 8 3
Less—Provision for redemption charges for the period July to December, 1937, in respect of loans raised by City of Capetown ...	12,615 15 6
	3,822 12 9
„ Balance brought down ...	641 14 11
	£4,464 7 8

Referred to in our Report of 15th May, 1939.

ALEX. AIKEN & CARTER, }  
B. HALSEY. } Auditors.

## Electricity Supply Commission

Dr. Statement of Amounts Charged to Pooled Costs during the

Pooled Generation of Electricity.	
To Operation and Maintenance—	
Fuel ... ..	£294,343 11 9
Water, Oil, Waste and Stores ... ..	16,786 19 9
Salaries, Wages and Other Expenses ... ..	46,582 19 11
	£357,713 11 5
„ General Expenses (including Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.) ...	4,713 19 3
„ Interest ... ..	25,074 10 8
„ Redemption Fund ... ..	96,422 14 11
„ Reserve Fund ... ..	2,682 14 10
	£486,607 11 1

Capetown,  
31st March, 1939.

## and City of Capetown.

Year ended 31st December, 1938, and Allocation thereof. Cr.

By Allocation of Pooled Costs in terms of Agreement—	
Electricity Supply Commission ... ..	£157,003 17 11
City of Capetown ... ..	327,265 10 3
	£484,269 8 2
„ Sundry Revenue ... ..	2,338 2 11
	£486,607 11 1

GEO. H. SWINGLER,  
Manager of the Pooled Stations.

## Electricity Supply

DURBAN

**Dr.** **Revenue Account for the Year**

<b>Generation of Electricity.</b>			
To Operation—			
Fuel ... ..	£113,793	3	2
Water, Oil, Waste and Stores ... ..	1,997	3	0
Salaries and Wages ... ..	13,781	15	8
Other Expenses ... ..	1,756	12	0
„ Maintenance—			
Stores ... ..	6,430	4	8
Salaries and Wages ... ..	12,240	10	0
Other Expenses ... ..	976	15	0
„ Electricity Purchased ... ..		£150,976	3 6
		2,726	4 6
<b>Distribution of Electricity.</b>			
„ Operation and Maintenance—			
Stores ... ..	733	14	10
Salaries and Wages ... ..	1,292	7	0
Other Expenses ... ..	539	17	11
		2,565	19 9
<b>General Expenses.</b>			
„ Local Administration and Technical Management ...	4,962	7	3
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.) ... ..	5,674	7	7
„ Investigations and Development Expenses ... ..	198	0	6
„ Head Office Administration and General Expenses, including Publicity ... ..	4,163	8	1
„ Engineering Expenses ... ..	2,162	18	6
„ Deferred Payment Scheme, including Propaganda and Showroom Expenses ... ..		17,161	1 11
		90	12 3
		173,520	1 11
„ Interest ... ..	51,824	18	7
„ Redemption Fund ... ..	33,968	16	9
„ Sinking Fund ... ..	207	12	0
„ Amount set aside to Reserve Fund ... ..	18,360	0	0
„ Balance carried down ... ..	1,695	14	3
		£279,577	3 6
To Balance as per Balance Sheet ... ..	£15,372	3	2
	£15,372	3	2

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,  
31st March, 1939.

## Commission.

UNDERTAKING.

**ended 31st December, 1938.**

**Cr.**

<b>By Sales of Electricity—</b>			
Bulk Supplies ... ..	£265,524	7	4
Industrial Supplies ... ..	3,970	19	11
Domestic and Lighting Supplies ... ..	7,086	6	4
	276,581	13	7
Less—Proportion applied against Capital Cost of part of Undertaking not in commercial operation ... ..	284	1	11
„ Other Revenue ... ..		£276,297	11 8
		3,279	11 10
		£279,577	3 6
By Balance at 31st December, 1937, brought forward ...	£13,676	8	11
„ Balance brought down ... ..	1,695	14	3
	£15,372	3	2

Referred to in our Report of 15th May, 1939.

ALEX. AIKEN & CARTER, }  
B. HALSEY. } Auditors.



## Electricity Supply

SABIE

Dr. Revenue Account for the Year

To		Cr.	
<b>Generation of Electricity.</b>			
To Operation—			
Water, Oil, Waste and Stores	... ..	£53 10 9	
Salaries and Wages	... ..	1,736 18 11	
Other Expenses	... ..	1 8 6	
,, Maintenance—			
Stores	... ..	611 18 11	
Salaries and Wages	... ..	345 5 7	
Other Expenses	... ..	115 6 2	
		£2,864 8 10	
<b>Distribution of Electricity.</b>			
,, Operation and Maintenance—			
Stores	... ..	57 3 8	
Salaries and Wages	... ..	307 19 7	
Other Expenses	... ..	331 11 4	
		696 14 7	
<b>General Expenses.</b>			
,, Local Administration and Technical Management ...			
		294 7 8	
,, General Expenses (including Maintenance of Quarters, Insurance, Pension Fund Contributions, etc.) ...			
		171 16 1	
,, Head Office Administration and General Expenses, including Publicity ...			
		624 10 2	
,, Engineering Expenses ...			
		324 8 10	
		1,415 2 9	
		4,976 6 2	
		4,209 7 8	
		3,525 14 5	
		600 0 0	
		£13,311 8 3	
To Balance brought down ... ..			
		£18 1 11	
,, Balance as per Balance Sheet ... ..			
		1,062 0 1	
		£1,080 2 0	

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,  
31st March, 1939.

## Commission.

UNDERTAKING.

ended 31st December, 1938. Cr.

By Sales of Electricity—			
Mining Supplies	... ..	£13,293 6 4	
,, Balance carried down ... ..			18 1 11
		£13,311 8 3	
By Balance at 31st December, 1937, brought forward ... ..			
		£1,080 2 0	
		£1,080 2 0	

Referred to in our Report of 15th May, 1939.

ALEX. AIKEN & CARTER, }  
B. HALSEY. } Auditors.

## Electricity Supply

### KLIP GENERATING

Dr. Revenue Account for the Year

#### GENERATION OF ELECTRICITY.

To Operation—					
Fuel	...	...	...	...	£227,433 13 7
Water, Oil, Waste and Stores	...	...	...	...	6,185 2 2
Salaries and Wages	...	...	...	...	30,410 13 10
Other Expenses	...	...	...	...	2,274 2 0
„ Maintenance—					
Stores	...	...	...	...	6,593 0 11
Salaries and Wages	...	...	...	...	10,685 2 8
Other Expenses	...	...	...	...	4,709 0 3
					£288,290 15 5

#### GENERAL EXPENSES.

„ Local Administration and Technical Management	...	...	...	...	5,324 14 1
„ General Expenses (including Maintenance of Quarters, Stores Expenses, Rates, Insurance, Pension Fund Contributions, etc.)	...	...	...	...	7,149 15 2
„ Administration, Engineering and General Expenses of Operating Party (The Victoria Falls and Transvaal Power Company, Limited)	...	...	...	...	13,076 0 7
„ Head Office Administration and General Expenses, including Publicity	...	...	...	...	5,140 5 10
„ Engineering Expenses	...	...	...	...	2,670 8 6
					33,361 4 2
					321,651 19 7
„ Interest	...	...	...	...	133,712 13 8
„ Redemption Fund	...	...	...	...	103,625 13 6
„ Provision for Repayment of Amounts Outstanding (Rand Water Board)	...	...	...	...	4,436 17 1
„ Amount set aside to Reserve Fund	...	...	...	...	40,362 2 1
					£603,789 5 11

A. E. HARTE, C.A. (S.A.), Chief Accountant.

Johannesburg,  
31st March, 1939.

## Commission.

### STATION UNDERTAKING.

ended 31st December, 1938. Cr.

