

# Electricity Supply Commission.

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Electricity House,

82, Marshall Street,

Johannesburg,

30th June, 1928.

To the Honourable  
The Minister of Mines and Industries,  
Pretoria.

SIR,

In conformity with the provisions of Section 14 of the Electricity Act, 1922, the Commission has the honour to submit its Fifth Annual Report, for the year ended 31st December, 1927, together with a brief review of its activities up to the date of this Report.

During the period under review considerable progress was made with construction work on the four Undertakings embarked upon by the Commission. Two of the Undertakings, viz., Witbank and Sabie, have been placed in commercial service, and the other two, viz., Capetown and Durban, are nearing completion.

The Witbank Power Station, from which electricity had been supplied since May, 1926, was placed in commercial service on 1st July, 1927.

The Sabie Gorge Scheme was started up in April, 1927, and was placed in commercial service on 1st April, 1928.

A certain amount of electricity has been generated at the Salt River Power Station, Capetown, since February, 1928, and the Power Station at Congella, Durban, was about to be started up at the date of this Report.

The Natal Central Undertaking, including the Colenso Power Station, was taken over by the Commission from the Railway Administration on 15/16th January, 1927.

The progress of the several Undertakings is referred to in greater detail later on in this Report.

The year 1927 was a difficult one, covering as it did a period of transition in the Commission's activities which had, during the first few years after its inception, necessarily been confined principally to negotiations precedent to the establishment of its Undertakings and the subsequent construction work.

During the year one large Undertaking was acquired as a going concern, and problems of organisation had to be considered and settled. On several of the other Undertakings the construction stages were partly or wholly superseded by operating conditions, involving, during the change-over period, the operation of the Undertakings whilst construction work was still in progress.

The changes in organisation necessitated by the commencement of production and the gradual change over until the final completion of construction work naturally presented problems and difficulties in both administration and management.

Commission's  
Under-  
takings.

The Commission's five Undertakings are as follows:—

Name of Undertaking.	Capacity of Main Generating Sets.	
	Kilowatts.	Kilovolt Amperes.
Natal Central ... ..	60,000	66,600
Witbank ... ..	60,000	70,500
Capetown ... ..	30,000	33,300
Durban ... ..	36,000	45,000
Sabie ... ..	1,700	2,300
	<u>187,700</u>	<u>217,700</u>

Summary of  
principal  
equipment  
installed or  
on order.

The principal equipment installed at and on order for the Commission's several Undertakings at the date of this report is as follows:—

#### GENERATING PLANT.

(Including House Turbine Sets at Witbank and Capetown.)

No. of Sets.	Capacity each, Kilowatts.	Total Capacity, Kilowatts.
4	20,000	80,000
7	12,000	84,000
3	10,000	30,000
2	6,000	12,000
6	1,000 and under	3,000
<u>Total</u> 22		<u>209,000</u>



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<u>Total</u> 22		<u>209,000</u>

### 3

#### BOILER PLANT.

No. of Boilers.	Total capacity in lbs. of steam per hour (normal rating).
35	2,250,000

#### TRANSMISSION LINES AND CABLES.

		88,000 volts.	33,000 volts.	22,000 volts.	Under 22,000 but above 3,000 volts.	Total.
		Route Miles.	Route Miles.	Route Miles.	Route Miles.	Route Miles.
Overhead Lines	...	275	71	30	8	<b>384</b>
Cables	... ..	—	29	8	6	<b>43</b>
Totals	...	<b>275</b>	<b>100</b>	<b>38</b>	<b>14</b>	<b>427</b>

#### TELEPHONE LINES AND CABLES.

Overhead Lines. Route Miles.	Cables. Route Miles.	Total. Route Miles.
19	27	<b>46</b>

#### TRANSFORMERS.

(Step-up and Step-down.)

Total capacity installed or to be installed ... ..	Kilovolt Amperes. 300,000
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#### TRACTION SUB-STATIONS.

MOTOR GENERATOR SETS.			ROTARY CONVERTERS.			TOTALS.		
No. of Sub- stations.	No. of Sets.	Rating Kilowatts.	No. of Sub- stations.	No. of Sets.	Rating Kilowatts.	No. of Sub- stations.	No. of Sets.	Rating Kilowatts.
12	22	44,000	6	12	24,000	<b>18</b>	<b>34</b>	<b>68,000</b>

#### STAFF QUARTERS.

No. of Married and Single Staff Quarters ... ..	94
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The following table shows the coal consumed at the Colenso and Witbank Power Stations during the year under review. At Colenso Power Station, the figures relate to a period of 11½ months commencing on 16th January, 1927, which is the date upon which the Undertaking was taken over from the Railway Administration. In the case of the Witbank Power Station, which was placed in commercial service on 1st July, 1927, the figures are given for the whole year, as power was being produced during the first six months of the year, although construction work was still in progress:—

Coal consumption.

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#### BOILER PLANT.

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Coal  
consumption.

Power Station.	COAL CONSUMED.		B.T.U.'s.	
	Tons. (2,000 lbs.)	Lbs. per unit generated.	Average per Lb. of Coal.	Average per unit generated.
Colenso ... ..	93,850	1.63	12,210	19,902
Witbank ... ..	405,939	1.75	11,420	19,985

Consumers.

During the period under review the Commission has been actively engaged in negotiations with prospective consumers in the areas of supply in respect of its several Undertakings and with extensions of its transmission and distribution systems to supply electricity to additional consumers.

The following table embodies details of the consumers taking supplies of electricity from the Commission as at 31st December, 1927 :—

Undertaking.	NUMBER OF CONSUMERS.				
	Domestic and Lighting.	Industrial and Mining.	Traction.	Bulk Supplies.	Total.
Natal Central ...	70	6	1	4	<b>81</b>
Witbank ...	288	6	—	1	<b>295</b>
Capetown ...	—	5	1	1	<b>7</b>
Sabie ... ..	—	3	—	—	<b>3</b>
Totals ...	<b>358</b>	<b>20</b>	<b>2</b>	<b>6</b>	<b>386</b>

Capital  
Expenditure.

The total capital expenditure to 31st December, 1927, was £6,605,034, made up as follows :—

Undertaking.	Capital Expenditure.
Natal Central ... ..	£3,239,920
Witbank ... ..	1,514,257
Capetown ... ..	1,247,010
Durban ... ..	494,866
Sabie ... ..	108,981
Total ... ..	<b>£6,605,034</b>

Prior to the Undertakings coming into commercial service, electricity was produced by some, and purchased on behalf of others, for supply to consumers. The net revenue derived from the supply of this power, and from the sale of water at Witbank, amounting to a total of £118,761 up to 31st December, 1927, has been credited to capital, so that the net loan indebtedness on the Commission's Undertakings as at 31st December, 1927, was £6,486,273.

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A Schedule of Expenditure on Capital Account forms Annexure “ C ” to this Report.

The capital required by the Commission to finance its Undertakings has been obtained by way of advances from the Treasury. Cost of raising and interest charges during construction are capitalised and added to the net amount of the advances.

Financial.

As from the date upon which an Undertaking is placed in commercial service

- (a) interest on the advances made in respect of that Undertaking is paid by the Commission to the Treasury out of the revenue of the Undertaking; and
- (b) provision is made for setting aside out of the revenue of the Undertaking contributions for redemption purposes and as provision for reserve.

The total sum paid by the Commission to the Treasury in respect of interest up to 31st December, 1927, was £190,561.

The amounts set aside during the year 1927 as provision for redemption and for reserve in respect of the two Undertakings which were in commercial service during part of that year were:—

Provision for redemption	...	...	£78,003
Provision for reserve	...	...	£34,442

As regards the former, the balance carried forward from the year 1926, viz., £37, plus interest earned on the investment of the funds up to 31st December, 1927, viz., £816, result in a net balance as at that date of £78,856.

The interest earned on the investment of the contributions set aside as provision for reserve amounted to £388, and the expenditure on replacements and betterment to £331, leaving a net balance as at 31st December, 1927, of £34,499.

The supply of electricity by the Commission was first commenced in November, 1925. During 1926 supplies were given from four Undertakings, the units sold up to the end of 1926 aggregating 161,758,522 units.

Electricity  
supplied.

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Financial.

As from the date upon which an Undertaking is placed in commercial service

- (a) interest on the advances made in respect of that Undertaking is paid by the Commission to the Treasury out of the revenue of the Undertaking; and
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Electricity supplied.

The following table shows the units sold to all consumers during 1926 and 1927, and the total units sold up to 31st December, 1927 :—

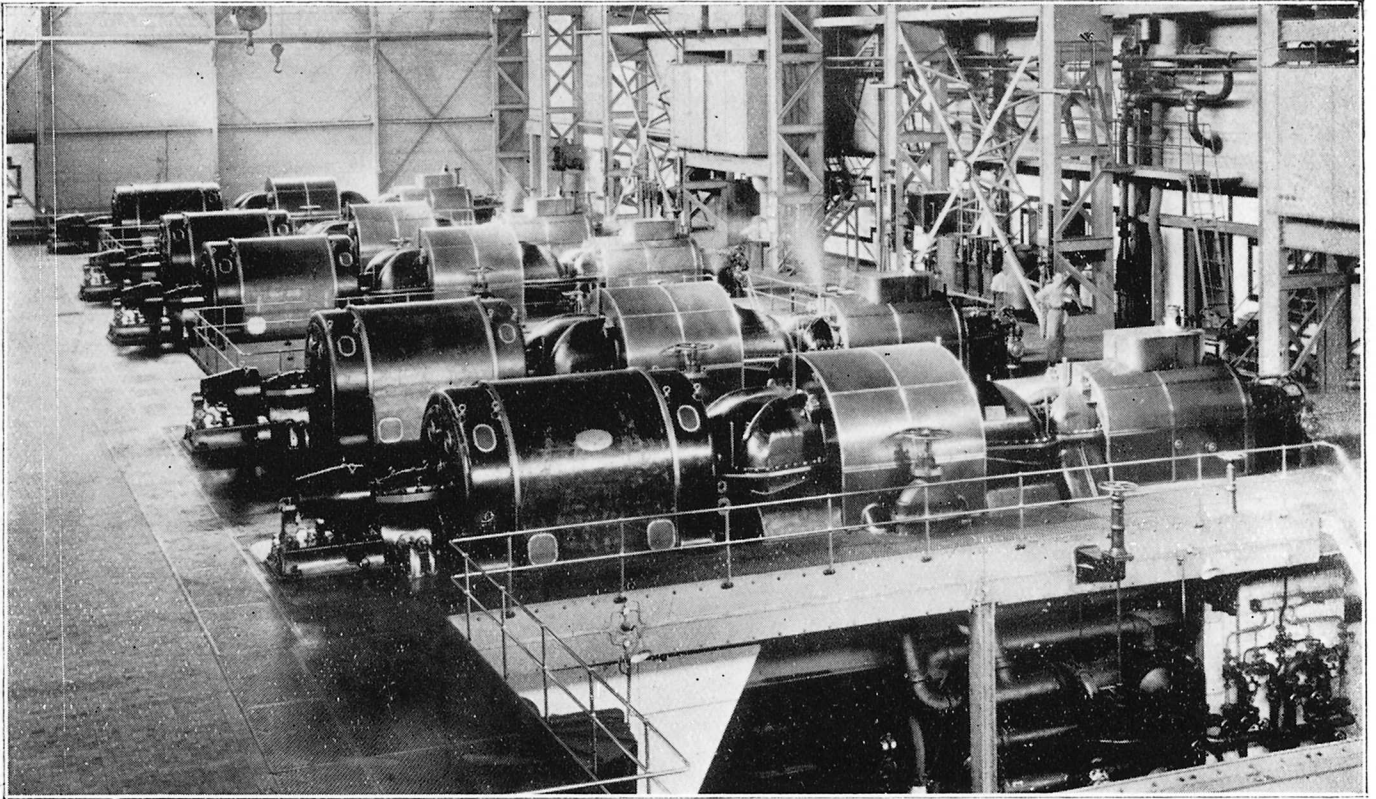
Undertaking.	Units sold 1926.	Units sold 1927.	Total units sold to 31/12/1927.
Natal Central ... ..	719,666	<b>104,206,235</b>	104,925,901
Witbank ... ..	160,031,213	<b>439,061,722</b>	599,092,935
Capetown ... ..	280,242	<b>5,811,836</b>	6,092,078
Sabie ... ..	727,401	<b>1,938,940</b>	2,666,341
Totals ... ..	161,758,522	<b>551,018,733</b>	712,777,255

The distribution of the units sold during 1927 was as follows :—

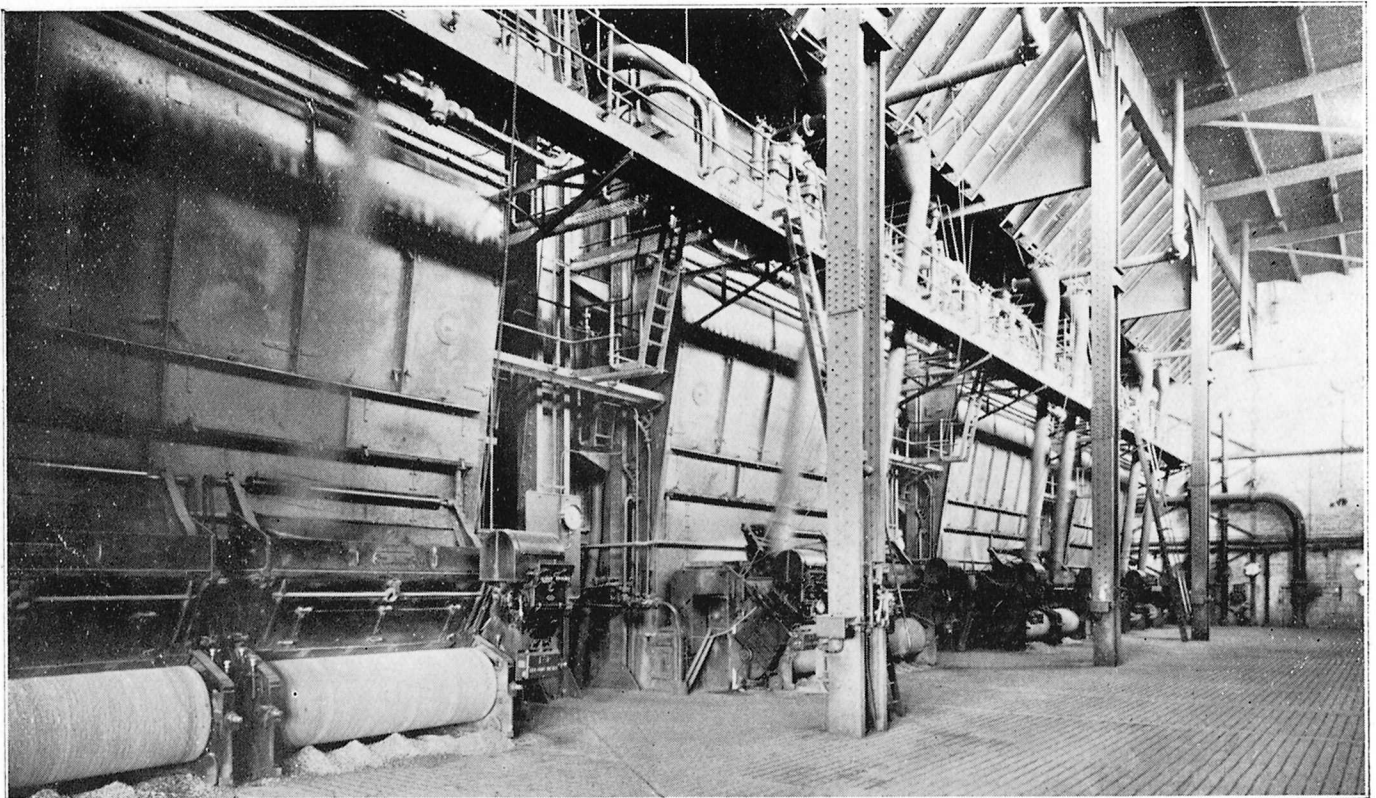
UNITS SOLD—1927.

Undertaking.	Domestic and Lighting.	Industrial and Mining.	Traction.	Bulk Supplies.	Total.
Natal Central .	10,185	1,810,205	100,502,299	1,883,546	<b>104,206,235</b>
Witbank ...	95,837	13,293,496	—	425,672,389	<b>439,061,722</b>
Capetown ...	—	2,509,709	1,121,827	2,180,300	<b>5,811,836</b>
Sabie ...	—	1,938,940	—	—	<b>1,938,940</b>
Totals ...	<b>106,022</b>	<b>19,552,350</b>	<b>101,624,126</b>	<b>429,736,235</b>	<b>551,018,733</b>

In the case of the Natal Central Undertaking the units sold prior to the Commission taking over the Undertaking from the Railway Administration on 15/16th January, 1927, were purchased from the Railway Administration. In the case of the Capetown Undertaking the electricity sold during 1927 was, by arrangement, supplied by the Capetown Corporation pending the starting up of the Commission's power station at Salt River. At Sabie supplies were given from the Sabie Undertaking while construction work was in progress, and this also applies to the Witbank Undertaking up to 1st July, 1927, when the Power Station was placed in commercial service.



Colenso Power Station—Turbine House.



Colenso Power Station—View in Boiler House.

## NATAL CENTRAL UNDERTAKING.

The Natal Central Undertaking comprises:—

- (a) a power station at Colenso consisting of five main generating sets of 12,000 kilowatts each, making a total installation of 60,000 kilowatts, and eight boilers, each of a normal capacity of 60,000 lbs. of steam per hour.
- (b) 275 miles of 88,000 volt overhead transmission lines extending in duplicate from the power station in a northerly direction to Glencoe Junction and in a southerly direction to Pietermaritzburg;
- (c) a step-up sub-station at Colenso and twelve sub-stations (situated at intermediate points between Glencoe Junction and Pietermaritzburg) for distributing electricity and converting it for traction purposes; and
- (d) local distribution systems and other miscellaneous buildings and appurtenances.

This Undertaking, which formed a portion of the South African Railways and Harbours Administration's Natal Electrification Scheme, was taken over by the Commission from the Administration on 15/16th January, 1927.

The capital expenditure on the Natal Central Undertaking to 31st December, 1927, amounted to £3,239,920.

In terms of the agreement, dated 24th December, 1926, between the Commission and the Administration in regard to the transfer of the Undertaking, the purchase price to the Commission of the land, works and other assets acquired is a matter for agreement between the Commission and the Administration based on the capital cost thereof to the Administration, plus railage and harbour charges at public tariff rates on the materials, plant and equipment comprising the Undertaking. The figures in regard to capital cost and railage and harbour charges have not yet been finally determined and agreed, so that the amount of £3,239,920 is subject to adjustment when this has been done.

A summary of the principal points in the agreement concluded between the Commission and the Administration in regard to the transfer of the Undertaking, and a description of the main features of the Undertaking, were included in the Commission's last Annual Report. Mention was also made in that Report of the arrangement

whereby the Commission took over from the Administration all staff employed on the Undertaking as at the date of transfer. A considerable amount of reorganisation work was done during the year 1927, and the control of the whole Undertaking is now concentrated at Colenso.

Working  
results.

The units generated at the Colenso Power Station from 16th January to 25th December, 1927, total 114,859,353, and the maximum half-hourly demand was 25,600 kilowatts, the load factor being 50·6 per cent. The thermal efficiency of the power station was 16 per cent.—a very favourable result having regard to the fact that the predominating load, viz., the supply to the Railway Administration for traction purposes, is very variable and subject to sudden and violent fluctuations. The load on the power station not infrequently fluctuates over a range of 20,000 kilowatts within a few minutes. These fluctuations are not confined to any particular time of the day or night and the power station staff do not know from hour to hour what the load is likely to be or when a peak will occur.

The units sold during the year 1927 total 104,206,235, of which 102,311,283 units were supplied by the Commission to the Railway Administration. The units supplied to the Administration for traction purposes total 100,502,299. The requirements of the Administration fell short of expectations, due to railway traffic on the electrified section of the line being considerably below what was anticipated by the Administration. As a result, the output of the Undertaking was small in relation to the capacity of the plant.

The operation of the Undertaking since the Commission took over has been satisfactory and has been characterised by successful co-operation between the Commission's and the Administration's operating staffs in Natal.

The financial results are given in Annexure " D " to this Report.

Housing  
accommoda-  
tion at  
Colenso.

As indicated in last year's Report the housing accommodation for the staff at Colenso is inadequate. Three additional houses for the accommodation of married staff and a block of 28-roomed single quarters are under construction. This is a first instalment in order to provide immediate relief, and further houses are still required and will be provided as soon as this can reasonably be done. A recreation hall for the staff is also urgently needed. The staff are still using the old wood-and-iron buildings provided as a Railway Institute for the construction staff.



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Working  
results.

The units generated at the Colenso Power Station from 16th January to 25th December, 1927, total 114,859,353, and the maximum half-hourly demand was 25,600 kilowatts, the load factor being 50·6 per cent. The thermal efficiency of the power station was 16 per cent.—a very favourable result having regard to the fact that the predominating load, viz., the supply to the Railway Administration for traction purposes, is very variable and subject to sudden and violent fluctuations. The load on the power station not infrequently fluctuates over a range of 20,000 kilowatts within a few minutes. These fluctuations are not confined to any particular time of the day or night and the power station staff do not know from hour to hour what the load is likely to be or when a peak will occur.

The units sold during the year 1927 total 104,206,235, of which 102,311,283 units were supplied by the Commission to the Railway Administration. The units supplied to the Administration for traction purposes total 100,502,299. The requirements of the Administration fell short of expectations, due to railway traffic on the electrified section of the line being considerably below what was anticipated by the Administration. As a result, the output of the Undertaking was small in relation to the capacity of the plant.

The operation of the Undertaking since the Commission took over has been satisfactory and has been characterised by successful co-operation between the Commission's and the Administration's operating staffs in Natal.

The financial results are given in Annexure " D " to this Report.

Housing  
accommoda-  
tion at  
Colenso.

As indicated in last year's Report the housing accommodation for the staff at Colenso is inadequate. Three additional houses for the accommodation of married staff and a block of 28-roomed single quarters are under construction. This is a first instalment in order to provide immediate relief, and further houses are still required and will be provided as soon as this can reasonably be done. A recreation hall for the staff is also urgently needed. The staff are still using the old wood-and-iron buildings provided as a Railway Institute for the construction staff.

As the Colenso Township had no water supply scheme, and water for domestic and other purposes had to be carted from the Tugela River, an arrangement was concluded between the Commission and the Local Board for water to be supplied in bulk to the Board from the Commission's domestic water scheme, the Board undertaking the reticulation in the Township other than to the Commission's houses and quarters.

Water supply: Colenso Township.

Reference was made in the Commission's last Annual Report to the decision come to, in consultation with the Railway Administration

Extension of Undertaking.

- (a) to extend the boiler house at the Colenso Power Station to provide for the accommodation of four more boilers ;
- (b) to proceed with the installation of two additional boilers similar to the eight existing boilers ; and
- (c) to convert the single-unit sub-station at Willbrook into a double-unit sub-station by the installation of a second motor generator set, of a capacity of 2,000 kilowatts direct current, and auxiliary equipment.

The extension to the Willbrook sub-station has been completed and the second motor generator set installed. The work still to be done is confined principally to connections, cabling, etc., and it is anticipated that the second motor generator set will soon be in commission. Work in connection with the extension of the boiler house at Colenso is well advanced. The materials for the two new boilers are on site and erection work is proceeding.

The largest of the Commission's consumers from the Natal Central Undertaking is the Railway Administration, for whose requirements primarily the Undertaking was established. The Commission's other consumers include the following :—

Supplies to consumers.

Consumer.	Date Supply Commenced.
Ladysmith Municipality ... ..	March, 1926
Estcourt Municipality ... ..	March, 1926
Glencoe Local Board ... ..	August, 1926
Pietermaritzburg Municipality ... ..	June, 1927
Cedara School of Agriculture ... ..	October, 1927
Individual Consumers in and adjoining the Colenso Township	November, 1927
Individual Consumers at Nottingham Road ... ..	November, 1927

Enquiries have been received from other prospective consumers in the Commission's area of supply between Pietermaritzburg and Glencoe Junction, and negotiations thereanent are proceeding.



As the Colenso Township had no water supply scheme, and water for domestic and other purposes had to be carted from the Tugela River, an arrangement was concluded between the Commission and the Local Board for water to be supplied in bulk to the Board from the Commission's domestic water scheme, the Board undertaking the reticulation in the Township other than to the Commission's houses and quarters.