By Sales of Electricity—					
Bulk Supplies	...	...	...	...	£600,532 6 4
„ Other Revenue	...	...	...	...	3,256 19 7

Referred to in our Report of 15th May, 1939.

ALEX. AIKEN & CARTER, }  
B. HALSEY. } Auditors.

Account No. 9.

## Electricity Supply

---

### RAND EXTENSION

---

Dr. Revenue Account for the Year

To Insurance ... ..	£59	12	1
„ Head Office Administration and General Expenses, including Publicity ... ..	400	6	9
„ Engineering Expenses ... ..	207	19	7
		<hr style="width: 50%; margin-left: 0;"/>	£667 18 5
„ Interest ... ..	13,045	2	11
„ Redemption Fund ... ..	9,828	2	9
„ Amount set aside to Reserve Fund ... ..	3,828	1	1
		<hr style="width: 50%; margin-left: 0;"/>	£27,369 5 2
		<hr style="width: 50%; margin-left: 0;"/>	<hr style="width: 50%; margin-left: 0;"/>

A. E. HARTE, C.A. (S.A.), Chief Accountant.

## Commission.

---

### UNDERTAKING.

---

ended 31st December, 1938.

Cr.

By Amount recovered from The Victoria Falls and Transvaal Power Company, Limited ... ..	£27,369	5	2
		<hr style="width: 50%; margin-left: 0;"/>	£27,369 5 2
		<hr style="width: 50%; margin-left: 0;"/>	<hr style="width: 50%; margin-left: 0;"/>

Referred to in our Report of 15th May, 1939.

ALEX. AIKEN & CARTER, }  
B. HALSEY. } Auditors.

## INDEX TO ANNEXURE " B " (STATISTICAL AND OTHER STATEMENTS).

	Pages.
Summary of principal plant and equipment installed at the Commission's several Undertakings as at 31st December, 1938 ...	83-85
Summary of principal plant and equipment in course of installation or on order as at 31st December, 1938 ... ..	86
Statement showing price or rent of land or rights or interests in or over land or other property acquired or hired by the Commission during 1938 ... ..	87
Units sold to all consumers during the past fourteen years ...	89
Distribution of units sold during 1938 ... ..	89
Power Station Statistics, 1938 ... ..	90
Particulars of coal used at the Commission's Steam-raising Power Stations during 1938 ... ..	90

## ANNEXURE " B. "

## Electricity Supply Commission.

## STATEMENT No. 1.

Summary of principal plant and equipment installed at the Commission's several Undertakings as at 31st December, 1938:—

## POWER STATIONS.

Colenso (Natal Central Undertaking)	...	...	...	...	...	Steam.
Congella (Durban Undertaking)	...	...	...	...	...	Steam.
Klip	...	...	...	...	...	Steam.
Margate	...	...	...	...	...	Oil.
Sabie	...	...	...	...	...	Hydro.
Salt River (Cape Town Undertaking)	...	...	...	...	...	Steam.
Scottburgh (Durban Undertaking)	...	...	...	...	...	Oil.
Umkomaas (Durban Undertaking)	...	...	...	...	...	Oil.
Volksrust (Natal Central Undertaking)	...	...	...	...	...	Oil.
Witbank	...	...	...	...	...	Steam.

## BOILER PLANT.

Power Station.	No. of Boilers.	Normal Rating of each Boiler. Lbs. of steam per hour.	Total Rating of all Boilers. Lbs. of steam per hour.	Pressure. Lbs. per square inch.
Colenso	12	60,000	720,000	290
Congella	{ 6 4	{ 60,000 100,000	760,000	{ 270 300
Klip	18	180,000	3,240,000	355
Salt River	{ 2 6	{ 60,000 100,000	720,000	{ 270 425
Witbank	20	70,000	1,400,000	225
<b>Totals</b>	<b>68</b>		<b>6,840,000</b>	

## ANNEXURE " B. "

## Electricity Supply Commission.

## STATEMENT No. 1.

Summary of principal plant and equipment installed at the Commission's several Undertakings as at 31st December, 1938:—

## POWER STATIONS.

Colenso (Natal Central Undertaking)	...	...	Steam.
Congella (Durban Undertaking)	...	...	Steam.
Klip	...	...	Steam.
Margate	...	...	Oil.
Sabie	...	...	Hydro.
Salt River (Cape Town Undertaking)	...	...	Steam.
Scottburgh (Durban Undertaking)	...	...	Oil.
Umkomaas (Durban Undertaking)	...	...	Oil.
Volksrust (Natal Central Undertaking)	...	...	Oil.
Witbank	...	...	Steam.

## BOILER PLANT.

Power Station.	No. of Boilers.	Normal Rating of each Boiler. Lbs. of steam per hour.	Total Rating of all Boilers. Lbs. of steam per hour.	Pressure. Lbs. per square inch.
Colenso	12	60,000	720,000	290
Congella	{ 6 4	{ 60,000 100,000	760,000	{ 270 300
Klip	18	180,000	3,240,000	355
Salt River	{ 2 6	{ 60,000 100,000	720,000	{ 270 425
Witbank	20	70,000	1,400,000	225
<b>Totals</b>	<b>68</b>		<b>6,840,000</b>	

## GENERATING PLANT (EXCLUDING HOUSE SETS).

Power Station.	No. of Generators.	Normal Rating of Each Generator.		Rating of Generator House.		Voltage of Generation	
		Kilo-watts.	Kilovolt Amperes.	Kilo-watts.	Kilovolt Amperes.		
Colenso	... 5	12,000	13,500	60,000	67,500	6,600	
Congella	... {	2	6,000	7,500	98,000	122,500	{
		3	12,000	15,000			
		1	20,000	25,000			
		1	30,000	37,500			
Klip ...	... 6	33,000	41,250	264,000	330,000	10,500	
Margate	... {	1	93	116	166	207	400
		1	73	91			
Sabie ...	... 3	450	600	1,350	1,800	3,300	
Salt River	... {	3	10,000	11,000	90,000	108,000	{
		3	20,000	25,000			
Scottburgh	... 1	16	20	16	20	{	
Umkomaas	... 2	32	38	64	76	{	
							400
Volksrust	... 2	250	300	500	600	6,600	
Witbank	... 5	20,000	23,500	100,000	117,500	6,600	
<b>Totals</b>	... <b>41</b>			<b>614,096</b>	<b>748,203</b>		

## TRANSMISSION LINES AND CABLES.

Undertaking.	88,000 volts. Route Miles.	80,000 volts. Route Miles.	40,000 volts. Route Miles.	33,000 volts. Route Miles.	22,000, 21,000, 20,000 volts. Route Miles.	12,000, 11,000 volts. Route Miles.	6,000, 3,000, 2,200, 2,000 volts. Route Miles.	390/220 volts. Route Miles.	Total Route Miles.
Cape Town ...	—	—	—	211	—	42	113	120	486
Durban (South Coast)	—	—	—	30	—	—	18	22	70
Natal Central ...	546	—	—	33	—	58	137	57	831
Rand Extension ...	—	253	55	—	27	—	6	1	342
Sabie ...	—	—	—	—	7	—	1	—	8
Witbank ...	—	—	19	—	105	—	17	26	167
<b>Totals ...</b>	<b>546</b>	<b>253</b>	<b>74</b>	<b>274</b>	<b>139</b>	<b>100</b>	<b>292</b>	<b>226</b>	<b>1,904</b>



## STATIC TRANSFORMERS AT POWER STATIONS AND SUBSTATIONS.

(Step-up and Step-down, including Spares.)