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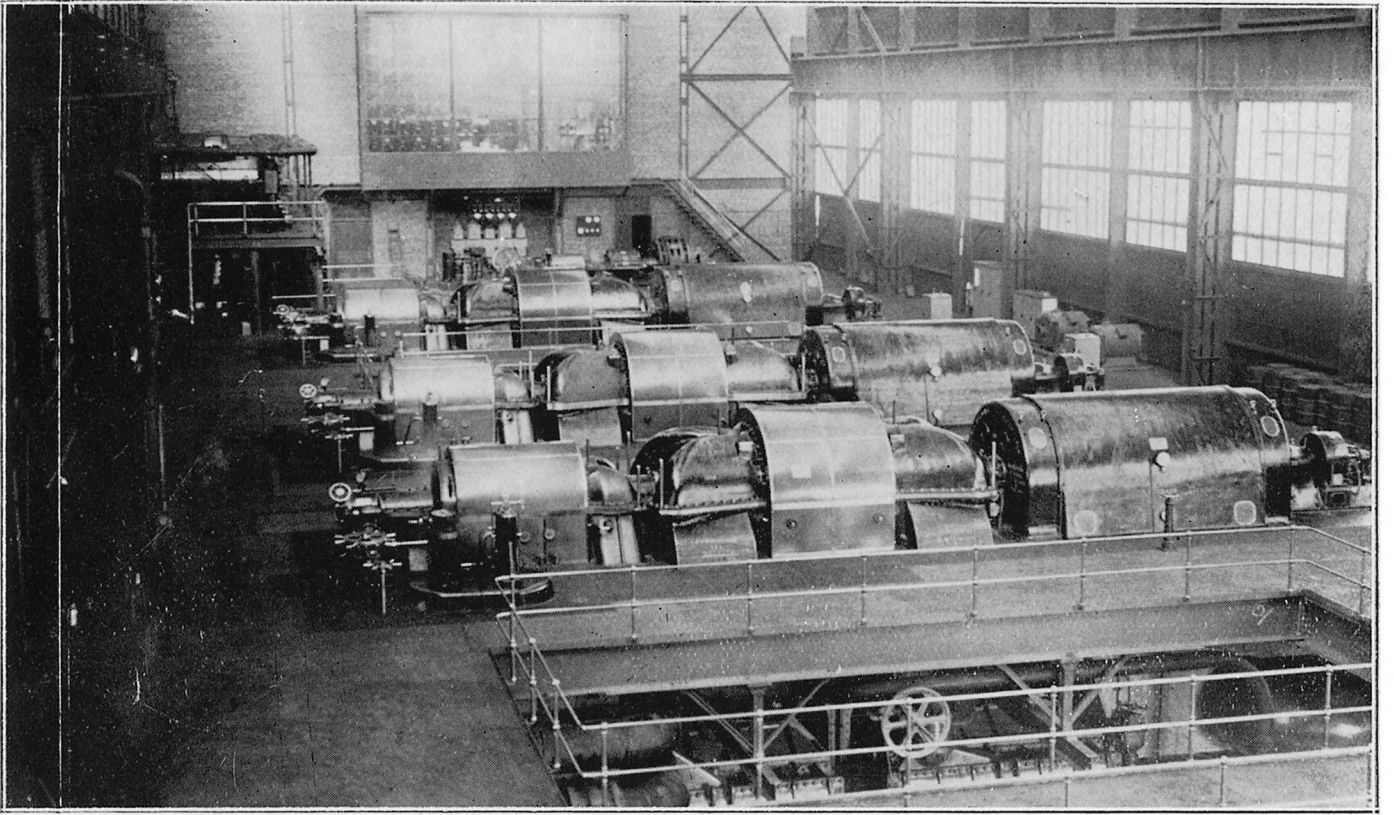
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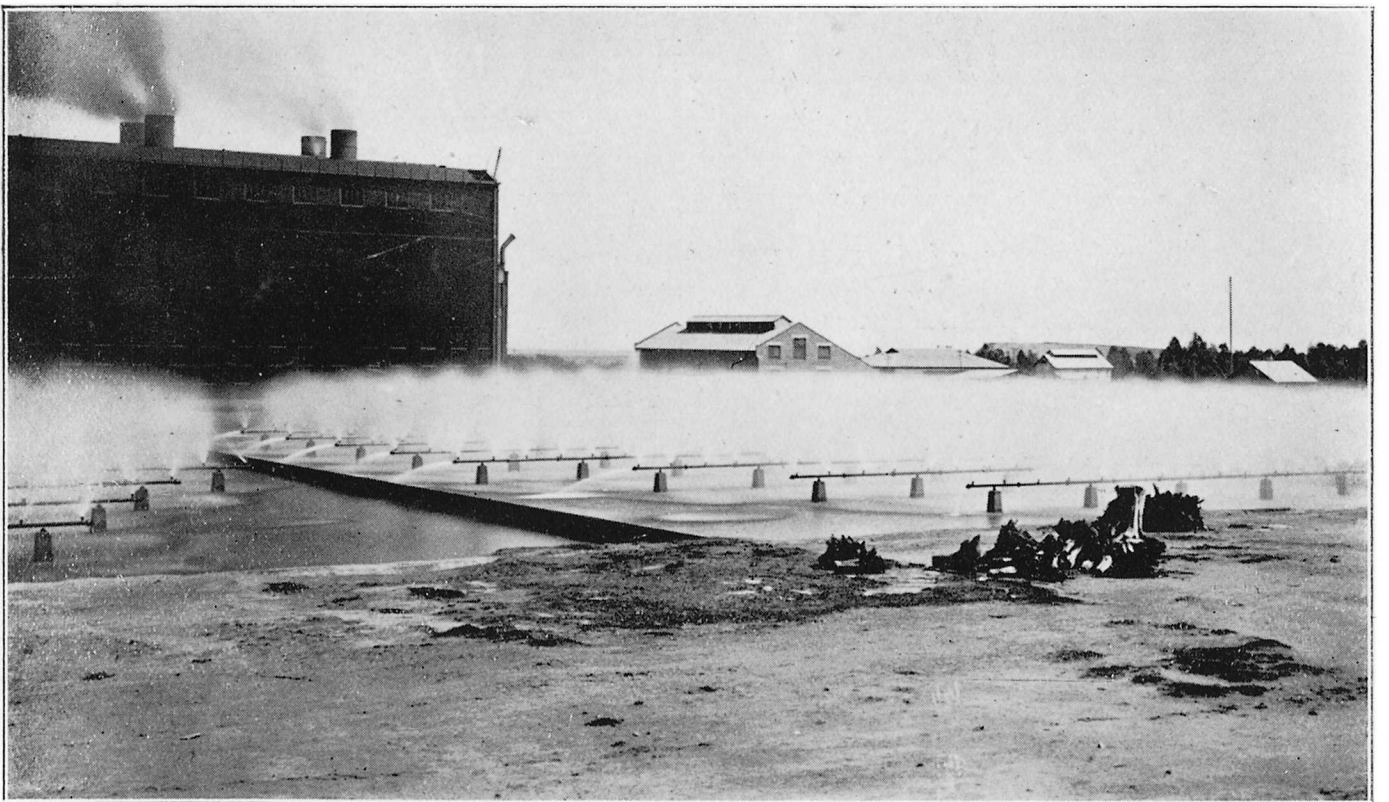
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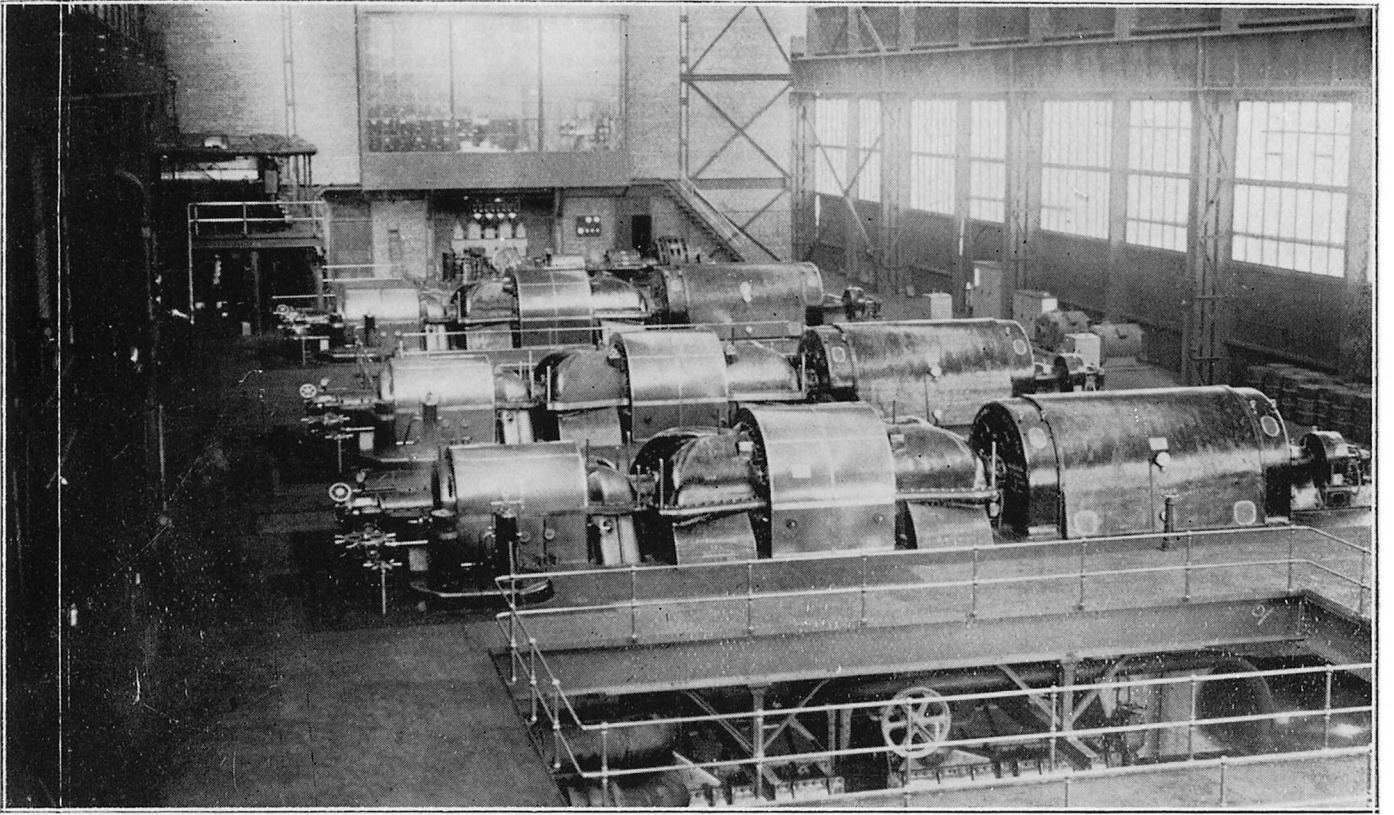
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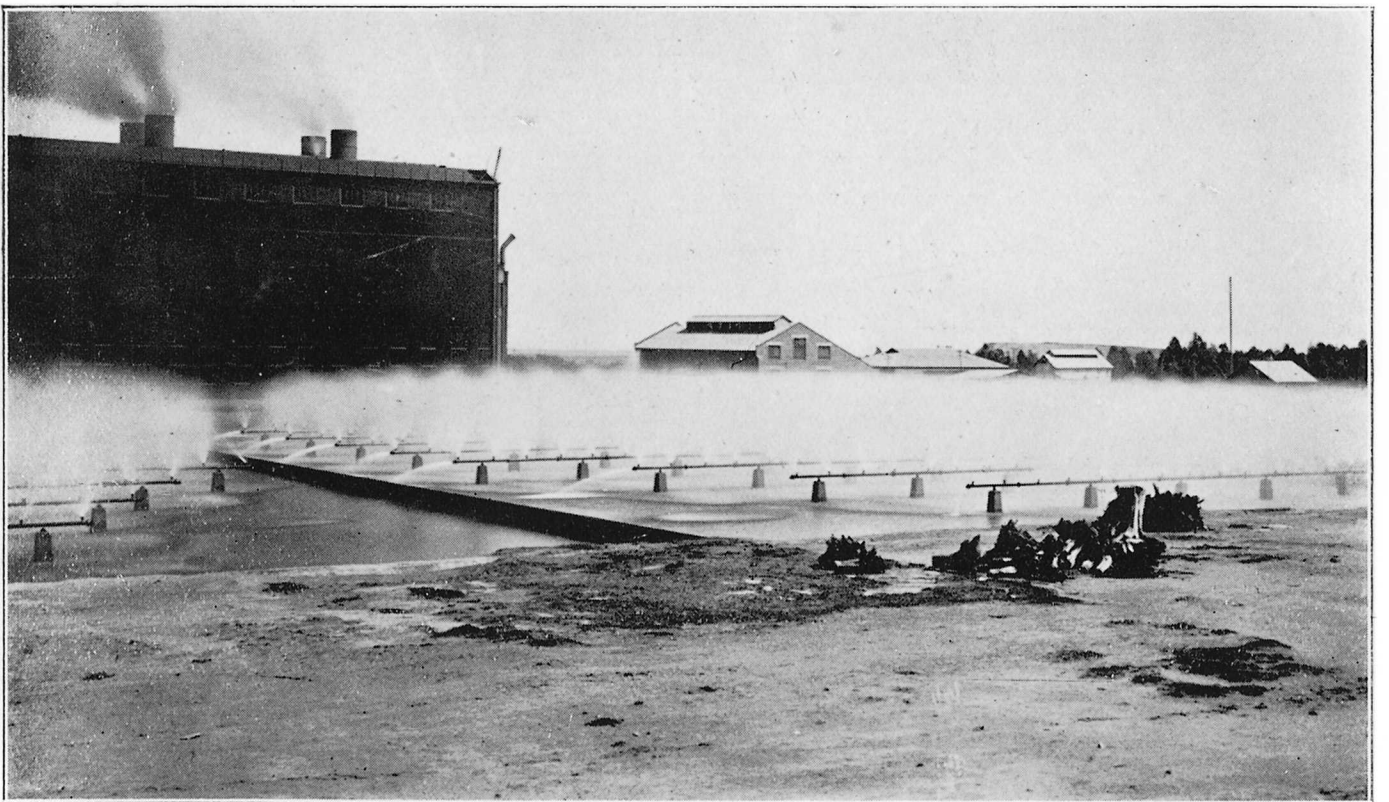
Witbank Power Station—Turbine House.



Witbank Power Station—Spray Cooling Ponds.



Witbank Power Station—Turbine House.



Witbank Power Station—Spray Cooling Ponds.



## WITBANK UNDERTAKING.

The Witbank Undertaking comprises :—

- (a) a power station at Witbank, consisting of three main generating sets of 20,000 kilowatts each, giving a total installation of 60,000 kilowatts, and twelve boilers, each of a normal capacity of 70,000 lbs. of steam per hour ;
- (b) a 21,000 volt reticulation system in the Witbank district for transmitting electricity to the Commission's consumers in that district ;
- (c) a 380/220 volt distribution network within the Witbank Municipal area for the supply to consumers and for street lighting within the Township ; and
- (d) other miscellaneous buildings and appurtenances.

The Witbank Power Station is interlinked with the electrical system of The Victoria Falls and Transvaal Power Company, Limited, on the Witwatersrand by means of a 132,000 volt overhead transmission line, between Witbank and Brakpan, owned and operated by that Company.

The Witbank Power Station was placed in commercial operation on 1st July, 1927, and the distribution network in the Witbank District on 1st January, 1928.

The capital expenditure on the Witbank Undertaking to 31st December, 1927, amounted to £1,514,257.

The units generated at the Witbank Power Station during the year 1927 total 463,856,602 units and the maximum hourly demand was 60,920 kilowatts, the load factor being 82·2 per cent. As explained earlier in this Report, construction work was still in progress at the Witbank Power Station during the first half of the year 1927.

Working  
results.

The Witbank Power Station is a base load station. In terms of the arrangement made between the Commission and The Victoria Falls and Transvaal Power Company, Limited, the Company, subject to certain limitations, is required to take all the electricity that can be generated at the Witbank Power Station, after meeting the requirements of the Commission's consumers in the Witbank district.

The average thermal efficiency of the Witbank Power Station over the year 1927 was 16·2 per cent.

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The average thermal efficiency of the Witbank Power Station over the year 1927 was 16·2 per cent.

The units sold by the Commission from the Witbank Undertaking during the year 1927 totalled 439,061,722, of which 13,389,333 units were supplied to consumers in the Witbank district, the balance being supplied in bulk to The Victoria Falls and Transvaal Power Company, Limited, for transmission to Brakpan and reticulation through that Company's system to its consumers on the Witwatersrand.

The financial results for the six months ended 31st December, 1927, are given in Annexure " E " to this Report.

By reason of its situation on the coal fields, electricity is available from the Witbank Power Station at a very cheap price. The standard tariff to the Commission's consumers in the Witbank area is as follows:—

- (a) a charge of £25 per annum, payable in advance, plus
- (b) a charge of £6 for each kilovolt ampere of the maximum demand supplied in each year, plus
- (c) a charge of 0·06d. for each unit supplied.

With effect from July, 1928, the maximum demand charge, referred to in paragraph (b), is being reduced from £6 to £5 10s.

Mention was made in the Commission's last Annual Report of the decision to extend the Witbank Power Station by the installation of a further 20,000 kilowatt set and three additional boilers, bringing the installed capacity of the generating plant in the power station up to 80,000 kilowatts.

Construction work in connection with this extension is proceeding, and it is anticipated that the installation of the additional plant will be completed early next year.

The Commission's consumers from the Witbank Undertaking include the following:—

Consumer.	Date Supply Commenced.
The Victoria Falls and Transvaal Power Company, Limited ...	May, 1926
Rand Carbide, Limited ... ..	December, 1926
Witbank Colliery, Limited ... ..	May, 1927
S.A. Coal Estates (Witbank), Limited (Navigation Colliery)	July, 1927
Individual Consumers in Witbank Municipality ... ..	August, 1927
Middelburg Steam Coal and Coke Company, Limited ...	October, 1927
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Witbank  
Extension of  
Power  
Station.

Supplies to  
consumers.

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Witbank  
Extension of  
Power  
Station.

Supplies to  
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Witbank  
Extension of  
Power  
Station.

Supplies to  
consumers.

The Tweefontein United Collieries, Limited, has also decided to take a supply of electricity from the Commission and a formal agreement with this consumer is in course of completion. Negotiations are also proceeding with other prospective consumers in the district.

The water supply of the Witbank Municipality has of recent years been in a precarious position, and the solution of this difficult problem has engaged the attention of the Council for some time. The position became so acute two years ago that the Commission had to come to the Municipality's assistance with a water supply from the Commission's reservoir. This supply was originally given as a temporary measure, but has had to be continued ever since. Meantime, as a result of discussions between the Commission, the Municipality and other interested parties in the Witbank district, an arrangement was come to whereby, subject to the necessary rights being obtained from the Water Court, the Commission would store in and pump from its dam on the Great Olifants River a supply of water to be delivered to the Municipality in bulk at the Commission's service reservoir near the Witbank Power Station site, the Municipality itself undertaking the reticulation of the water to domestic and other consumers in the Township.

Water  
supply to  
Witbank  
Municipality.

Applications for the requisite rights to enable effect to be given to these arrangements were made to and granted by the Water Court towards the end of 1927.

The Order of the Water Court provides, inter alia, for the raising of the Commission's dam so as to provide the necessary additional storage for the increased quantity of water authorised to be abstracted therefrom. Some time will elapse before the Municipality will require the full quantity of water authorised, and the raising of the dam is being deferred until the Commission finds it necessary to provide the additional storage required.

It is anticipated that the permanent supply of water to the Municipality under this arrangement will be commenced within the next two or three months.

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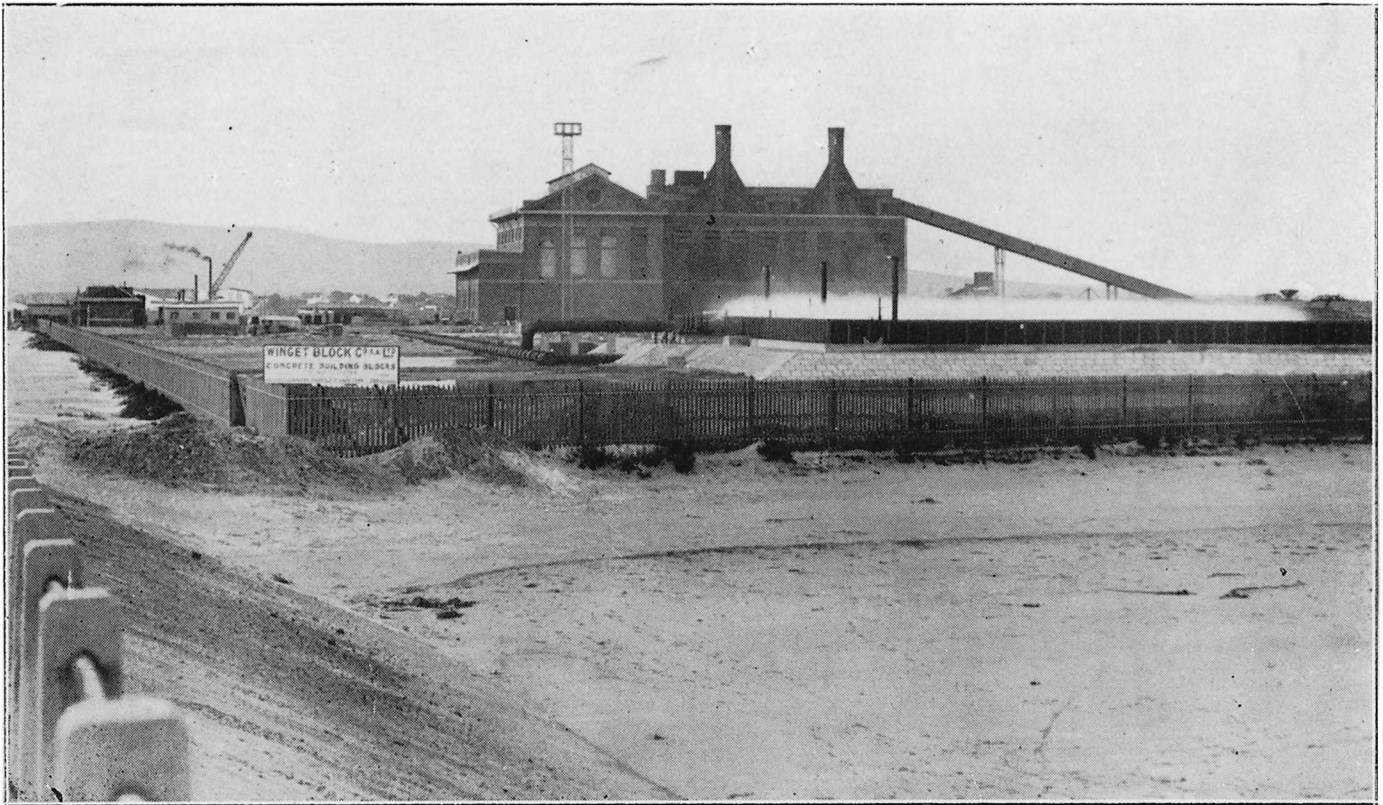
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Water  
supply to  
Witbank  
Municipality.

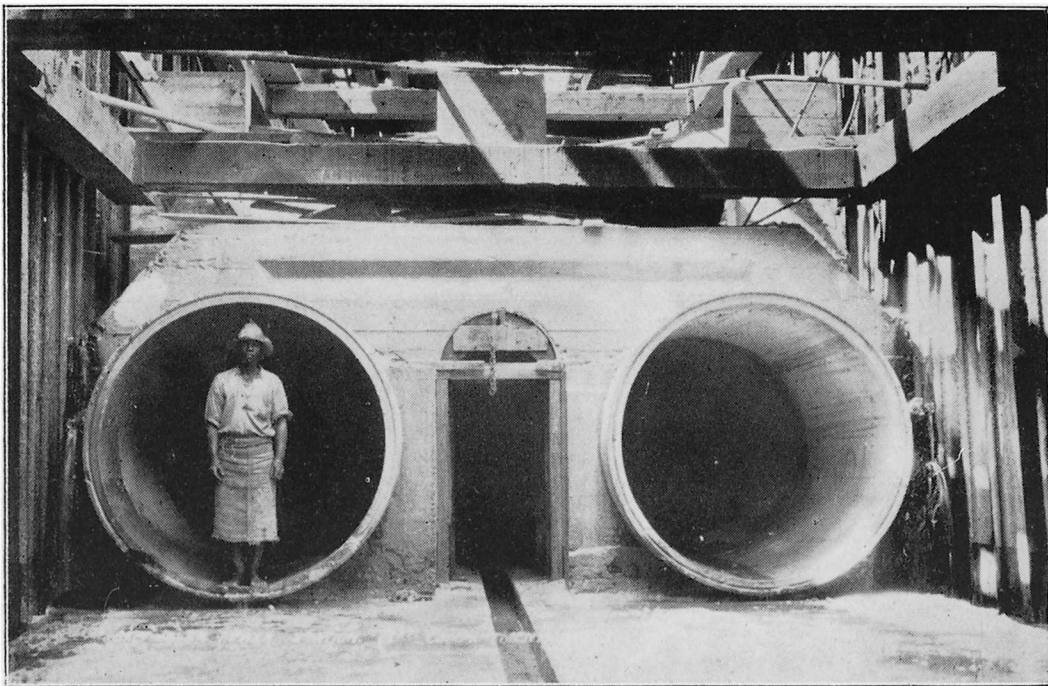
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Capetown Undertaking—Salt River Power Station.



Capetown Undertaking—Section of Sea Water Intake Works.

## CAPETOWN UNDERTAKING.

The Capetown Undertaking comprises :—

- (a) a power station at Salt River consisting of three main generating sets of 10,000 kilowatts each, making a total installation of 30,000 kilowatts, and four boilers, each of a normal capacity of 60,000 lbs. of steam per hour ;
- (b) a step-up sub-station at the power station site and rotary converter sub-stations at Three Anchor Bay, Milnerton Junction, Claremont, Diep River, Muizenberg and Glencairn ;
- (c) duplicate 12,000 volt underground cables connecting the Salt River Power Station with the Dock Road Power Station, belonging to the Capetown Corporation, and with the Three Anchor Bay and Milnerton Junction sub-stations ;
- (d) a 33,000 volt underground cable and a 33,000 volt overhead line (the latter belonging to the Railway Administration carried on the track structures between Salt River and Muizenberg) connecting the step-up sub-station with the sub-stations at Claremont, Diep River and Muizenberg, and duplicate 33,000 volt underground cables between Muizenberg and Glencairn sub-stations ;
- (e) a distribution system, consisting of 71 miles of 33,000 volt distribution lines with sub-stations, in the Cape rural area ;
- (f) other miscellaneous buildings and appurtenances.

The capital expenditure on the Capetown Undertaking to 31st December, 1927, was £1,247,010.

The main construction work at the Salt River Power Station has been completed.

Progress  
of work.

A commercial service of electric trains on the Sea Point line was started in October, 1927. The amount of power required for the working of this line did not justify the staffing and starting up of the Salt River Power Station so far in advance of the commencement of electric operation on the Wynberg-Simonstown line. The power required for the working of the Sea Point line was therefore generated



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- (c) duplicate 12,000 volt underground cables connecting the Salt River Power Station with the Dock Road Power Station, belonging to the Capetown Corporation, and with the Three Anchor Bay and Milnerton Junction sub-stations ;
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The main construction work at the Salt River Power Station has been completed.

Progress  
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A commercial service of electric trains on the Sea Point line was started in October, 1927. The amount of power required for the working of this line did not justify the staffing and starting up of the Salt River Power Station so far in advance of the commencement of electric operation on the Wynberg-Simonstown line. The power required for the working of the Sea Point line was therefore generated

at and purchased by the Commission from the Capetown Corporation's Dock Road Power Station and resold by the Commission to the Railway Administration after transmission to the Three Anchor Bay sub-station and conversion from alternating to direct current.

In February, 1928, the Salt River Power Station was started up for trial purposes and, after the necessary adjustments had been made, the station was placed under load for one shift per day, except at week ends, the load including, inter alia, the traction load on the Sea Point line. The remainder of the requirements during the week and at week ends was met from the Capetown Corporation's Dock Road Power Station.

With the running of electric trains on the Wynberg-Simonstown line, which commenced, for trial purposes, in June, 1928, the load on the Salt River Power Station is increasing, and arrangements have now been made to run three shifts at that station and to take over, in addition to the traction loads, the supplies to the Salt River Workshops, Capetown Railway Station and Table Bay Docks, which have hitherto been met by the Capetown Corporation under agreement with the Railway Administration.

The sub-station at Three Anchor Bay has been in commission since October, 1927, when the electric traction service on the Sea Point line commenced.

The step-up sub-station at Salt River and the traction sub-stations on the Wynberg-Simonstown line are ready for use, and some of them are already in commission in connection with the service of electric trains on that line.

Reference has been made in previous Reports to the 33,000 volt distribution system established by the Commission in the rural area outside the Cape Peninsula and to the consumers who had been secured in this area.

The Commission's consumers in the Cape rural area include the following :—

Consumer.	Date Supply Commenced.
Bellville Brick and Tile Works ... ..	June, 1926
Paarl Municipality ... ..	December, 1926
Cape Explosives, Limited, Somerset West ... ..	September, 1927
South African Railways and Harbours Quarry, Bellville ... ..	September, 1927
Capetown Corporation's Quarry, Brackenfel ... ..	September, 1927
J. W. Sturk's Brickfields, Bellville ... ..	December, 1927

Cape rural  
supply  
scheme.

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Cape rural  
supply  
scheme.



The Stellenbosch Municipality has recently decided to purchase a bulk supply of electricity from the Commission and, by arrangement with the Bellville and Durbanville Village Management Boards, the Commission is proceeding with the establishment of reticulation systems in these Townships for the supply of electricity to domestic and other consumers and for street lighting.

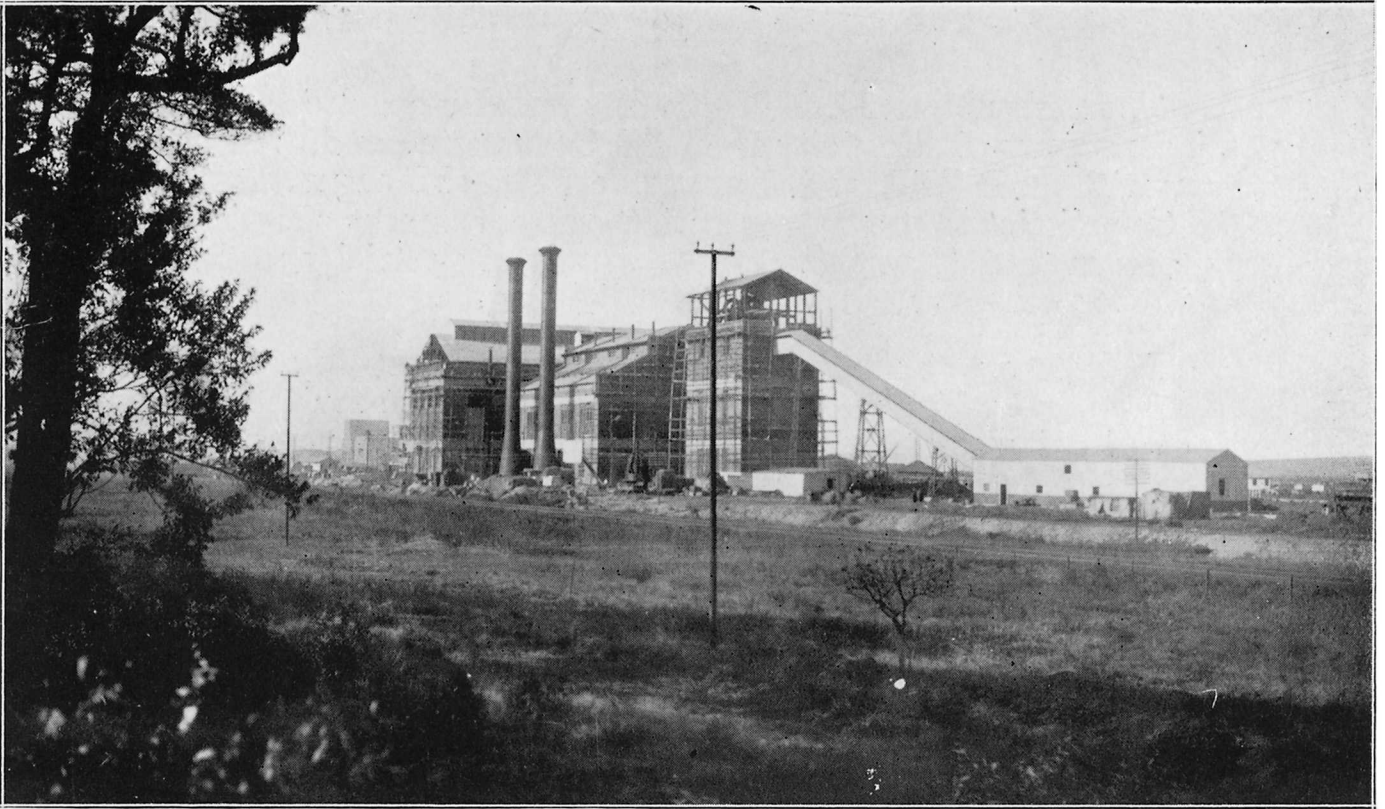
Reference was made in the Commission's last Annual Report to a proposal which was then under consideration for the development of a hydro-electric scheme at Gordon's Bay, using, for the purpose, the surplus water available from the Capetown Corporation's augmented Steenbras Water Scheme. A survey of this scheme has been made, and specifications of the plant and equipment required have been prepared and issued for tender.

Gordon's Bay  
Hydro-  
electric  
scheme.

The Stellenbosch Municipality has recently decided to purchase a bulk supply of electricity from the Commission and, by arrangement with the Bellville and Durbanville Village Management Boards, the Commission is proceeding with the establishment of reticulation systems in these Townships for the supply of electricity to domestic and other consumers and for street lighting.

Reference was made in the Commission's last Annual Report to a proposal which was then under consideration for the development of a hydro-electric scheme at Gordon's Bay, using, for the purpose, the surplus water available from the Capetown Corporation's augmented Steenbras Water Scheme. A survey of this scheme has been made, and specifications of the plant and equipment required have been prepared and issued for tender.

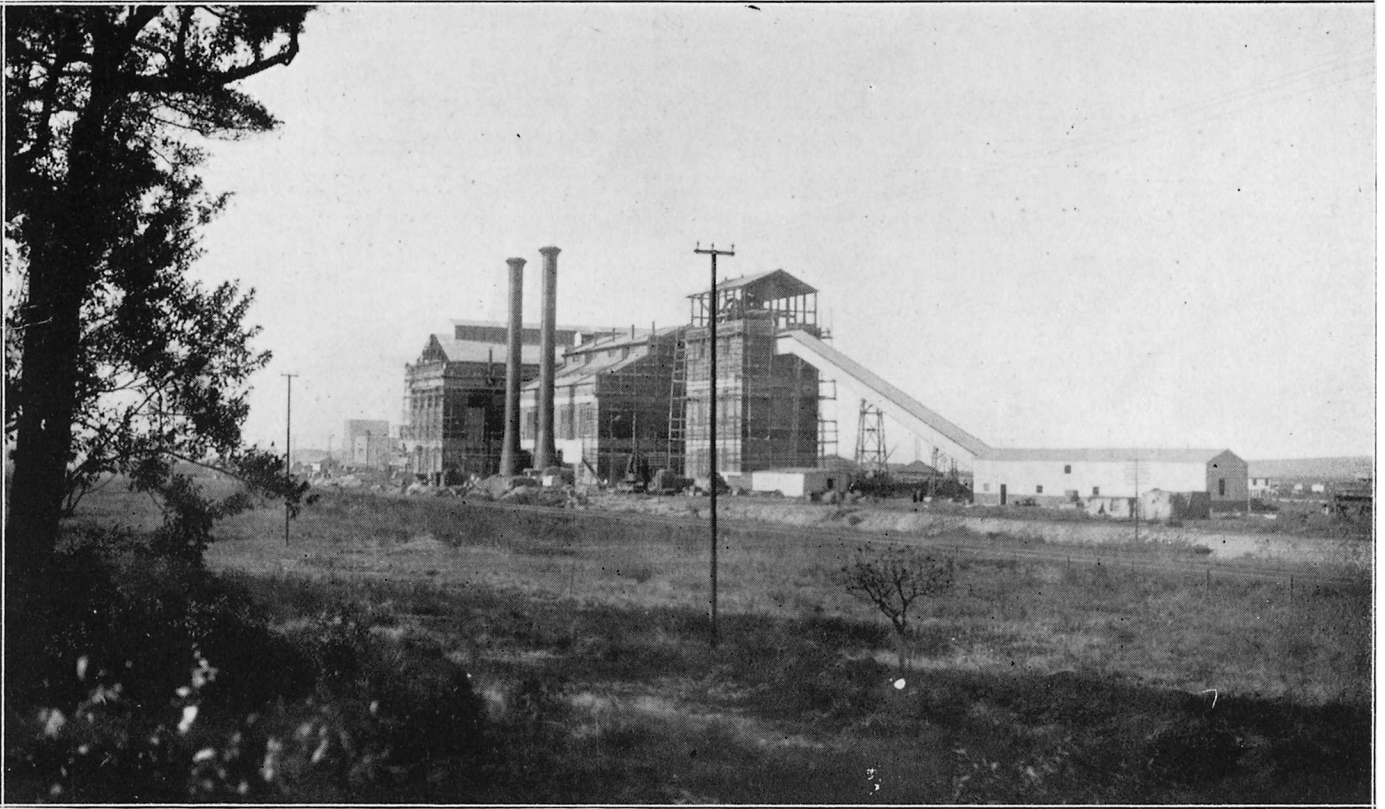
Gordon's Bay  
Hydro-  
electric  
scheme.