Undertaking.						Capacity. Kilovolt Amperes.
Cape Town ...	...	...	...	...	...	80,443
Durban ...	...	...	...	...	...	52,250
Klip ...	...	...	...	...	...	468,333
Natal Central	...	...	...	...	...	204,480
Rand Extension	...	...	...	...	...	104,350
Reef ...	...	...	...	...	...	60,295
Sabie ...	...	...	...	...	...	3,640
Witbank ...	...	...	...	...	...	180,976
<b>Total</b> ...	...	...	...	...	...	<b><u>1,154,767</u></b>

---

## CONVERTING SUB-STATIONS.

Type			Number of Sub-stations.	Number of Units.	Rating.
Motor Generators	...	...	13	23	46,000 kW.
Rotary Converters	...	...	6	12	24,000 kW.
Rectifiers	...	...	25	39	88,990 kVA.
<b>Totals</b> ...	...	...	<b><u>44</u></b>	<b><u>74</u></b>	—

## GENERATING PLANT (EXCLUDING HOUSE SETS).

Power Station.	No. of Generators.	Normal Rating of Each Generator.		Rating of Generator House.		Voltage of Generation
		Kilo-watts.	Kilovolt Amperes.	Kilo-watts.	Kilovolt Amperes.	
Colenso ...	5	12,000	13,500	60,000	67,500	6,600
Congella ...	2	6,000	7,500	98,000	122,500	6,600 33,000
	3	12,000	15,000			
	1	20,000	25,000			
	1	30,000	37,500			
Klip ...	6	33,000	41,250	264,000	330,000	10,500
Margate ...	1	93	116	166	207	400
	1	73	91			
Sabie ...	3	450	600	1,350	1,800	3,300
Salt River ...	3	10,000	11,000	90,000	108,000	12,000 33,000
	3	20,000	25,000			
Scottburgh ...	1	16	20	16	20	400 400
Umkomaas ...	2	32	38	64	76	400 400
Volksrust ...	2	250	300	500	600	6,600
Witbank ...	5	20,000	23,500	100,000	117,500	6,600
<b>Totals ...</b>	<b>41</b>			<b>614,096</b>	<b>748,203</b>	

## TRANSMISSION LINES AND CABLES.

Undertaking.	88,000 volts. Route Miles.	80,000 volts. Route Miles.	40,000 volts. Route Miles.	33,000 volts. Route Miles.	22,000, 21,000, 20,000 volts. Route Miles.	12,000, 11,000 volts. Route Miles.	6,000, 3,000, 2,200, 2,000 volts. Route Miles.	380/220 volts. Route Miles.	Total Route Miles.
Cape Town ...	—	—	—	211	—	42	113	120	486
Durban (South Coast)	—	—	—	30	—	—	18	22	70
Natal Central ...	546	—	—	33	—	58	137	57	831
Rand Extension ...	—	253	55	—	27	—	6	1	342
Sabie ...	—	—	—	—	7	—	1	—	8
Witbank ...	—	—	19	—	105	—	17	26	167
<b>Totals ...</b>	<b>546</b>	<b>253</b>	<b>74</b>	<b>274</b>	<b>139</b>	<b>100</b>	<b>292</b>	<b>226</b>	<b>1,904</b>

**STATIC TRANSFORMERS AT POWER STATIONS AND SUBSTATIONS.**

(Step-up and Step-down, including Spares.)

Undertaking.						Capacity. Kilovolt Amperes.
Cape Town ...	...	...	...	...	...	80,443
Durban ...	...	...	...	...	...	52,250
Klip ...	...	...	...	...	...	468,333
Natal Central	...	...	...	...	...	204,480
Rand Extension	...	...	...	...	...	104,350
Reef ...	...	...	...	...	...	60,295
Sabie ...	...	...	...	...	...	3,640
Witbank ...	...	...	...	...	...	180,976
<b>Total</b> ...	...	...	...	...	...	<b><u>1,154,767</u></b>

**CONVERTING SUB-STATIONS.**

Type			Number of Sub-stations.	Number of Units.	Rating.
Motor Generators	...	...	13	23	46,000 kW.
Rotary Converters	...	...	6	12	24,000 kW.
Rectifiers	...	...	25	39	88,990 kVA.
<b>Totals</b> ...	...	...	<b>44</b>	<b>74</b>	—

# Electricity Supply Commission.

## STATEMENT No. 2.

Summary of principal plant and equipment in course of installation or on order as at 31st December, 1938:—

### BOILER PLANT.

Power Station.	Number of Boilers.	Capacity in lbs. of steam per hour (normal rating).			Pressure. lbs. sq. inch.
		Each.	Total.		
Klip	... 4 ...	180,000	... 720,000	...	355

### GENERATING PLANT (EXCLUDING HOUSE SETS).

Power Station.	Number of Sets.	Capacity each. Kilowatts.	Total Capacity. Kilowatts.
Klip ...	... 4 ...	33,000	... 132,000

### TRANSMISSION LINE AND CABLES.

	40,000 Volts.	22,000 Volts.	380/220 Volts.	Totals.
	Route Miles.	Route Miles.	Route Miles.	
Overhead Lines ...	11	30	5	46

### TRANSFORMERS.

(Step-up and Step-down).

	Kilovolt-Amperes.
Total capacity in course of installation or on order ...	... 149,115

### CONVERTING SUB-STATIONS.

Type.	Number of Substations.	Number of Sets.	Rating.
Mercury Arc Rectifiers ...	... 2 ...	... 3 ...	8,165 kVA.
Rotary Converters ...	... 1 ...	... 2 ...	4,000 kW.

# Electricity Supply Commission.

## STATEMENT 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 1938.

(See previous Annual Reports for Rights or Interests in or over Land Acquired prior to 1938.)

Area.			Farm or Lot.	District.	Title.	Purchase Price or Rental.	Acquired From	Purpose for Which Required.
Acres	Roods	Perches						
<b><u>NATAL CENTRAL UNDERTAKING.</u></b>								
			Labuschagne's Kraal No. 1229	Weenen	Servitude of Right-of-Way in Perpetuity	£20 15 0	W. and A. McFie	Power Conductors
			Lot A of Onverwacht No. 911 and Middelpaats No. 916	Weenen	Servitude of Right-of-Way in Perpetuity	15 15 0	T. H. Wood	Power Conductors
			1 of A of Samson's Klip No. 3312	Klip River	Servitude of Right-of-Way in Perpetuity	5 0 0	R. H. J. O'Neil	Power Conductors
			Moord Kraal No. 830	Weenen	Servitude of Right-of-Way in Perpetuity	6 10 0	J. W. Haw	Power Conductors
			Subdivision Buffalo Rise of Jordaan's Stroom No. 3310	Klip River	Servitude of Right-of-Way in Perpetuity	5 0 0	A. E. Seedat	Power Conductors
			Remainder of Overwacht	Weenen	Servitude of Right-of-Way in Perpetuity	13 0 0	Estate of the late John Geekie	Power Conductors
			Aberfeldy No. 362	Harrismith	Servitude of Right-of-Way in Perpetuity	11 5 0	M. J. Bester	Power Conductors
			Thaba Bulois No. 603	Harrismith	Servitude of Right-of-Way in Perpetuity	13 15 0	W. A. C. Bester	Power Conductors
			Vaal Krantz	Weenen	Servitude of Right-of-Way in Perpetuity	7 15 0	J. Mattison	Power Conductors
			Remainder of Weenen Townlands	Weenen	Servitude of Right-of-Way in Perpetuity	—	Weenen Town Board	Power Conductors
			Haldale of Jordaan's Stroom No. 3310	Newcastle	Servitude of Right-of-Way in Perpetuity	7 10 0	P. J. Conradie	Power Conductors
<b><u>WITBANK UNDERTAKING.</u></b>								
Morgen	Sq. Roods	Sq. Feet	Portion M of Rietfontein No. 8	Springs	Purchase	£75 0 0	Rand Selection Corporation	Substation Site
	67	38	Remainder of Joubertsrust No. 16	Witbank	Servitude of Right-of-Way	—	Witbank Colliery Limited	Power Conductors
			Blesboklaagte No. 29	Witbank	Servitude of Right-of-Way	—	The Middelburg Steam Coal and Coke Co., Ltd.	Power Conductors and Transformer Site
			Portion D of Klipplaat No. 47	Witbank	Servitude of Right-of-Way in Perpetuity	22 0 0	J. C. P. de Villiers	Power Conductors
<b><u>CAPETOWN UNDERTAKING.</u></b>								
Acres	Roods	Perches	Blaauw Klip East and Nietgegund	Stellenbosch	Servitude of Right-of-Way in Perpetuity	—	C. J. & J. P. van Brakel	Power Conductors
			Bonte Rivier	Stellenbosch	Servitude of Right-of-Way in Perpetuity	—	W. A. & N. J. Krige	Power Conductors
			Lot DN of Groen Rivier	Stellenbosch	Servitude of Right-of-Way in Perpetuity	—	J. P. Roux	Power Conductors
			Portions of Elsjes Kraal and Oakdale	Bellville	Servitude of Right-of-Way in Perpetuity	£31 3 0	The Hume Pipe Co. (S.A.), Ltd.	Power Conductors
			Blaauw Klip and Blaauw Klip West	Stellenbosch	Servitude of Right-of-Way in Perpetuity	—	W. A. de Waal	Power Conductors
	1	1	Lot TSS Maitland	Cape	Crown Grant	70 0 0	Government of the Union of South Africa	Substation Site
		18	1 of E.S.C. Glen Lily Estate	Cape	Purchase	100 0 0	E. Daitsh	Substation Site
<b><u>RAND EXTENSION UNDERTAKING.</u></b>								
			Rietkuil No. 86, Buffeldoorn No. 58	Klerksdorp	Surface Right Permits	—	Government of the Union of South Africa	Power Conductors
			Gemspost No. 134 and Libanon No. 28	Krugersdorp	Surface Right Permits	—	Government of the Union of South Africa	Power Conductors
			Vlakfontein No. 8	Heidelberg	Surface Right Permits	—	Government of the Union of South Africa	Power Conductors
			Rietfontein No. 11	Springs	Surface Right Permits	—	Government of the Union of South Africa	Power Conductors

**STATEMENT No. 4.**

Units sold to all consumers during the past fourteen years.

Year.	Capetown Under- taking.	Durban Under- taking.	Klip Under- taking.	Natal Cent. Under- taking.	Sabie Under- taking.	Witbank Under- taking.	Total.
1925 ... ..	—	—	—	—	75,943	—	<b>75,943</b>
1926 ... ..	280,242	—	—	719,666	651,458	160,031,213	<b>161,682,579</b>
1927 ... ..	5,811,836	—	—	104,206,235	1,938,940	439,061,722	<b>551,018,733</b>
1928 ... ..	31,038,697	15,563,460	—	114,213,037	2,829,888	464,267,213	<b>627,912,295</b>
1929 ... ..	47,945,690	78,873,576	—	123,911,774	3,176,173	543,091,138	<b>796,998,351</b>
1930 ... ..	49,772,016	99,228,000	—	117,075,484	4,585,060	618,951,364	<b>889,611,924</b>
1931 ... ..	52,109,958	103,899,765	—	101,131,880	6,585,553	603,359,113	<b>867,086,269</b>
1932 ... ..	64,268,873	109,808,223	—	100,292,933	6,080,010	610,285,123	<b>890,735,162</b>
1933 ... ..	100,685,629	118,538,312	—	109,186,538	6,349,651	639,368,114	<b>974,128,244</b>
1934 ... ..	73,583,974	131,104,182	—	124,898,129	7,329,679	648,245,530	<b>985,161,494</b>
1935 ... ..	80,020,511	149,874,024	—	154,278,600	7,181,282	727,888,529	<b>1,119,242,946</b>
1936 ... ..	85,840,383	170,493,987	556,997,155	171,476,131	6,863,253	696,376,199	<b>1,688,047,108</b>
1937 ... ..	94,038,449	189,412,691	1,349,853,464	210,632,827	7,166,684	684,516,633	<b>2,535,620,748</b>
1938 ... ..	98,801,619	209,495,780	1,666,852,594	243,948,157	7,240,167	768,114,272	<b>2,985,452,589</b>

NOTE.—The units sold at Capetown do not include the units supplied to Capetown Corporation under the Pooling Agreement.

**STATEMENT No. 5.**

Distribution of the units sold during 1938 as between the various classes of consumers:--

UNITS SOLD, 1938.

Undertaking.	Traction.	Bulk.	Industrial and Mining.	Domestic and Lighting.	Total.
Cape Town ... ..	51,895,326	12,324,733	28,048,528	6,533,032	98,801,619
Durban ... ..	—	206,563,961	2,142,501	789,318	209,495,780
Klip ... ..	—	1,666,852,594	—	—	1,666,852,594
Natal Central ... ..	198,515,650	31,343,873	8,137,550	1,951,084	234,948,157
Sabie ... ..	—	—	7,240,167	—	7,240,167
Witbank ... ..	63,473,297	624,536,134	78,858,247	1,246,594	768,114,272
<b>Totals ... ..</b>	<b>308,884,273</b>	<b>2,541,621,295</b>	<b>124,426,993</b>	<b>10,520,028</b>	<b>2,985,452,589</b>

## STATEMENT No. 4.

Units sold to all consumers during the past fourteen years.

Year.	Capetown Under- taking.	Durban Under- taking.	Klip Under- taking.	Natal Cent. Under- taking.	Sabie Under- taking.	Witbank Under- taking.	Total.
1925 ... ..	—	—	—	—	75,943	—	75,943
1926 ... ..	280,242	—	—	719,666	651,458	160,031,213	161,682,579
1927 ... ..	5,811,836	—	—	104,206,235	1,938,940	439,061,722	551,018,733
1928 ... ..	31,038,697	15,563,460	—	114,213,037	2,829,888	464,267,213	627,912,295
1929 ... ..	47,945,690	78,873,576	—	123,911,774	3,176,173	543,091,138	796,998,351
1930 ... ..	49,772,016	99,228,000	—	117,075,484	4,585,060	618,951,364	889,611,924
1931 ... ..	52,109,958	103,899,765	—	101,131,880	6,585,553	603,359,113	867,086,269
1932 ... ..	64,268,873	109,808,223	—	100,292,933	6,080,010	610,285,123	890,735,162
1933 ... ..	100,685,629	118,538,312	—	109,186,538	6,349,651	639,368,114	974,128,244
1934 ... ..	73,583,974	131,104,182	—	124,898,129	7,329,679	648,245,530	985,161,494
1935 ... ..	80,020,511	149,874,024	—	154,278,600	7,181,282	727,888,529	1,119,242,946
1936 ... ..	85,840,383	170,493,987	556,997,155	171,476,131	6,863,253	696,376,199	1,688,047,108
1937 ... ..	94,038,449	189,412,691	1,349,853,464	210,632,827	7,166,684	684,516,633	2,535,620,748
1938 ... ..	98,801,619	209,495,780	1,666,852,594	243,948,157	7,240,167	768,114,272	2,985,452,589

NOTE.—The units sold at Capetown do not include the units supplied to Capetown Corporation under the Pooling Agreement.