Durban Undertaking—Congella Power Station.



Durban Undertaking—Pump House.



Durban Undertaking—Congella Power Station.



Durban Undertaking—Pump House.

## DURBAN UNDERTAKING.

The Durban Undertaking will consist of a power station at Congella, with an initial installation of 36,000 kilowatts in four main generating sets, two of 12,000 kilowatts capacity each and two of 6,000 kilowatts capacity each, together with six boilers, each of a normal capacity of 60,000 lbs. of steam per hour. The boilers will be fired entirely by pulverised coal.

The capital expenditure on the Durban Undertaking to 31st December, 1927, was £494,866.

Construction work on the Congella Power Station and auxiliary works is nearing completion. Progress  
of work.

Two of the boilers have been under steam, and the two 12,000 kilowatt generating sets are about to be dried out. It is hoped that the station will be on part load within the next few weeks.

Some time will of course still be occupied thereafter in final adjustments and tests and in completing various miscellaneous items of construction.

Reference was made in the Commission's 1925 Annual Report to the revised arrangements agreed upon with the Durban Corporation whereby the initial installation in the Congella Power Station would consist of 36,000 kilowatts of generating plant, the Commission having agreed to take over from the Corporation two 6,000 kilowatt sets, one of which was installed in the Corporation's Alice Street Power Station in 1924 and the other in 1927. Preliminary arrangements in connection with the transfer of the sets from Alice Street Power Station to Congella are now in hand.

The Durban Corporation is under agreement to take from the Commission a bulk supply of not less than 60,000,000 units per annum and a maximum demand of 14,000 kilowatts, exclusive of the supplies of electricity taken by the Railway Administration from the Corporation. Consumers.

The agreement between the Commission and the Durban Corporation provided for the possibility of a portion or the whole of the Administration's requirements being supplied by the Commission direct from the Congella Power Station. The problem of the most satisfactory and economic arrangements in this respect formed the



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subject of discussion and negotiation between the Administration and the Corporation last year, and towards the end of the year an arrangement was concluded whereby the Corporation will continue to supply the whole of the Administration's requirements.

At the outset, therefore, the Commission's only consumer at Durban will be the Corporation, and the guarantee of 60,000,000 units per annum and a maximum demand of 14,000 kilowatts will be increased by the amount of the supply furnished by the Corporation to the Administration, subject to a minimum of 4,500 kilowatts.

By the time the two 6,000 kilowatt sets have been transferred to and are ready for commission at Congella, bringing up the installation in that station to 36,000 kilowatts, the load on the station will be at least 18,500 kilowatts.

Provision for  
extensions.

The Congella Power Station buildings and circulating water works and the general layout of the station have been designed having in view the possibility of the generating capacity of the station having to be increased in the comparatively near future to provide not only for the growing demand for electricity in the Durban area for general and industrial purposes, but also for the traction requirements of the Railway Administration as and when the Government decides to proceed with the conversion of the section of railway line between Pietermaritzburg and Durban from steam to electric traction.

In making provision, in the design of the original power station, for future extensions, as the Commission has done, certain additional capital expenditure is involved. Whilst this additional expenditure is substantially less than it would have been had the enlargement of the waterworks, buildings, etc., been deferred until the additional generating plant was actually required, the full advantage of the improved layout will not be apparent until the load on the station increases and more nearly approaches the output capacity for which the power station is designed.

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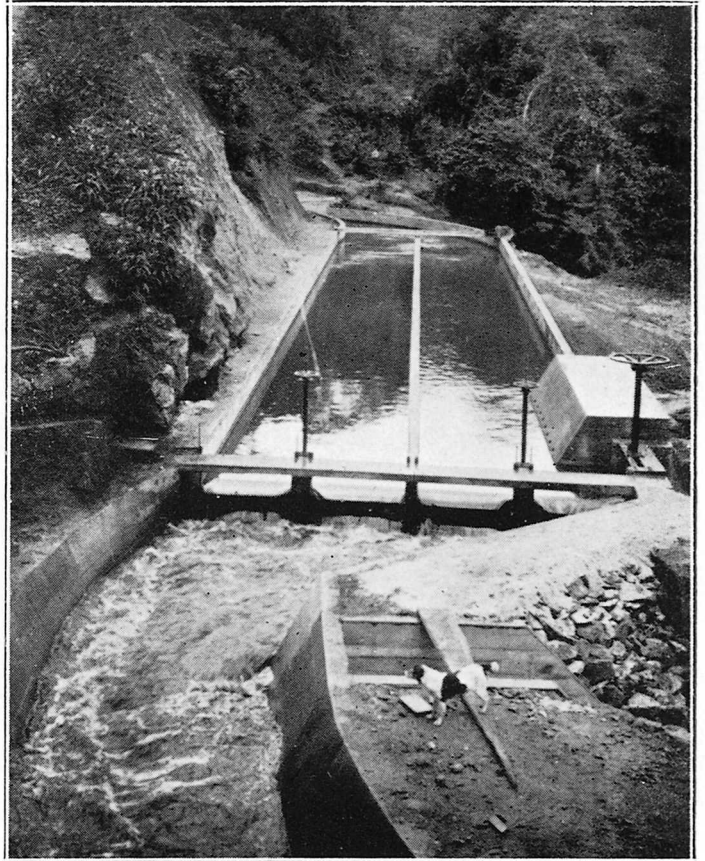
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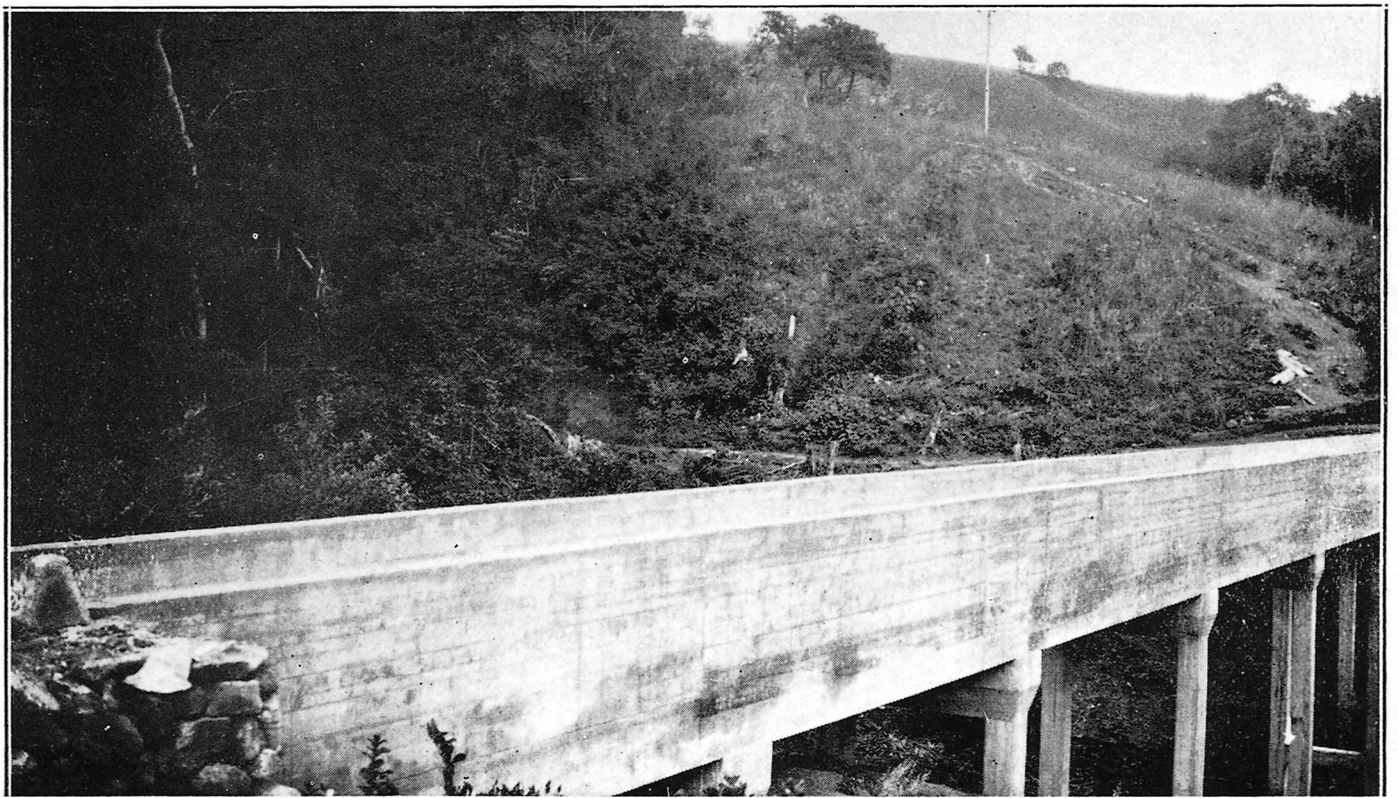
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Sabie Undertaking—42in. Pressure Pipe.



Sabie Undertaking—Sand Trap at Weir.



Sabie Undertaking—One of the Aqueducts.

As the Colenso Township had no water supply scheme, and water for domestic and other purposes had to be carted from the Tugela River, an arrangement was concluded between the Commission and the Local Board for water to be supplied in bulk to the Board from the Commission's domestic water scheme, the Board undertaking the reticulation in the Township other than to the Commission's houses and quarters.

Water supply: Colenso Township.

Reference was made in the Commission's last Annual Report to the decision come to, in consultation with the Railway Administration

Extension of Undertaking.

- (a) to extend the boiler house at the Colenso Power Station to provide for the accommodation of four more boilers ;
- (b) to proceed with the installation of two additional boilers similar to the eight existing boilers ; and
- (c) to convert the single-unit sub-station at Willbrook into a double-unit sub-station by the installation of a second motor generator set, of a capacity of 2,000 kilowatts direct current, and auxiliary equipment.

The extension to the Willbrook sub-station has been completed and the second motor generator set installed. The work still to be done is confined principally to connections, cabling, etc., and it is anticipated that the second motor generator set will soon be in commission. Work in connection with the extension of the boiler house at Colenso is well advanced. The materials for the two new boilers are on site and erection work is proceeding.

The largest of the Commission's consumers from the Natal Central Undertaking is the Railway Administration, for whose requirements primarily the Undertaking was established. The Commission's other consumers include the following :—

Supplies to consumers.

Consumer.	Date Supply Commenced.
Ladysmith Municipality ... ..	March, 1926
Estcourt Municipality ... ..	March, 1926
Glencoe Local Board ... ..	August, 1926
Pietermaritzburg Municipality ... ..	June, 1927
Cedara School of Agriculture ... ..	October, 1927
Individual Consumers in and adjoining the Colenso Township	November, 1927
Individual Consumers at Nottingham Road ... ..	November, 1927

Enquiries have been received from other prospective consumers in the Commission's area of supply between Pietermaritzburg and Glencoe Junction, and negotiations thereanent are proceeding.



## SABIE UNDERTAKING.

The Sabie Undertaking consists of:—

- (a) a hydro-electric power station in the Sabie River Gorge having an installed capacity of 1,350 kilowatts, made up of three generating sets of 450 kilowatts each ;
- (b) a 22,000 volt transmission line from the Gorge Power Station to a distribution sub-station near Sabie Township ; and
- (c) a 3,300 volt distribution line from the distribution sub-station for the supply of electricity to consumers in the Golden Valley area.

Construction work on the Sabie Gorge Scheme has been completed and the Undertaking was placed in commercial operation on 1st April, 1928.

The Malieveld Scheme—a stop-gap scheme which had been in operation from December, 1925, and which was described in the Commission's 1925 Annual Report—was closed down in May, 1927, after the Gorge Scheme had been started up, and now that the Gorge Scheme has been properly run in and placed in commercial service, it is proposed to dismantle the Malieveld plant and dispose of such materials as are not required by the Commission.

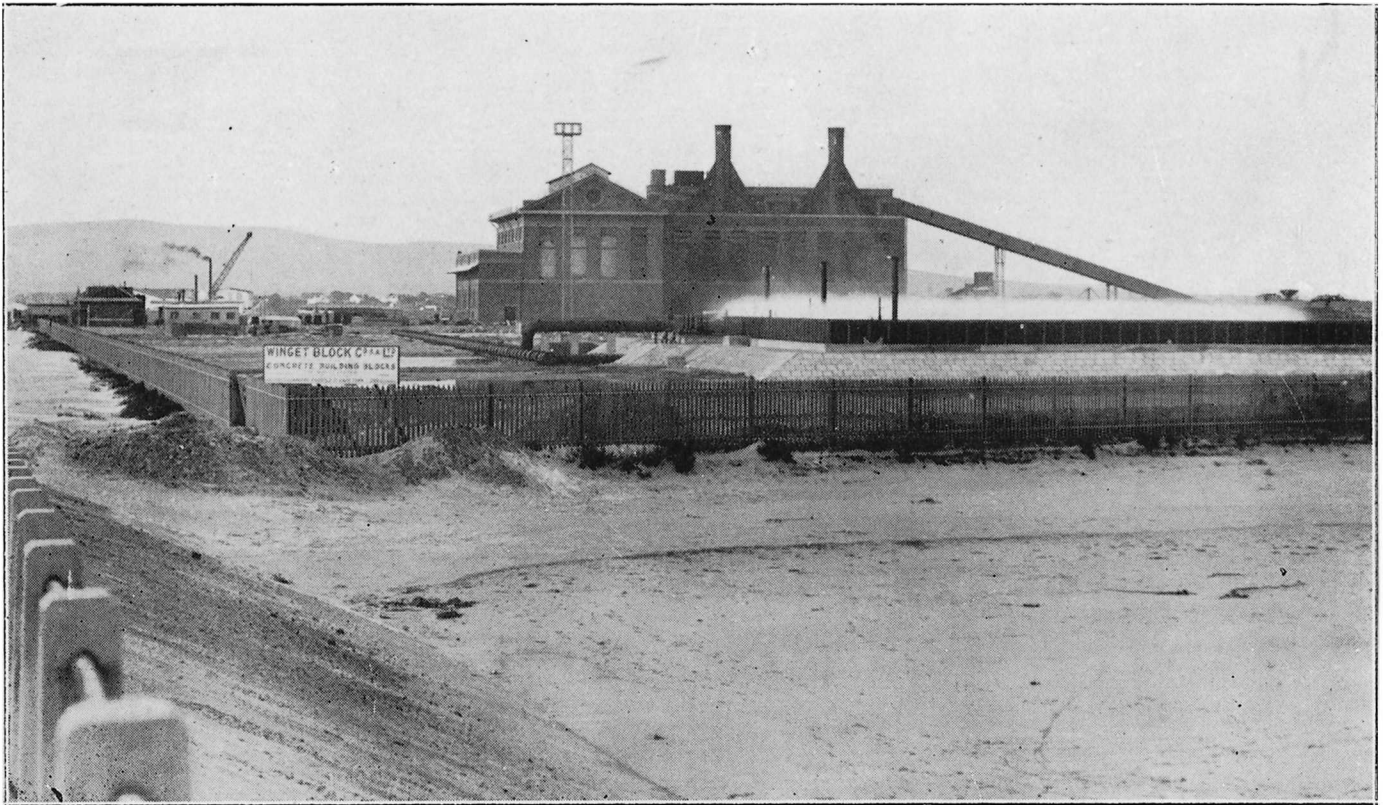
The capital expenditure on the Sabie Undertaking to 31st December, 1927, was £108,981.