## STATEMENT No. 5.

Distribution of the units sold during 1938 as between the various classes of consumers:--

### UNITS SOLD, 1938.

Undertaking.	Traction.	Bulk.	Industrial and Mining.	Domestic and Lighting.	Total.
Cape Town ...	51,895,326	12,324,733	28,048,528	6,533,032	98,801,619
Durban ...	—	206,563,961	2,142,501	789,318	209,495,780
Klip ...	—	1,666,852,594	—	—	1,666,852,594
Natal Central ...	193,515,650	31,343,873	8,137,550	1,951,084	234,948,157
Sabie ...	—	—	7,240,167	—	7,240,167
Witbank ...	63,473,297	624,536,134	78,858,247	1,246,594	768,114,272
<b>Totals ...</b>	<b>308,884,273</b>	<b>2,541,621,295</b>	<b>124,426,993</b>	<b>10,520,028</b>	<b>2,985,452,589</b>



## STATEMENT No. 6.

## Power Station Statistics—1938.

Power Station.	Units Generated.	Maximum Half-hourly Demand. Kilowatts (Sent Out).	Load Factor on Units Sent Out. %
Colenso ... ..	267,828,570	47,220	61·2
Congella ... ..	218,672,500	53,600	44·4
Klip ... ..	1,775,063,144	218,645 (Hour)	87·0
Salt River ... ..	351,133,105	78,000	48·8
Sabie ... ..	7,749,400	1,240	70·6
Witbank ... ..	753,943,488	99,020 (Hour)	81·4
	<u>3,374,390,207</u>		

## STATEMENT No. 7.

Particulars of coal used at the Commission's Steam-raising Power Stations during 1938

Power Station	COAL CONSUMED.			B.T.U.'s.		Thermal Efficiency on Units Sent Out.
	Tons. (2,000 lbs.)	Per Unit Generated. Lbs.	Per Unit Sent Out. Lbs.	Average per lb. of Coal.	Average per Unit Sent Out.	
Colenso ... ..	196,095	1·46	1·55	12,410	19,200	17·7%
Congella ... ..	151,309	1·38	1·45	12,460	18,100	18·9%
Klip ... ..	1,391,131	1·57	1·67	9,560	15,960	21·4%
Salt River ... ..	216,744	1·24	1·30	12,930	16,800	20·3%
Witbank ... ..	675,461	1·79	1·91	11,000	21,060	16·2%
	<u>2,630,740</u>					

## Average Cost per Ton (2,000 lbs.).

	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	1938.
Colenso ... ..	8/-	8/3	9/10	10/7	10/9	10/9	11/-	10/10	10/9
Congella ... ..	13/2	14/2	15/4	15/6	15/4	15/-	15/5	15/2	15/-
Klip ... ..	—	—	—	—	—	—	3/2	3/-	3/3
Salt River ... ..	23/5	23/4	24/11	25/4	25/6	25/4	25/4	24/8	25/1
Witbank ... ..	2/2	2/2	2/4	2/4	2/3	2/3	2/2	2/2	2/1

## STATEMENT No. 6.

## Power Station Statistics—1938.

Power Station.	Units Generated.	Maximum Half-hourly Demand. Kilowatts (Sent Out).	Load Factor on Units Sent Out. %
Colenso ... ..	267,828,570	47,220	61·2
Congella ... ..	218,672,500	53,600	44·4
Klip ... ..	1,775,063,144	218,645 (Hour)	87·0
Salt River ... ..	351,133,105	78,000	48·8
Sabie ... ..	7,749,400	1,240	70·6
Witbank ... ..	753,943,488	99,020 (Hour)	81·4
	<u>3,374,390,207</u>		

## STATEMENT No. 7.

Particulars of coal used at the Commission's Steam-raising Power Stations during 1938

Power Station	COAL CONSUMED.			B.T.U.'s.		Thermal Efficiency on Units Sent Out.
	Tons. (2,000 lbs.)	Per Unit Generated. Lbs.	Per Unit Sent Out. Lbs.	Average per lb. of Coal.	Average per Unit Sent Out.	
Colenso ... ..	196,095	1.46	1.55	12,410	19,200	17.7%
Congella ... ..	151,309	1.38	1.45	12,460	18,100	18.9%
Klip ... ..	1,391,131	1.57	1.67	9,560	15,960	21.4%
Salt River ... ..	216,744	1.24	1.30	12,930	16,800	20.3%
Witbank ... ..	675,461	1.79	1.91	11,000	21,060	16.2%
	2,630,740					

### Average Cost per Ton (2,000 lbs.).

	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	1938.
Colenso ... ..	8/-	8/3	9/10	10/7	10/9	10/9	11/-	10/10	10/9
Congella ... ..	13/2	14/2	15/4	15/6	15/4	15/-	15/5	15/2	15/-
Klip ... ..	—	—	—	—	—	—	3/2	3/-	3/3
Salt River ... ..	23/5	23/4	24/11	25/4	25/6	25/4	25/4	24/8	25/1
Witbank ... ..	2/2	2/2	2/4	2/4	2/3	2/3	2/2	2/2	2/1

## ANNEXURE " C. "

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

Extracted from the 1936/37 Industrial Census, and published by courtesy of the Department  
of Census and Statistics (Pretoria).

## UNITS GENERATED.

Province.	Local Authorities.	Other Producers.
Cape ... ..	144,420,209	368,718,696
Natal ... ..	13,591,570	534,174,651
O.F.S. ... ..	34,099,490	30,862,411
Transvaal ... ..	356,550,428	3,853,548,831
Totals ... ..	548,661,697	4,787,304,589
	<u>5,335,966,286</u>	

## CONSUMERS AND SALES.

	PROVINCE.				Totals.
	Cape.	Natal.	O.F.S.	Transvaal.	
Total Number of Consumers	111,607	44,389	120,088	114,171	282,255
Total Units Consumed ...	445,407,613	471,654,071	56,363,582	3,387,905,681	4,361,330,947
Number of Domestic Consumers	100,136	34,902	10,599	96,948	242,585
Units Sold to Domestic Consumers	193,521,977	89,618,009	8,003,843	184,605,426	475,749,255
Average Units Sold per Domestic Consumer	1933	2,568	755	1,904	1,961

## ANNEXURE " C. "

---

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

---

Extracted from the 1936/37 Industrial Census, and published by courtesy of the Department  
of Census and Statistics (Pretoria).

---

## UNITS GENERATED.

Province.	Local Authorities.	Other Producers.
Cape ... ..	144,420,209	368,718,696
Natal ... ..	13,591,570	534,174,651
O.F.S. ... ..	34,099,490	30,862,411
Transvaal ... ..	356,550,428	3,853,548,831
Totals ... ..	548,661,697	4,787,304,589
	5,335,966,286	

---

CONSUMERS AND SALES.

	PROVINCE.				
	Cape.	Natal.	O.F.S.	Transvaal.	Totals.
Total Number of Consumers	111,607	44,389	120,088	114,171	282,255
Total Units Consumed ...	445,407,613	471,654,071	56,363,582	3,387,905,681	4,361,330,947
Number of Domestic Consumers	100,136	34,902	10,599	96,948	242,585
Units Sold to Domestic Consumers	193,521,977	89,618,009	8,003,843	184,605,426	475,749,255
Average Units Sold per Domestic Consumer	1933	2,568	755	1,904	1,961

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

**INSTALLED CAPACITY OF PLANTS.**

Capacity.	Number of Power Stations.	Total Installed Capacity—Kilowatts.
50,000 kilowatts and over ... ..	9	865,883
20,000 kilowatts and over and below 50,000 kilowatts	7	267,350
10,000 kilowatts and over and below 20,000 kilowatts	4	46,000
5,000 kilowatts and over and below 10,000 kilowatts	6	45,280
1,000 kilowatts and over and below 5,000 kilowatts	29	64,522
Below 1,000 kilowatts ... ..	220	49,813
	<u>275</u>	<u>1,338,848</u>

**SIZE AND TYPE OF GENERATING UNITS.**

Size of Sets.	Steam Turbines.	Steam Recip- rocating Engines.	Oil Engines.	Gas Engines.	Water Wheels and Turbines.	Total Number of Sets.
<b>(1) A.C. Plants—</b>						
Below 250 kilowatts ... ..	3	74	193	13	21	304
250 kilowatts and over, but below 1,000 kilowatts ... ..	23	59	5	7	11	105
1,000 kilowatts and over, but below 5,000 kilowatts ... ..	70	—	—	—	—	70
5,000 kilowatts and over ... ..	75	—	—	—	—	75
<b>(2) D.C. Plants—</b>						
Below 250 kilowatts ... ..	2	53	135	19	2	211
250 kilowatts and over but below 1,000 Kilowatts ... ..	1	14	1	—	—	16
1,000 kilowatts and over, but below 5,000 kilowatts ... ..	3	—	—	—	—	3

**FUEL CONSUMED.**

Type of Fuel.	Quantity (Tons=2,000 lbs.).	Cost.
Coal ... ..	4,922,361	£1,809,368
Other Fuel ... ..	—	£121,148

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

---

COAL CONSUMPTION.

Average Coal Consumption per Unit Generated.	Number of Undertakings.
Under 2 lbs. ... ..	16
2 lbs. and over, but under 3 lbs. ... ..	19
3 lbs. and over, but under 4 lbs. ... ..	16
4 lbs. and over, but under 6 lbs. ... ..	23
6 lbs. and over, but under 8 lbs. ... ..	14
8 lbs. and over ... ..	28

---

TRANSMISSION AND DISTRIBUTION LINES—ROUTE MILES.

System.	Overhead Lines.	Underground Cables.
D.C.—All voltage ... ..	584	446
A.C.—Below 2,000 volts ... ..	4,915	3,090
2,000 volts to 11,000 volts ... ..	1,248	2,798
Above 11,000 volts ... ..	2,291	249

---

TRANSFORMERS.

Total installed capacity ... .. 5,107,467 K.V.A.

---

Total value of land, buildings, machinery, plant and tools ... ..	£38,024,590
Total number of persons employed in the electricity industry (generation and distribution) ... ..	14,597
Total salaries and wages paid for the year ... ..	£2,184,870

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

INSTALLED CAPACITY OF PLANTS.

Capacity.	Number of Power Stations.	Total Installed Capacity—Kilowatts.
50,000 kilowatts and over ... ..	9	865,883
20,000 kilowatts and over and below 50,000 kilowatts	7	267,350
10,000 kilowatts and over and below 20,000 kilowatts	4	46,000
5,000 kilowatts and over and below 10,000 kilowatts	6	45,280
1,000 kilowatts and over and below 5,000 kilowatts	29	64,522
Below 1,000 kilowatts ... ..	220	49,813
	<u>275</u>	<u>1,338,848</u>

SIZE AND TYPE OF GENERATING UNITS.

Size of Sets.	Steam Turbines.	Steam Recip- rocating Engines.	Oil Engines.	Gas Engines.	Water Wheels and Turbines.	Total Number of Sets.
<b>(1) A.C. Plants—</b>						
Below 250 kilowatts ... ..	3	74	193	13	21	304
250 kilowatts and over, but below 1,000 kilowatts ... ..	23	59	5	7	11	105
1,000 kilowatts and over, but below 5,000 kilowatts ... ..	70	—	—	—	—	70
5,000 kilowatts and over ... ..	75	—	—	—	—	75
<b>(2) D.C. Plants—</b>						
Below 250 kilowatts ... ..	2	53	135	19	2	211
250 kilowatts and over but below 1,000 Kilowatts ... ..	1	14	1	—	—	16
1,000 kilowatts and over, but below 5,000 kilowatts ... ..	3	—	—	—	—	3

FUEL CONSUMED.

Type of Fuel.	Quantity (Tons=2,000 lbs.).	Cost.
Coal ... ..	4,922,361	£1,809,368
Other Fuel ... ..	—	£121,148



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

---

COAL CONSUMPTION.

Average Coal Consumption per Unit Generated.	Number of Undertakings.
Under 2 lbs. ... ..	16
2 lbs. and over, but under 3 lbs. ... ..	19
3 lbs. and over, but under 4 lbs. ... ..	16
4 lbs. and over, but under 6 lbs. ... ..	23
6 lbs. and over, but under 8 lbs. ... ..	14
8 lbs. and over ... ..	28

---

TRANSMISSION AND DISTRIBUTION LINES—ROUTE MILES.

System.	Overhead Lines.	Underground Cables.
D.C.—All voltage ... ..	584	446
A.C.—Below 2,000 volts ... ..	4,915	3,090
2,000 volts to 11,000 volts ... ..	1,248	2,798
Above 11,000 volts ... ..	2,291	249

---

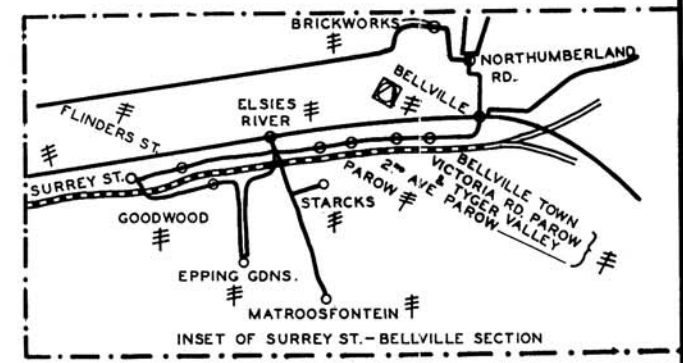
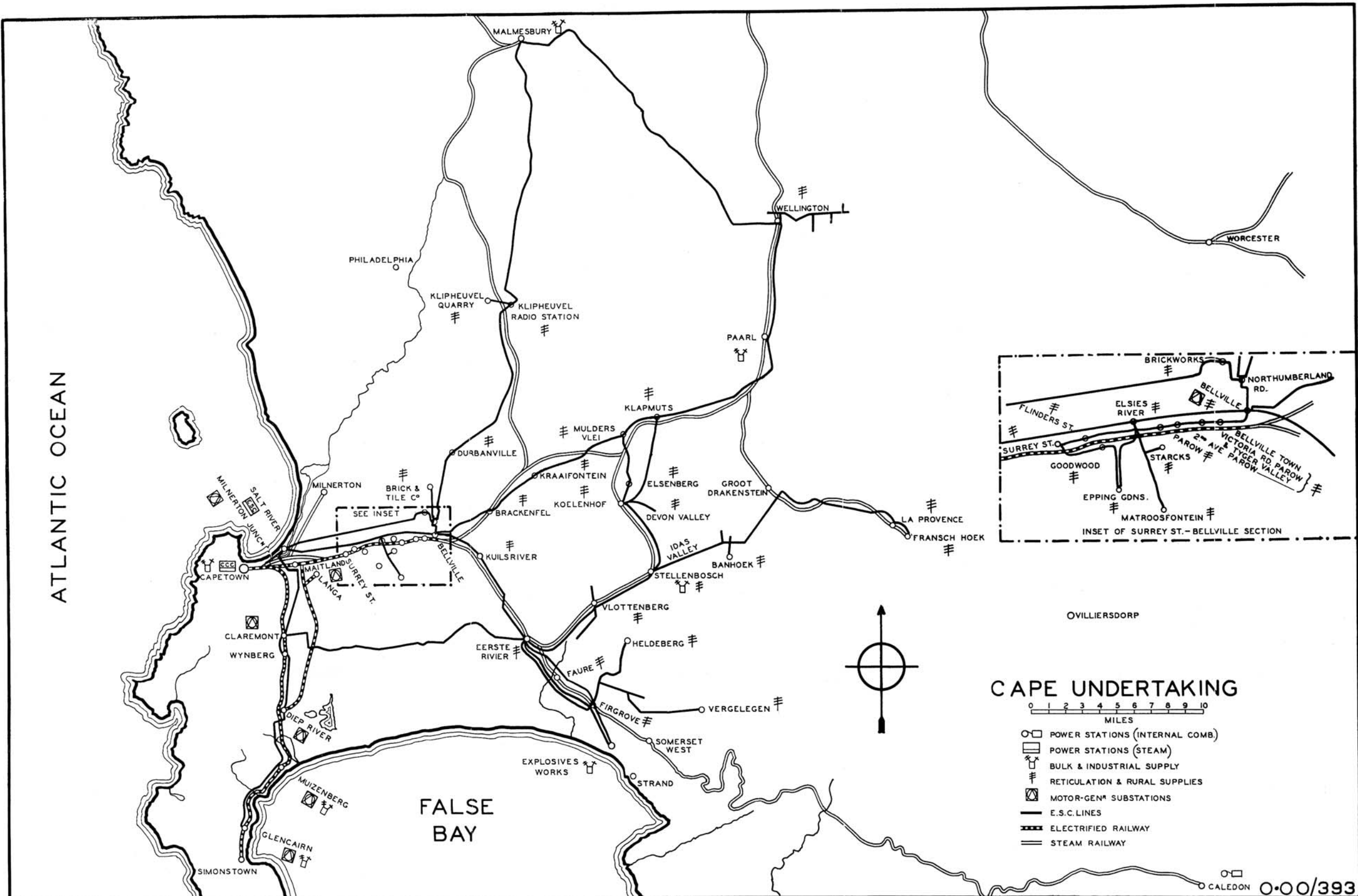
TRANSFORMERS.