Electricity supplied from the Sabie Undertaking to the three mining consumers during the year under review amounted to 1,938,940 units. This is somewhat less than the requirements estimated for by consumers.

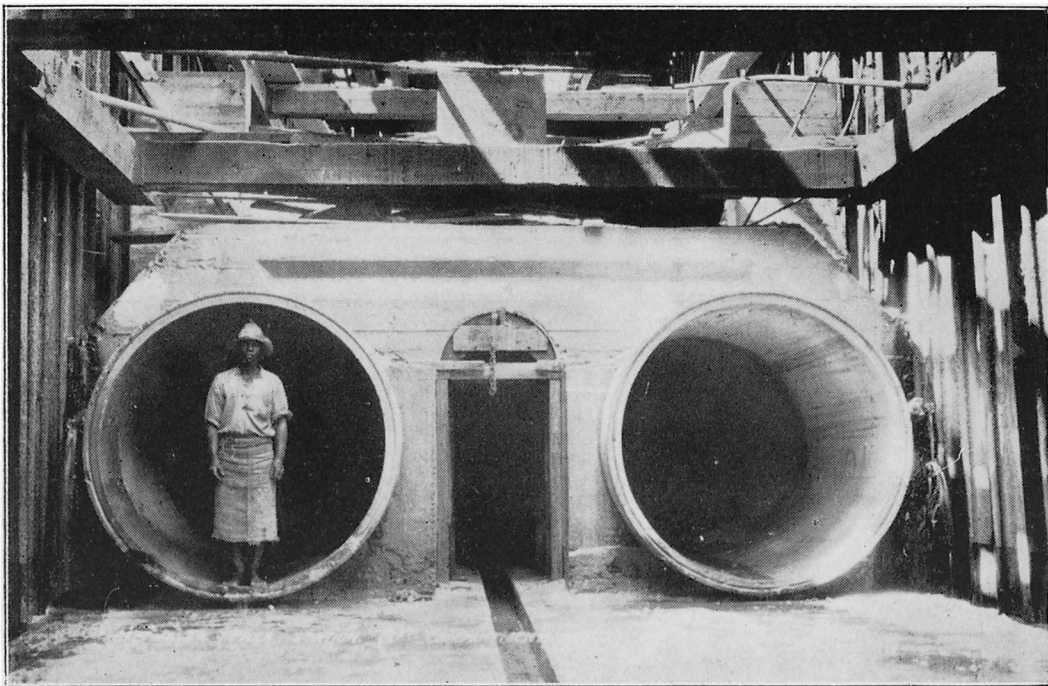
Supply to  
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Whilst the output of the Undertaking for the first few months of the current year indicates an improvement as compared with 1927, the Gorge Power Station is not yet fully loaded.





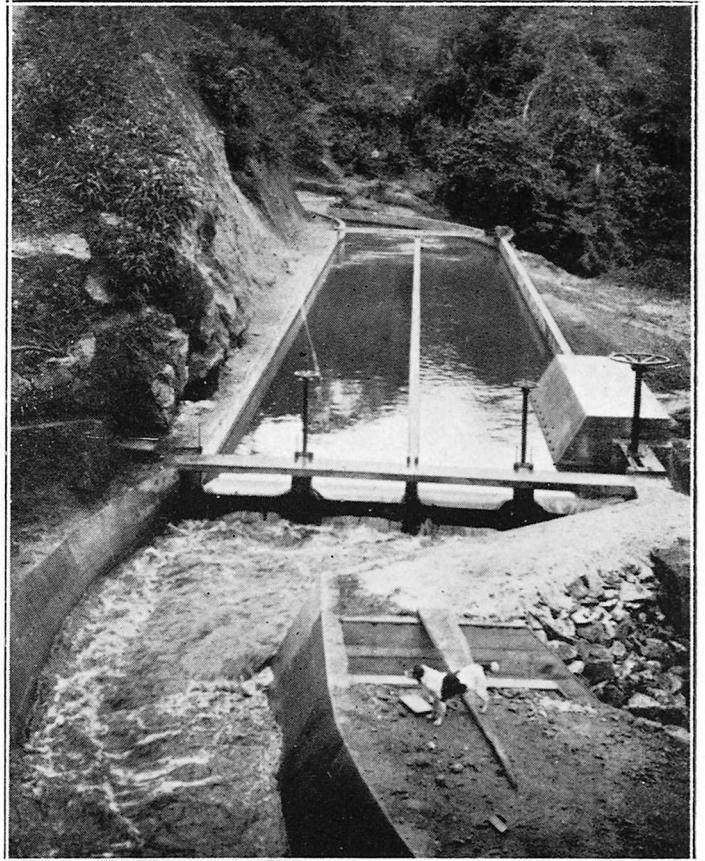
Capetown Undertaking—Salt River Power Station.



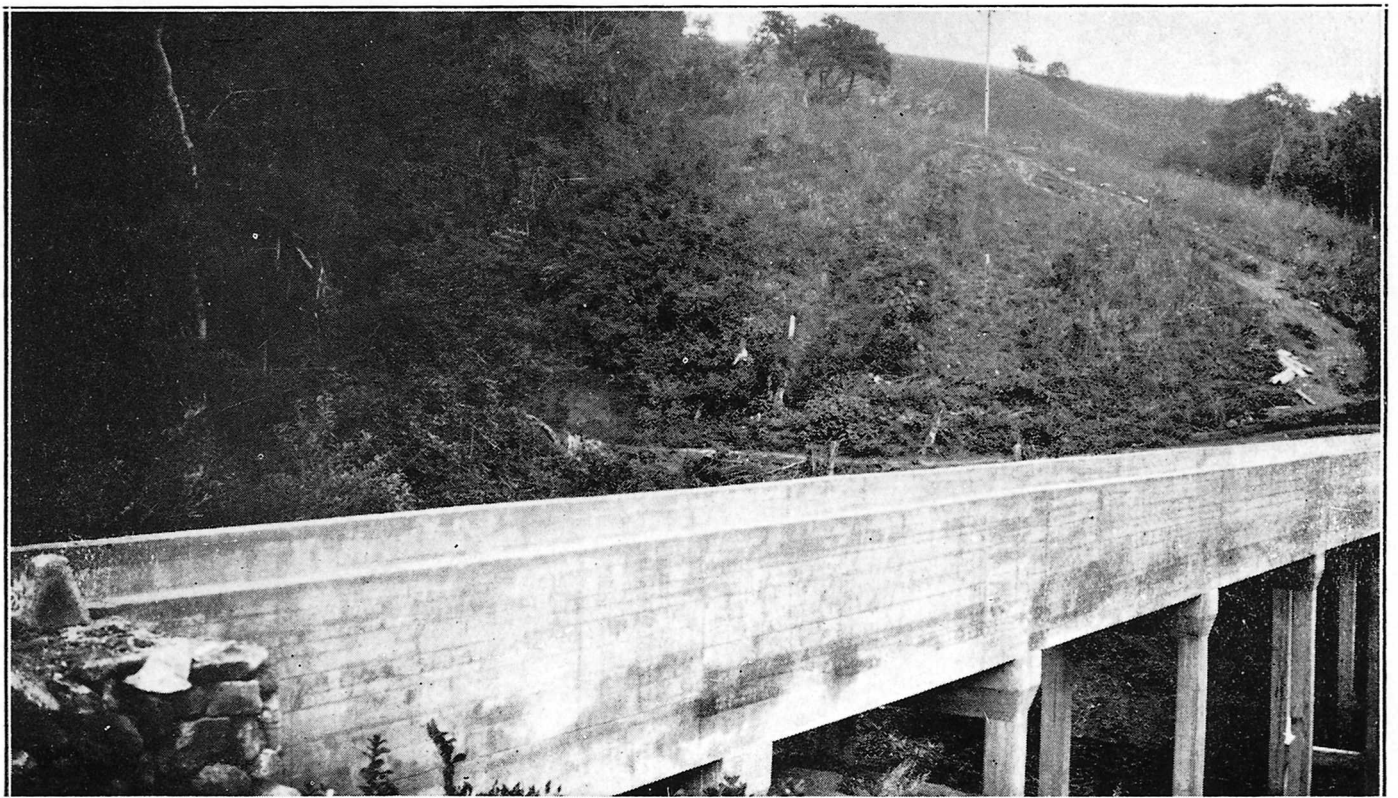
Capetown Undertaking—Section of Sea Water Intake Works.



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Sabie Undertaking—One of the Aqueducts.

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## MUNICIPAL SCHEMES.

Up to 31st December, 1927, 117 municipal schemes have been reported on by the Commission in terms of Section 38 of the Electricity Act, 1922, and supplementary reports upon tenders have been submitted in respect of 48 schemes.

During the year 1927 the following 45 schemes, of which 24 were new schemes, were reported upon by the Commission:—

## CAPE.

Alice.	*Indwe.	Stutterheim.
Burghersdorp.	Mafeking.	Tulbagh.
Calvinia.	Oudtshoorn.	Uitenhage.
Capetown	Oudtshoorn (Cango	Umtata.
Ceres.	Caves).	Upington.
*Cradock.	Somerset East.	Villiersdorp.
Elliot.	Sterkstroom.	Worcester.
Grahamstown.	Steynsburg.	
Hermanus.	Swellendam.	

## TRANSVAAL.

Alberton.	Johannesburg.	Pretoria.
Carolina.	Nelspruit.	Zeerust.
Daspoort.	Nigel.	
Innesdale.	Nylstroom.	

## ORANGE FREE STATE.

Boshof.	Heilbron.	Smithfield.
Brandfort.	Lindley.	Wepener.
Edenburg.	Reitz.	Zastron.

## NATAL.

Howick.

## SOUTH-WEST AFRICA.

Windhoek.

(\* Tenders only.)

Of the 117 electricity schemes reported upon by the Commission, no less than 61 were new schemes.

The following table shows the total number of Local Authorities in the respective Provinces in the Union, and the numbers in each Province which have established, or are in course of establishing, electricity supply schemes.

Province.	No. of Municipalities.	No. of Other Local Authorities.	Total No. of Local Authorities.	No. of Local Authorities with Electricity Supply Schemes.		
				Established.	Under Construction.	Total.
Cape ... ..	129	105	<b>234</b>	51	13	<b>64</b>
Transvaal ... ..	23	62	<b>85</b>	29	4	<b>33</b>
O.F.S. ... ..	61	5	<b>66</b>	21	3	<b>24</b>
Natal ... ..	9	24	<b>33</b>	20	1	<b>21</b>
South-West Africa	7	7	<b>14</b>	5	—	<b>5</b>
Totals ...	229	203	<b>432</b>	126	21	<b>147</b>

South Africa is well advanced in the number of small communities which enjoy the amenities and advantages of electricity.

In December, 1927, a meeting was held in the Commission's offices between representatives of the Provincial Administrations and the Commission.

It was felt that, with the experience gained during the past five years in the working of the Electricity Act, 1922, and more especially Section 38 thereof, a stage had been reached when a meeting between representatives of the Provincial Administrations and the Commission would be of advantage with the object of discussing their respective difficulties and with a view to the more effective exercise of their respective functions and the achievement to the fullest extent of the results which existing legislation had been designed to produce.

The matters discussed at the meeting included:—

- (a) the introduction of a standard form of accounts for the electricity undertakings of Local Authorities, which had been under consideration by the Cape Provincial Administration for some time and upon which the Commission's advice had been sought;
- (b) the procedure to be followed by Local Authorities for the purpose of obtaining approval, under the Electricity Act, 1922, and the respective Provincial Ordinances, of proposals in regard to the establishment or the extension of electricity supply schemes;
- (c) the co-ordination of statistical information in respect of electricity supply schemes of Local Authorities; and



- (d) other matters, including general and financial questions, in which the Provincial Administrations, the Commission and Local Authorities themselves are jointly interested.

Unfortunately the Orange Free State and South-West Africa Administrations were unable to be represented at the meeting, but copies of the proceedings were circulated to them and they have agreed to co-operate as far as possible.

General agreement was arrived at on all matters brought up for discussion and the meeting will, the Commission feels, be productive of much good.

One outcome of the meeting is that the arrangement already in force in the Cape Province whereby the Commission undertakes the scrutiny of tenders submitted in respect of the electricity supply schemes of Local Authorities is being extended to other Provinces.

## UNION STATISTICS.

By the courtesy of the Department of Census and Statistics, the Commission is able to publish some interesting information (extracted from the 1926-27 Industrial Census) bearing upon the production and distribution of electricity in the Union, as follows:—

## ELECTRICITY PRODUCTION.

<u>Province.</u>	<u>Units generated.</u>
Cape ... ..	116,709,630
Transvaal ... ..	1,537,158,003
O.F.S. ... ..	30,449,021
Natal ... ..	204,292,294
Total ... ..	<u>1,888,608,948</u>

The total number of people employed in the electricity industry (generation and distribution) was 8,009, and the total salaries and wages paid for the year was £1,145,068.

## CONSUMERS AND SALES.

	PROVINCE.				
	Cape.	Transvaal.	O.F.S.	Natal.	Total.
Total No. of Consumers ..	49,702	49,266	7,548	23,323	129,839
Total Units Consumed ..	93,272,870	1,376,714,212	27,750,728	188,079,549	1,685,817,359
Domestic Consumers ..	46,643	46,061	6,756	21,553	121,013
Total Units Sold to Domestic Consumers ..	19,603,137	27,612,754	2,903,559	21,306,787	71,426,237
Average Units Sold per Domestic Consumer ...	420	599	430	989	590

## FUEL CONSUMED.

Type of Fuel.	Quantity. (Tons : 2,000 lbs.)	Cost. £
Coal ... ..	2,692,371	1,129,778
Other Fuel ... ..	—	27,931

## COAL CONSUMPTION: STEAM PLANT.

Average coal consumed per unit generated.					Number of Undertakings.
Under 2 lbs.	...	...	...	...	11
2 lbs. and over, but under 3 lbs.	...	...	...	...	14
3 lbs. and over, but under 4 lbs.	...	...	...	...	10
4 lbs. and over, but under 6 lbs.	...	...	...	...	8
6 lbs. and over	...	...	...	...	61

## INSTALLED CAPACITY OF PLANTS.

Capacity.			No. of Power Stations.	Total Installed Capacity. Kilowatts.
50,000 K.W. and over	...	...	6	295,700
20,000 K.W. and over, but below 50,000 K.W.	...	...	5	127,200
10,000 K.W. and over, but below 20,000 K.W.	...	...	2	30,000
5,000 K.W. and over, but below 10,000 K.W.	...	...	4	27,050
1,000 K.W. and over, but below 5,000 K.W.	...	...	26	46,291
Below 1,000 K.W.	...	...	116	27,946
Total	...	...	159	554,187

## SIZE AND TYPE OF GENERATING UNITS.

Size of Units	Steam Turbines	Steam Recip- roating Engines	Oil Engines	Gas Engines	Water Wheels and Turbines	Total Number of Sets
<u>(i) A.C. PLANTS:</u>						
Below 100 K.W. ...	—	18	1	5	8	32
100 K.W. and over, but below 1,000 K.W. ...	13	82	—	6	13	114
1,000 K.W. and over, but below 10,000 K.W. ...	75	4	—	—	—	79
10,000 K.W. and over ..	16	—	—	—	—	16
<u>(ii) D.C. PLANTS:</u>						
Below 100 K.W. ...	1	53	45	32	11	142
100 K.W. and over, but below 500 K.W. ...	3	72	4	6	1	86
500 K.W. and over ...	1	8	—	—	—	9

**THE REPORT OF THE AUDITORS.**

Johannesburg,

22nd June, 1928.