Total installed capacity ... ..	5,107,467 K.V.A.
---------------------------------	------------------

---

Total value of land, buildings, machinery, plant and tools ... ..	£38,024,590
Total number of persons employed in the electricity industry (generation and distribution) ... ..	14,597
Total salaries and wages paid for the year ... ..	£2,184,870

ATLANTIC OCEAN

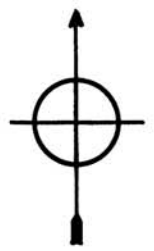


OVIILLIERSDORP

### CAPE UNDERTAKING



- POWER STATIONS (INTERNAL COMB.)
- POWER STATIONS (STEAM)
- BULK & INDUSTRIAL SUPPLY
- RETICULATION & RURAL SUPPLIES
- MOTOR-GEN<sup>a</sup> SUBSTATIONS
- E.S.C. LINES
- ELECTRIFIED RAILWAY
- STEAM RAILWAY



TRANSVAAL

SWAZILAND










ORANGE  
FREE  
STATE

NATAL

BASUTO  
LAND

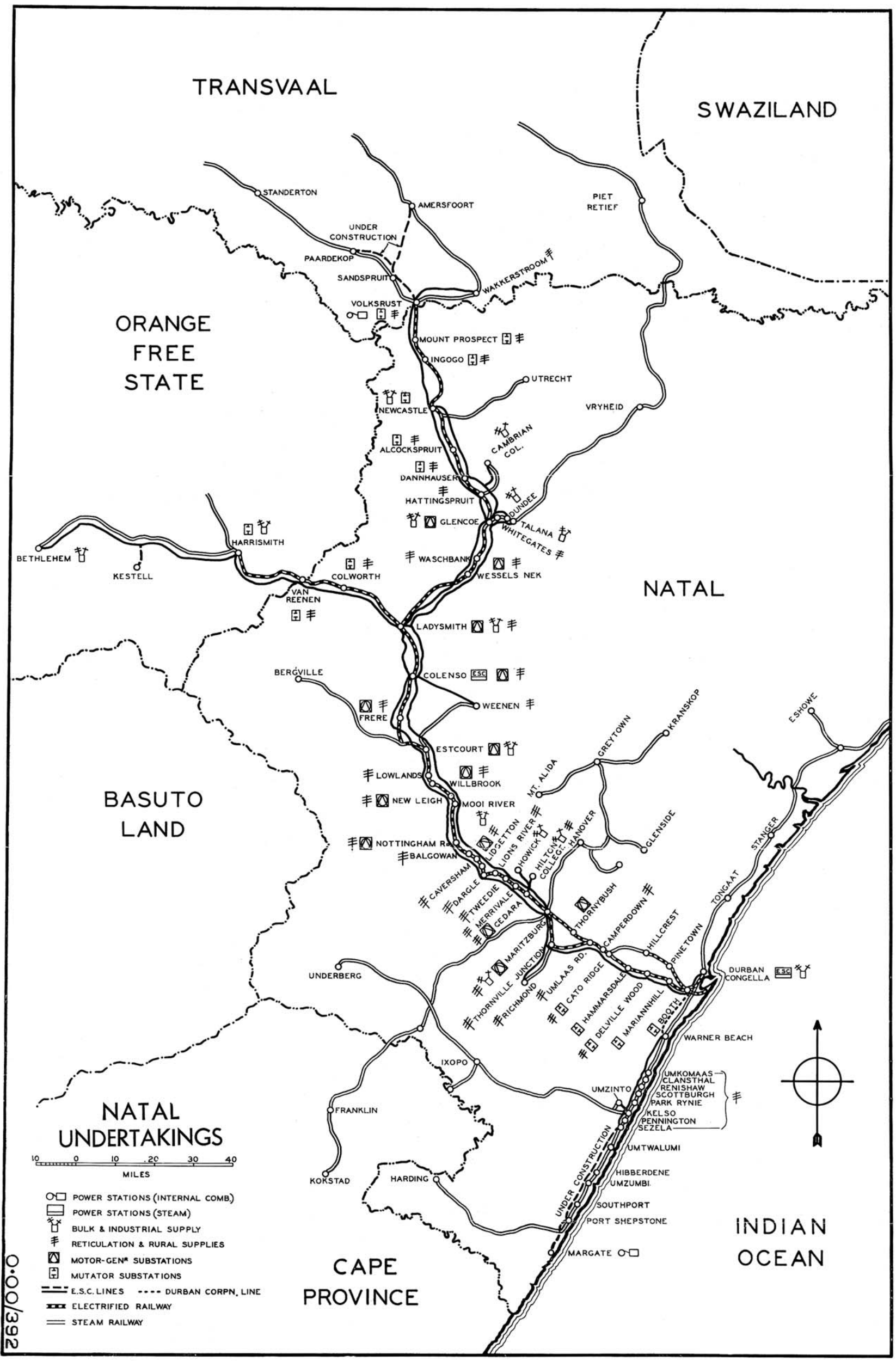
NATAL  
UNDERTAKINGS

0 10 20 30 40  
MILES

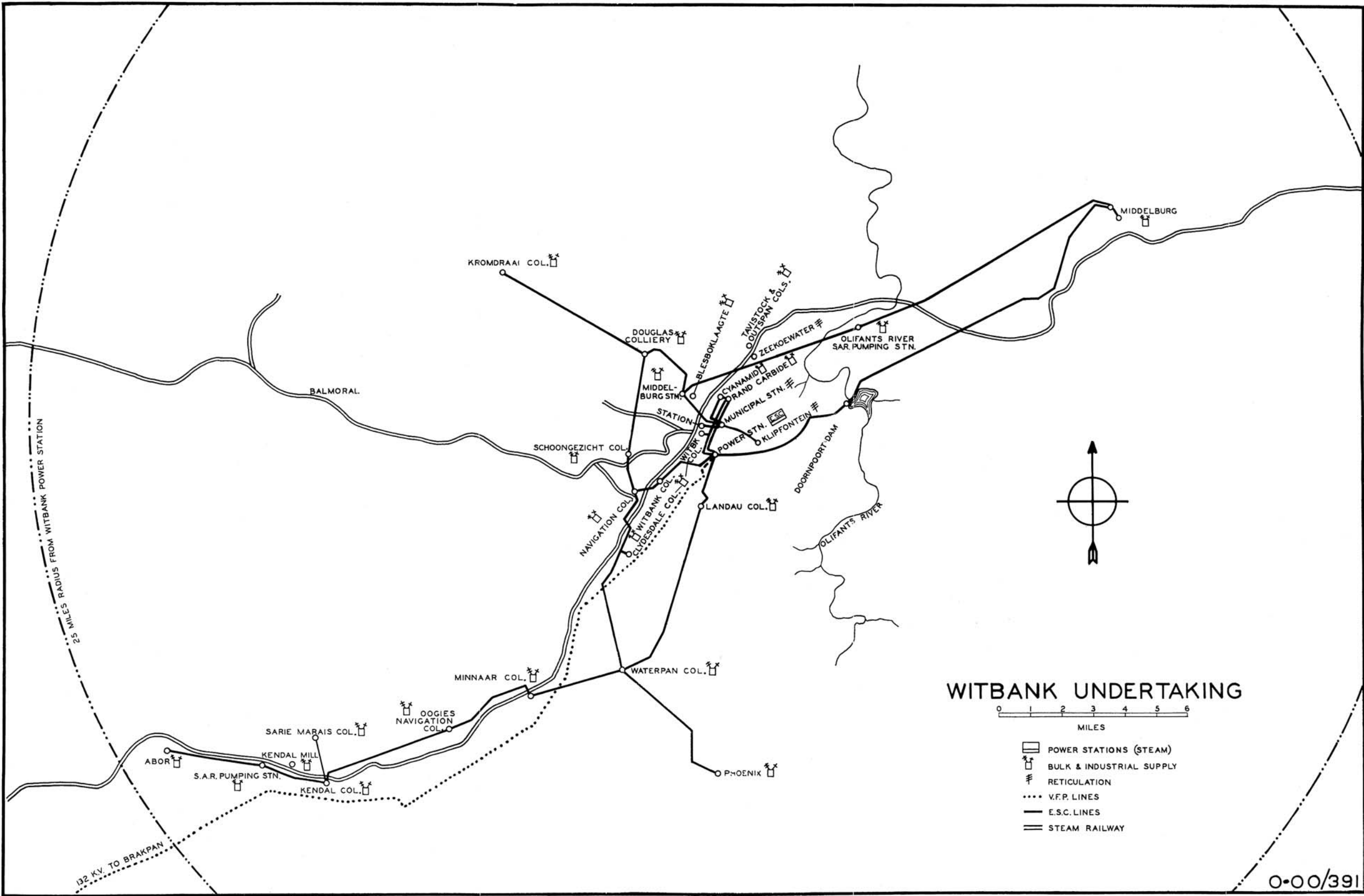
-  POWER STATIONS (INTERNAL COMB.)
-  POWER STATIONS (STEAM)
-  BULK & INDUSTRIAL SUPPLY
-  RETICULATION & RURAL SUPPLIES
-  MOTOR-GEN<sup>er</sup> SUBSTATIONS
-  MUTATOR SUBSTATIONS
-  E.S.C. LINES    - - - - DURBAN CORPN. LINE
-  ELECTRIFIED RAILWAY
-  STEAM RAILWAY

CAPE  
PROVINCE

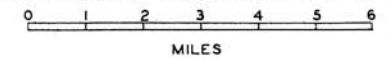
INDIAN  
OCEAN









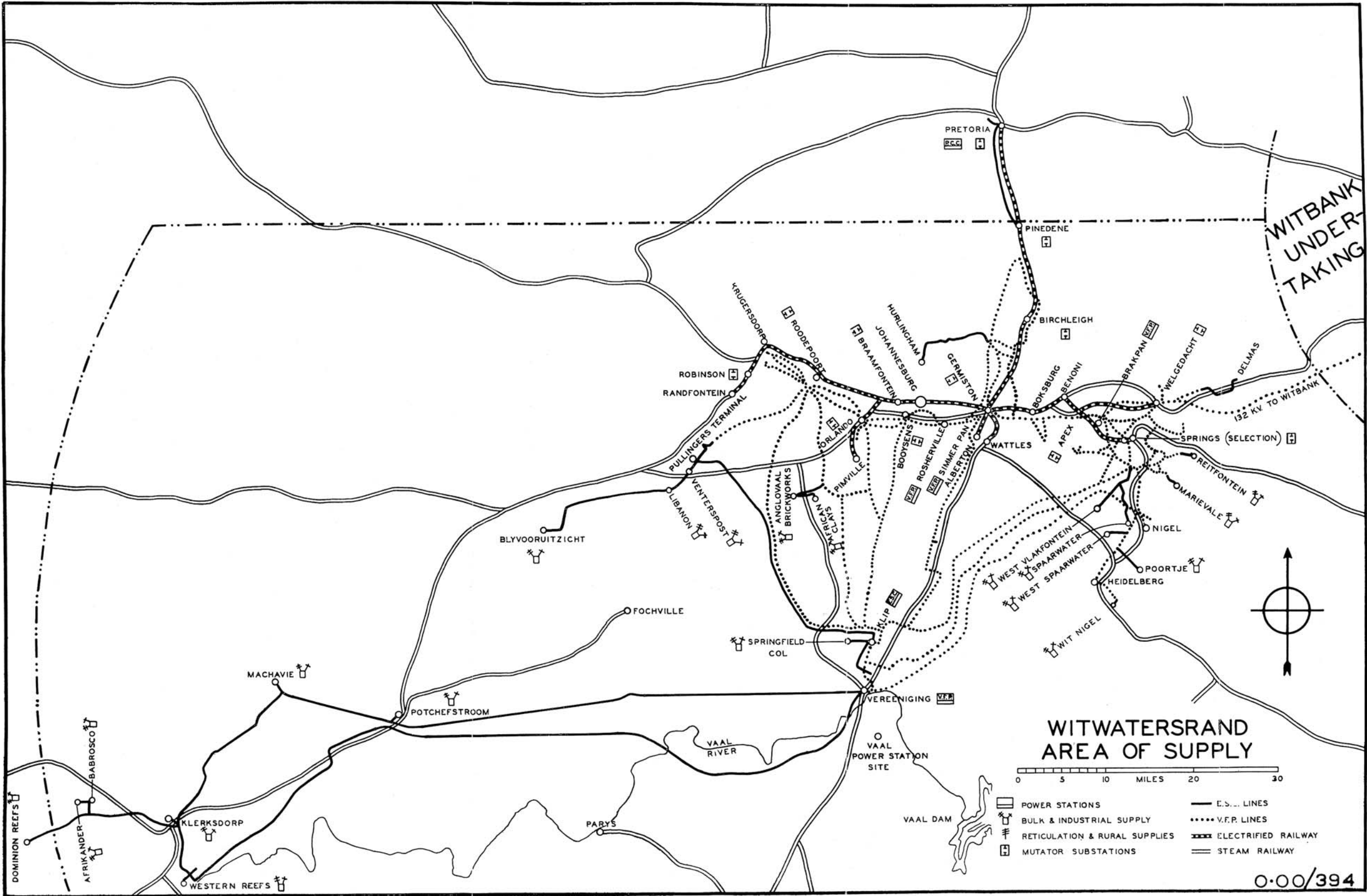
0.00/392



### WITBANK UNDERTAKING



-  POWER STATIONS (STEAM)
-  BULK & INDUSTRIAL SUPPLY
-  RETICULATION
-  V.F.P. LINES
-  E.S.C. LINES
-  STEAM RAILWAY



### WITWATERSRAND AREA OF SUPPLY



- |  |                               |  |                     |
|--|-------------------------------|--|---------------------|
|  | POWER STATIONS                |  | E.S. LINES          |
|  | BULK & INDUSTRIAL SUPPLY      |  | V.F.P. LINES        |
|  | RETICULATION & RURAL SUPPLIES |  | ELECTRIFIED RAILWAY |
|  | MUTATOR SUBSTATIONS           |  | STEAM RAILWAY       |