The Chairman and Members,  
Electricity Supply Commission,  
Johannesburg.

GENTLEMEN,

We have to report in connection with the audit of the books and accounts of the Commission for the year ended 31st December, 1927, as follows:—

(1) The year has been a transition period, some of the undertakings having produced electricity while still under construction and others having come partially into commercial operation during the year.

The principle adopted under these circumstances is to fix a date when each undertaking or portion of an undertaking has come or will come into commercial operation.

Prior to coming into commercial operation the difference shown by the revenue derived from consumers over the working costs and interest has been credited in reduction of the capital cost of the undertaking. From the date fixed as the date of coming into commercial operation revenue accounts are prepared and provisions made for Redemption and Reserve Funds in terms of the Electricity Act and as further referred to below. (Paragraphs 5 and 6.)

During 1927 the following was the position of the various undertakings in this respect:—

**CAPETOWN UNDERTAKING.**

The Salt River Power Station did not produce electricity, but, to supply consumers, power was purchased from the Capetown Corporation and distributed to the Commission's consumers.

**DURBAN UNDERTAKING.**

This station was still in course of construction and produced no power.

**NATAL CENTRAL UNDERTAKING (COLENZO).**

The Power Station, Main Transmission Lines and Sub-stations, which had been constructed and operated by the South African Railways, were taken over and brought into commercial operation by the Commission as from January 16th, 1927. In 1926 supplies to the towns of Ladysmith, Glencoe and Estcourt had been brought into commercial operation. During 1927 power was supplied to other consumers, which supplies have not yet been brought into commercial operation.

**SABIE UNDERTAKING.**

Although power was produced during 1927, the undertaking was not brought into commercial operation, the construction work not having been completed.

# Commission.

Electricity Act, 1922.

31st DECEMBER, 1927.

ASSETS.					
<b>Expenditure on Capital Account</b>	...	...	...	...	£6,486,272 17 1
Capetown Undertaking	...	...	...	£1,247,009 14 10	
Durban Undertaking	...	...	...	494,866 3 6	
Natal Central Undertaking	...	...	...	3,239,920 8 9	
Sabie Undertaking	...	...	...	108,980 10 8	
Witbank Undertaking	...	...	...	1,514,257 7 5	
				6,605,034 5 2	
<i>Less</i> —Net Revenue derived from sales of energy and water during construction	...	...	...	118,761 8 1	
				64,553 2 8	
<b>Stores</b>	...	...	...	...	64,553 2 8
<b>Sundry Debtors and Debit Balances</b>	...	...	...	...	76,071 12 8
<b>Cash at Bankers and on Hand</b>	...	...	...	...	17,809 18 4
<b>Total Assets General Fund</b>	...	...	...	...	£6,644,707 10 9
<b>Investment of Provision for Repayment of Moneys Borrowed</b>	...	...	...	...	78,856 0 8
£78,710 Union of South Africa 5 per cent. Local Stock, 1935;					
£70,430 paid up	...	...	...	70,331 12 3	
Cash at Bankers	...	...	...	146 6 8	
Amount due by General Fund (contra)	...	...	...	8,378 1 9	
				34,498 15 3	
<b>Investment of Provision for Reserve Fund</b>	...	...	...	...	34,498 15 3
£34,790 Union of South Africa 5 per cent. Local Stock, 1935;					
£31,520 paid up	...	...	...	31,476 10 3	
Cash at Bankers	...	...	...	18 15 2	
Amount due by General Fund (contra)	...	...	...	3,003 9 10	
				£6,758,062 6 8	

Referred to in our Report of June 22nd, 1928.

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

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# ACCOUNTS

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# Electricity Supply

Incorporated under the

## BALANCE SHEET at

LIABILITIES.		
<b>Treasury of the Union of South Africa Advance Account</b> ... ..		£6,319,665 4 0
Balance at 31st December, 1926 ... ..	£1,929,330 7 8	
Advances during 1927, including interest and cost of raising	4,580,895 13 11	
	6,510,227 1 7	
<i>Less</i> —Interest paid during 1927 ... ..	190,560 17 7	
<b>Sundry Creditors and Credit Balances</b> ... ..		308,869 4 5
<b>Provision for Pensions</b> ... ..		4,790 10 9
<b>Amounts due by General Fund in respect of December Contributions and Sundry Receipts, less expenditure to:</b>		
Provision for Repayment of Moneys Borrowed (contra) ...	8,378 1 9	
Provision for Reserve Fund (contra) ... ..	3,003 9 10	
		11,381 11 7
<b>Total Liabilities General Fund</b> ... ..		£6,644,707 10 9
<b>Provision for Repayment of Moneys Borrowed</b> ... ..		78,856 0 8
Balance at 31st December, 1926 ... ..	37 12 8	
Contributions during year by Natal Central and Witbank Undertakings ... ..	78,002 10 7	
Interest earned ... ..	815 17 5	
<b>Provision for Reserve Fund</b> ... ..		34,498 15 3
Contributions during year by Natal Central and Witbank Undertakings ... ..	34,441 12 10	
Interest earned ... ..	387 12 6	
		34,829 5 4
<i>Less</i> —Expenditure on Natal Central Undertaking Replacements and Betterment ... ..	330 10 1	
£6,758,062 6 8		

NOTE.—In addition to the liabilities shown above, the Commission has approved of expenditure amounting to approximately £895,025, in connection with the completion and extension of its Undertakings.

H. J. VAN DER BYL, Chairman.

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

Johannesburg,  
25th May, 1928.

## WITBANK UNDERTAKING.

The Power Station came into commercial operation as from July 1st, 1927. From that date the station has been operated by The Victoria Falls and Transvaal Power Co., Ltd., in terms of the agreement between the Commission and that Company. The supplies to other local consumers in the Witbank area had not come into commercial operation at December 31st, 1927.

### (2) ACQUISITION OF THE COLENZO POWER STATION.

The Power Station, Main Transmission Lines and Sub-stations were taken over by the Commission in terms of an agreement with the South African Railways Administration dated December 24th, 1926. The agreement provides that the purchase price shall be the agreed capital cost to the Administration of the Works and other assets acquired. This capital cost has not yet been finally determined, but during the year an approximate provisional sum has been paid through the Treasury in terms of Section 19 of the Financial Adjustments Act, 1925. Further sums have been paid direct by the Commission for railage, etc.

It should be noted that, pending agreement of the capital cost, the charges for interest and provision for Redemption and Reserve as shown in the Revenue Account of the Natal Central Undertaking, being based on estimated figures only, will require adjustment when the amount payable to the Administration is finally fixed.

### (3) WITBANK POWER STATION.

Under agreement between The Victoria Falls and Transvaal Power Company, Ltd., and the Commission, the Witbank Power Station is being operated by the Company. The cost of operating, as shown in the revenue account of the Witbank Undertaking, is in accordance with statements rendered by the Power Company. These statements, together with details of capital expenditure incurred during the year, have been verified by the internal auditor of the Commission with the books kept by the Power Company.

### (4) PENSION FUND.

In terms of Clause 4 (q) of the Electricity Act, the Commission has decided to establish a Pension Fund for the benefit of its staff and employees. The details of the scheme have not been settled, but provision on account, amounting to £4,790 10s. 9d., has been made in the 1927 accounts and charged provisionally to the undertakings.

### (5) PROVISION FOR REDEMPTION OF MONEYS BORROWED.

The whole of the funds borrowed by the Commission to December 31st, 1927, have been in the form of advances by the Union Treasury and are subject to interest and cost of raising charges. An arrangement has been made with the Treasury whereby the first £2,750,000 received shall be repaid not later than December 31st, 1950. The whole question of the repayment of this sum and of subsequent amounts received from the Treasury is the subject of negotiation between the Commission and the Treasury.

In the accounts under review the Commission has provided such sums as, on a  $3\frac{1}{2}$  per cent. compound interest basis, will amortise the capital invested in each undertaking, having regard to the special circumstances of such undertaking, but in no case exceeding a period of thirty years from the date of coming into commercial operation.

In view of the position as stated above we consider that adequate provision has been made for the redemption of the capital invested in the portions of the two undertakings which were in commercial operation during the year.

(6) PROVISION FOR RESERVE FUND.

The Commission has set aside sums towards the formation of a Reserve Fund as contemplated in Clause 9 of the Electricity Act.

The contributions towards this provision have been made as follows:—

Witbank Power Station, at the rate of  $\frac{1}{2}$  per cent. per annum on capital invested from date of coming into commercial operation, viz., July 1st, 1927.

Natal Central Undertaking, on Power Station, etc., and local supplies in commercial operation, during period of commercial operation in 1927, at 1 per cent. per annum on estimated total capital cost.

(7) TITLE TO LAND, ETC.

The Commission has not hitherto received transfer of the power station sites and other landed rights acquired from the South African Railways and Harbours Administration relating to the Natal Central and Durban Undertakings.

(8) GENERAL.

We have audited the books and accounts of the Commission for the year 1927 and, subject to the foregoing remarks and 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 results of trading.
- (c) Due provision has been made for the redemption and repayment of moneys borrowed in view of the circumstances as explained in Paragraph 5 of this report.
- (d) The value of the assets of the Commission is correctly stated.
- (e) The Fund to be created in terms of Clause 9 of the Electricity Act has not yet been established, but provision has been made for replacements and generally for the betterment of the plant of the Commission as explained in Paragraph 6 of this report.
- (f) All our requirements and recommendations as Auditors have been complied with and carried out.

Yours faithfully,

B. HALSEY.

ALEX. AIKEN & CARTER.

# Electricity Supply Commission.

## SCHEDULE OF EXPENDITURE ON CAPITAL ACCOUNT to 31st December, 1927.

Expenditure in connection with Electricity Undertakings.	Amount Expended to 31st Dec., 1926.	Amount Expended during 1927.	Total to 31st Dec., 1927.
<b>NATAL CENTRAL UNDERTAKING:</b>			
Capital Cost of Power Station, Transmission Lines and Sub-Stations, including Land, Buildings, Machinery and Plant, etc. ... ..	£6,284 3 8	£3,194,914 11 7	£3,201,198 15 3
Works and Extensions under Construction: Buildings, Machinery, Plant, etc. ... ..	526 16 1	35,966 13 4	36,493 9 5
Interest during Construction and Cost of Raising Money ... ..	9 14 11	2,218 9 2	2,228 4 1
	£6,820 14 8	£3,233,099 14 1	£3,239,920 8 9
Less—Net Revenue during Construction ... ..	149 19 11	708 8 9	858 8 8
	<b>£6,670 14 9</b>	<b>£3,232,391 5 4</b>	<b>£3,239,062 0 1</b>
<b>WITBANK UNDERTAKING:</b>			
Capital Cost of Power Station, including Land, Buildings, Machinery and Plant, etc. ... ..	£1,229,442 0 3	£100,044 18 9	£1,329,486 19 0
Works and Extensions under Construction: Land, Buildings, Machinery and Plant, etc. ... ..	24,855 4 11	40,762 1 1	65,617 6 0
Interest during Construction and Cost of Raising Money ... ..	84,583 18 3	34,569 4 2	119,153 2 5
	£1,338,881 3 5	£175,376 4 0	£1,514,257 7 5
Less—Net Revenue during Construction ... ..	39,826 19 5	61,819 2 1	101,646 1 6
	<b>£1,299,054 4 0</b>	<b>£113,557 1 11</b>	<b>£1,412,611 5 11</b>
<b>CAPETOWN UNDERTAKING:</b>			
Land ... ..	£17,170 3 4	£621 16 11	£17,792 0 3
Buildings and other Civil Engineering Works ... ..	205,781 4 7	200,317 9 0	406,098 13 7
Machinery and Plant ... ..	277,483 0 5	319,082 4 7	596,565 5 0
General Expenditure ... ..	60,678 7 9	82,448 16 10	143,127 4 7
Interest during Construction and Cost of Raising Money ... ..	28,202 2 11	55,224 8 6	83,426 11 5
	£589,314 19 0	£657,694 15 10	£1,247,009 14 10
Less—Net Revenue during Construction ... ..	809 10 1	6,504 15 4	7,314 5 5
	<b>£588,505 8 11</b>	<b>£651,190 0 6</b>	<b>£1,239,695 9 5</b>
<b>DURBAN UNDERTAKING:</b>			
Land ... ..	£8,750 0 0	£19,373 0 0	£28,123 0 0
Buildings and other Civil Engineering Works ... ..	8,024 2 7	146,750 2 2	154,774 4 9
Machinery and Plant ... ..	420 3 2	229,878 3 4	230,298 6 6
General Expenditure ... ..	20,002 1 1	39,516 17 2	59,518 18 3
Interest during Construction and Cost of Raising Money ... ..	2,107 17 4	20,043 16 8	22,151 14 0
	£39,304 4 2	£455,561 19 4	£494,866 3 6
<b>SABIE UNDERTAKING:</b>			
Land ... ..	£510 0 0	—	£510 0 0
Buildings and other Civil Engineering Works ... ..	38,987 17 1	£4,921 6 5	43,909 3 6
Machinery and Plant ... ..	40,159 19 3	2,979 11 6	43,139 10 9
General Expenditure ... ..	10,172 13 10	5,186 8 9	15,359 2 7
Interest during Construction and Cost of Raising Money ... ..	4,222 5 0	1,840 8 10	6,062 13 10
	£94,052 15 2	£14,927 15 6	£108,980 10 8
Less—Net Revenue during Construction ... ..	5,107 19 2	3,834 13 4	8,942 12 6
	<b>£88,944 16 0</b>	<b>£11,093 2 2</b>	<b>£100,037 18 2</b>
<b>SUMMARY:</b>			
NATAL CENTRAL UNDERTAKING ... ..	<b>£6,820 14 8</b>	<b>£3,233,099 14 1</b>	<b>£3,239,920 8 9</b>
WITBANK UNDERTAKING ... ..	<b>1,338,881 3 5</b>	<b>175,376 4 0</b>	<b>1,514,257 7 5</b>
CAPETOWN UNDERTAKING ... ..	<b>589,314 19 0</b>	<b>657,694 15 10</b>	<b>1,247,009 14 10</b>
DURBAN UNDERTAKING ... ..	<b>39,304 4 2</b>	<b>455,561 19 4</b>	<b>494,866 3 6</b>
SABIE UNDERTAKING ... ..	<b>94,052 15 2</b>	<b>14,927 15 6</b>	<b>108,980 10 8</b>
EXPENDITURE FOR ALLOCATION ... ..	<b>67,973 8 3</b>	<b>Cr. 67,973 8 3</b>	—
	<b>£2,136,347 4 8</b>	<b>£4,468,687 0 6</b>	<b>£6,605,034 5 2</b>
Less—Net Revenue during Construction ... ..	<b>45,894 8 7</b>	<b>72,866 19 6</b>	<b>118,761 8 1</b>
	<b>£2,090,452 16 1</b>	<b>£4,395,820 1 0</b>	<b>£6,486,272 17 1</b>

# Commission.

## UNDERTAKING.

ended 31st December, 1927.

Cr.

By Sales of Electricity—								
Traction Supplies	...	...	...	...	...	£348,831	14	4
Bulk Supplies	...	...	...	...	...	5,725	16	10
Industrial Supplies	...	...	...	...	...	68	7	1
Domestic Supplies	...	...	...	...	...	227	5	10
Street Lighting	...	...	...	...	...	40	0	0
						354,893	4	1
<i>Less</i> —Proportion applied against Capital Cost of part of Under-								
taking not in commercial operation						673	3	5
						£354,220	0	8
„ Other Revenue	...	...	...	...	...		2,594	9
								4

6061.9.9 ↓

£356,814 10 0

Referred to in our Report of June 22nd, 1928.

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

# Electricity Supply

WITBANK

Dr.

## Revenue Account for the Six Months

<b>Generation of Electricity.</b>							
To Fuel	...	...	...	...	...	...	£18,761 6 10
„ Water, Oil, Waste and Stores	...	...	...	...	...	...	873 5 8
„ Salaries and Wages	...	...	...	...	...	...	9,480 16 6
„ Other Expenses	...	...	...	...	...	...	570 15 4
„ Maintenance—							
Buildings and Other Civil Engineering Works	...	...	...	...	...	...	936 13 9
Machinery and Plant	...	...	...	...	...	...	6,660 13 0
Miscellaneous Equipment	...	...	...	...	...	...	314 3 5
							<u>£37,597 14 6</u>
<b>General Expenses.</b>							
„ Maintenance of Quarters	...	...	...	...	...	...	303 11 10
„ Stores Expenses	...	...	...	...	...	...	620 1 10
„ General Expenses, including Management and Administration	...	...	...	...	...	...	8,494 17 11
							<u>9,418 11 7</u>
<b>Capital Charges.</b>							
„ Interest	...	...	...	...	...	...	33,336 19 0
„ Provision for Repayment of Moneys Borrowed	...	...	...	...	...	...	18,119 10 3
„ Provision for Reserve Fund	...	...	...	...	...	...	3,528 15 4
							<u>54,935 4 7</u>
							<u>£102,001 10 8</u>

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

Johannesburg,  
25th May, 1928.



ANNEXURE " E. "

Commission.

UNDERTAKING.

ended 31st December, 1927.

Cr.

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By Sales of Electricity—							
Bulk Supplies	...	...	...	...	...	£93,862	10 7
Industrial Supplies	...	...	...	...	...	10,171	5 3
Domestic Supplies	...	...	...	...	...	803	18 11
Street Lighting	...	...	...	...	...	209	11 6
						<hr/>	
						£105,047	6 3
Less—Proportion applied against cost of distribution and Capital Cost of part of Undertaking not in commercial operation						4,748	2 2
						<hr/>	
							£100,299 4 1
„ Other Revenue	...	...	...	...	...		1,702 6 7

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£102,001 10 8

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Referred to in our Report of June 22nd, 1928.

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

# Electricity Supply

NATAL CENTRAL

Dr.

Revenue Account for the Year

<b>Generation of Electricity.</b>							
To Fuel	...	...	...	...	...	...	£36,978 7 1
„ Water, Oil, Waste and Stores	...	...	...	...	...	...	1,849 6 9
„ Salaries and Wages	...	...	...	...	...	...	18,488 1 1
„ Other Expenses	...	...	...	...	...	...	197 10 11
„ Maintenance—							
Buildings and Other Civil Engineering Works	...	...	...	...	...	...	1,925 15 7
Machinery and Plant	...	...	...	...	...	...	13,058 10 6
Miscellaneous Equipment	...	...	...	...	...	...	425 6 11
							£72,922 18 10
„ Power Purchased	...	...	...	...	...	...	126 8 4
<b>Distribution of Electricity.</b>							
„ Stores	...	...	...	...	...	...	1,542 11 5
„ Salaries and Wages	...	...	...	...	...	...	11,582 9 2
„ Other Expenses	...	...	...	...	...	...	1,455 11 8
							14,580 12 3
<b>General Expenses.</b>							
„ Maintenance of Quarters	...	...	...	...	...	...	861 1 7
„ Stores Expenses	...	...	...	...	...	...	1,078 12 6
„ General Expenses, including Management and Administration	...	...	...	...	...	...	23,098 17 10
							25,038 11 11
<b>Capital Charges.</b>							
„ Interest	...	...	...	...	...	...	✓ 153,350 0 10
„ Provision for Repayment of Moneys Borrowed	...	...	...	...	...	...	✓ 59,883 0 4
„ Provision for Reserve Fund	...	...	...	...	...	...	✓ 30,912 17 6
							244,145 18 8
							£356,814 10 0

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

Johannesburg,  
25th May, 1928.

# Electricity Supply Commission.

**ANNEXURE "F."**

**STATEMENT SHOWING THE PRICE OR RENT OF ANY LAND OR RIGHTS OR INTERESTS IN OR OVER LAND OR ANY OTHER PROPERTY ACQUIRED OR HIRED BY THE COMMISSION AT 31st DECEMBER, 1927.**

Area.			Farm or Lot.	District.	Title.	Purchase Price or Rental.	Acquired From.	Purpose For Which Required.	
Acres.	Roods.	Perches.							
<b>NATAL CENTRAL UNDERTAKING.</b>									
				NATAL			Water Court, District No. 16, Pietermaritzburg		
				—	Water Rights (Tugela River)			Power Station, Colenso.	
234	2	24	Town Lands, Colenso Tugela Drift, No. 1062 Labuschagnes Kraal, No. 1229	Weenen	} Formal Transfer not yet given by Railways and Harbours Administration.			Power Station, Colenso.	
1	0	9	M.G.E. of Roseneu No. 3212	Klip River				Sub-station, Glencoe Junction.	
2	0	19	N.C.R. of Kleinfontein No. 1262	Klip River				Sub-station, Wessels Nek.	
2	1	20	Town Lands of Ladysmith	Klip River				Sub-station, Daimana.	
1	2	0	Frere Township of Plessis Laager No. 1331	Weenen				Sub-station, Frere.	
3	0	16	N.G.R. 6 of Town Lands, Estcourt	Weenen				Sub-station, Estcourt.	
1	1	5	Weltevreden No. 1903	Weenen				Sub-station, Willbrook.	
2	1	17	Farend Farm of Langewacht No. 2168 Grantleigh No. 2177	Weenen				Sub-station, New Leigh.	
0	3	5	Gowrie No. 1930	Pietermaritzburg				Sub-station, Nottingham Road.	
1	3	37	Riet Vallei No. 1206	Pietermaritzburg				Sub-station, Lidgetton.	
0	3	27	Driefontein No. 952	Pietermaritzburg				Sub-station, Cedara.	
1	1	5	Ordnance Land No. 1686	Pietermaritzburg				Sub-station, Pietermaritzburg.	
				—		Lease in Perpetuity for Rights-of-Way in Course of Completion			Electric Transmission Lines, including 88,000-volt Overhead Transmission Lines between Glencoe Junction and Pietermaritzburg.
<b>WITBANK UNDERTAKING.</b>									
Morgen.	Sq. Roods.	Sq. Feet.		TRANSVAAL					
67	26	—	Witbank No. 61, Portion R	Witbank	Freehold, excluding all Rights to Coal	} £271 10 0	Witbank Colliery, Ltd.	Power Station Site.	
44	269	—	Joubertsrust No. 16, Portions J and M Joubertsrust No. 16 Witbank No. 61 Blesboklaagte No. 29	Witbank	Freehold, excluding all Rights to Coal				Railway Sidings and Loops, Open Drains, Power Conductors, Reservoir Site, and Access.
11	248	—	Doornpoort No. 58, Portion S.2	Witbank	Servitudes and Rights-of-Way			Dam and Works.	
259	—	—	Doornpoort No. 58, Portion S.1	Witbank	Servitude in Perpetuity	} 2,750 0 0	Transvaal and Delagoa Bay Investment Co., Ltd.	Submerged Ground.	
—	42	—	Doornpoort No. 58, Portion S.3	Witbank	Servitude of Storage in Perpetuity				Gauging Weir. Access.
7	505	—	Doornpoort No. 58, Zeekoewater No. 14, Portion S.1 of Portion A	Witbank	Servitude in Perpetuity			Submerged Ground.	
				Witbank	Right-of-Way	} 150 0 0	J. P. Reyneke	Submerged Ground.	
				Witbank	Servitude of Storage in Perpetuity				Road giving Access to Dam.
				Witbank	Right-of-Way in Perpetuity	} 50 0 0	J. P. Reyneke	Power Conductors, Water Pipeline.	
				Witbank	Servitude of Right-of-Way in Perpetuity				Power Conductors, Water Pipeline.
				Witbank	Servitude of Right-of-Way in Perpetuity	} 250 0 0	J. P. Reyneke	Power Conductors, Water Pipeline.	
				Witbank	Servitude of Right-of-Way in Perpetuity				Railway Siding and Loop.
				Witbank	Servitude of Right-of-Way in Perpetuity	} 60 0 0	D. D. Steenkamp S.A. Coal Estates (Witbank), Ltd. M.C. Pretorius Witbank Municipality	Underground Cable. Underground Cable.	
				Witbank	Servitude in Perpetuity				Power Conductors.
				Witbank	Servitude of Right-of-Way in Perpetuity	} 35 0 0	P. J. de Wet	Power Conductors.	
				Witbank	Servitude of Right-of-Way in Perpetuity				Power Conductors.
				Witbank	Servitude of Right-of-Way in Perpetuity	} 29 0 0	M. A. Brecht	Power Conductors.	
				Witbank	Servitude of Right-of-Way in Perpetuity				Power Conductors.
				Witbank	Servitude of Right-of-Way in Perpetuity	} 12 0 0	P. F. Roux	Power Conductors.	
				Witbank	Servitude of Right-of-Way in Perpetuity				Power Conductors.
				Witbank	Servitude of Right-of-Way in Perpetuity	} 35 0 0	J. C. O. Forssman	Power Conductors.	
				Witbank	Servitude of Right-of-Way in Perpetuity				Power Conductors.
<b>CAPE TOWN UNDERTAKING.</b>									
9	210	—	Lot P.12	CAPE Paarden Island	Freehold	15,567 3 2	Capetown Corporation	Power Station Site.	
8	383	105	Lot Super Power Station Lot A	Salt River Mouth	Government Grant	100 0 0	Government of Union of South Africa	Sub-station Site.	
—	477	52	Lot A	Huguenot	Freehold	350 0 0	P. Goldberg	Sub-station Site.	
—	274	37		Diep River	Leasehold	250 0 0	C. D. B. Stiles	Sub-station Site.	
—	76	128	Lot 3B	Three Anchor Bay	Freehold	£1 per annum	Capetown Corporation	Sub-station and Depôt Site.	
—	8	79	Lot C	Belville	Freehold	60 0 0	E. C. Edwards	} Sub-station and Depôt Site.	
—	561	140		Ronde Vlei	Belville	Freehold	75 0 0		J. L. Berkeley
—	95	103		Glencairn	Government Grant	25 0 0	Government of Union of South Africa	Sub-station Site.	
—	118	35	Lot RB, Portion of Lot Railway B	Muizenberg	Government Grant	210 0 0	Government of Union of South Africa	Sub-station Site.	
—	33	48	Lot ELEC, Part of Lots 1 to 12	Wellington	Freehold	250 0 0	Government of Union of South Africa H. & J. Roup	Sub-station Site.	
—	158	112	Lot EC, Bennetsville, Portion of Groenefontein	Paarl	Freehold	75 0 0	J. A. Ward	Linesman's Cottage, Klamputs.	
<b>DURBAN UNDERTAKING.</b>									
Acres.	Roods.	Perches.		NATAL					
20	0	3	Bay Foreshore No. 5350 Lot C.3 of Crown Lands	Durban	Formal Transfer not yet given by Railways and Harbours Administration.			Power Station, Congella.	
<b>SABIE UNDERTAKING.</b>									
				TRANSVAAL					
				Pilgrims Rest	Water Right (Sabie River)			Water Court, District No. 22, Transvaal Department of Mines	
				Pilgrims Rest	Water Right (Sabie River)			Hydro-electric Power Station.	
				Pilgrims Rest	Servitudes of Abutment, Acqueduct, Storage, Right-of-Way, etc.	500 0 0	S. H. Coetzee	Dam, Water Race, Pipeline, Power Station and Auxiliary Works.	
				Pilgrims Rest	Surface Right Permit			Department of Mines	
				Pilgrims Rest	Surface Right Permits			Department of Mines	
				Pilgrims Rest	Surface Right Permit			Department of Mines	
				Pilgrims Rest	Surface Right Permit			Department of Mines	

ANNEXURE " E. "

Commission.

UNDERTAKING.

ended 31st December, 1927.

Cr.

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By Sales of Electricity—							
Bulk Supplies	...	...	...	...	...	£93,862	10 7
Industrial Supplies	...	...	...	...	...	10,171	5 3
Domestic Supplies	...	...	...	...	...	803	18 11
Street Lighting	...	...	...	...	...	209	11 6
						<hr/>	
						£105,047	6 3
Less—Proportion applied against cost of distribution and Capital Cost of part of Undertaking not in commercial operation						4,748	2 2
						<hr/>	
							£100,299 4 1
„ Other Revenue	...	...	...	...	...		1,702 6 7

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£102,001 10 8

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Referred to in our Report of June 22nd, 1928.

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

# Electricity Supply

NATAL CENTRAL

Dr.

Revenue Account for the Year

<b>Generation of Electricity.</b>							
To Fuel	...	...	...	...	...	...	£36,978 7 1
„ Water, Oil, Waste and Stores	...	...	...	...	...	...	1,849 6 9
„ Salaries and Wages	...	...	...	...	...	...	18,488 1 1
„ Other Expenses	...	...	...	...	...	...	197 10 11
„ Maintenance—							
Buildings and Other Civil Engineering Works	...	...	...	...	...	...	1,925 15 7
Machinery and Plant	...	...	...	...	...	...	13,058 10 6
Miscellaneous Equipment	...	...	...	...	...	...	425 6 11
							£72,922 18 10
„ Power Purchased	...	...	...	...	...	...	126 8 4
<b>Distribution of Electricity.</b>							
„ Stores	...	...	...	...	...	...	1,542 11 5
„ Salaries and Wages	...	...	...	...	...	...	11,582 9 2
„ Other Expenses	...	...	...	...	...	...	1,455 11 8
							14,580 12 3
<b>General Expenses.</b>							
„ Maintenance of Quarters	...	...	...	...	...	...	861 1 7
„ Stores Expenses	...	...	...	...	...	...	1,078 12 6
„ General Expenses, including Management and Administration	...	...	...	...	...	...	23,098 17 10
							25,038 11 11
<b>Capital Charges.</b>							
„ Interest	...	...	...	...	...	...	✓ 153,350 0 10
„ Provision for Repayment of Moneys Borrowed	...	...	...	...	...	...	✓ 59,883 0 4
„ Provision for Reserve Fund	...	...	...	...	...	...	✓ 30,912 17 6
							244,145 18 8
							£356,814 10 0

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

Johannesburg,  
25th May, 1928.