

# Electricity Supply Commission.

Electricity House,  
82, Marshall Street,  
Johannesburg,

30th September, 1927.

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 fourth annual report—for the year ended 31st December, 1926, together with a brief review of its activities up to the date of this report.

During the year 1926 a large amount of preliminary work was completed, the Witbank Power Station was started up and substantial progress made with construction work at that station and on the several other electricity Undertakings in hand by the Commission. Additional contracts have been entered into with consumers, and several other agreements negotiated, including an agreement with the Railway Administration for the acquisition by the Commission of the Colenso Power Station, transmission lines extending from Glencoe Junction to Pietermaritzburg, and the traction sub-stations forming part of the Natal railway electrification scheme, which were taken over by the Commission on 15/16th January of this year.

The year 1926 marks the commencement of supplies of electricity by the Commission, though on a comparatively small scale and principally from Undertakings still in the construction stage. As has been explained in earlier reports, several consumers within the areas of supply of the Commission's Undertakings had reached the stage when they had either to purchase electricity or instal new or additional generating plants of their own, and in order to meet the requirements of such consumers the Commission arranged either to press forward construction work on portions of its own plant so as to afford temporary relief or to purchase electricity for distribution to such consumers.

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Electricity  
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Twelve consumers were supplied with electricity during the year or portion thereof, the total sales amounting to 161,758,522 units. made up as follows:—

Undertaking.	Date Supplies Started.	Units Sold, 1926.
Natal Central ... ..	March, 1926	719,666
Witbank ... ..	May, 1926	160,031,213
Capetown (Rural Supply Scheme) ...	May, 1926	280,242
Sabie (includes 75,943 units supplied in 1925) ... ..	November, 1925	727,401
Total ... ..		<u>161,758,522</u>

This is about the same number of units as were sold in 1926 by the three largest Municipal Electricity Undertakings in South Africa, viz., Johannesburg, Durban and Capetown, taken together.

In the case of the Natal Central Undertaking the supplies were purchased by the Commission from the Railway Administration and re-sold to consumers in terms of a Permit granted to the Commission by the Electricity Control Board on 26th June, 1925. The supplies from the Witbank and Sabie Undertakings were given while construction work was in progress, and in the case of the Capetown Undertaking (Rural Supply Scheme) the electricity is, by arrangement, being supplied by the Capetown Corporation pending the starting up of the Commission's power station at Salt River.

The Undertakings acquired and being established by the Commission are as follows:—

(The Natal Central Undertaking is the only one acquired.)

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

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An additional 20,000 kilowatt set and three additional boilers are being installed at Witbank which will bring up the plant capacity of that station to 80,000 kilowatts.

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

Summary of principal equipment installed or on order.

#### GENERATING PLANT.

(Including House Turbine Sets at Witbank and Capetown.)

No. of Sets.	Total Kilowatts installed or to be installed.	Total Kilovolt Amperes installed or to be installed.
22	209,000	243,000

#### BOILER PLANT.

No. of Boilers.	Total Capacity in Lbs. of Steam per Hour (normal rating).
35	2,250,000 lbs.

#### OVERHEAD TRANSMISSION LINES AND CABLES.

	88,000 volts Route Miles.	33,000 volts Route Miles.	22,000 volts Route Miles.	Under 22,000 volts Route Miles.	Total Route Miles.
Overhead Lines ...	275	61	24	8	368
Cables ...	—	28	8	6	42
Total ...	275	89	32	14	410

#### TELEPHONE LINES AND CABLES.

Overhead Lines. Route Miles.	Cables. Route Miles.	Total. Route Miles.
13	27	40

#### TRANSFORMERS.

(Step-up and Step-down.)

Total capacity installed or to be installed	Kilovolt Amperes.
... ..	298,000

#### TRACTION SUB-STATIONS.

No. of Sub-stations	Motor Generator Sets. No. of Sets.	Rating Kilowatts.	Rotary Converters. No. of Sets.	Rating Kilowatts.	Total. No. of Sets.	Rating Kilowatts.
18	22	44,000	12	24,000	34	68,000

#### NUMBER OF STAFF QUARTERS.

Married and Single Quarters	... ..	85
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Colenso Power Station.



New Leigh Sub-Station.

## NATAL CENTRAL UNDERTAKING.

The Natal Central Undertaking consists of a Power Station at Colenso with a total installed capacity of 60,000 kilowatts; 275 miles of 88,000 volt transmission line, 13 main sub-stations, and other buildings and apparatus.

The Power Station, sub-stations, and transmission system comprising this Undertaking were constructed by the Railway Administration as part of the work involved in the conversion from steam to electric traction of the section of the Natal Main Line from Glencoe Junction to Mason's Mill, near Pietermaritzburg, which was authorised by Parliament in 1922. The Undertaking was started up in commercial service in three stages, the working of a complete service of electric trains over the whole section from Glencoe Junction to Pietermaritzburg having been commenced on 18th April, 1926

At the date of the Commission's last annual report, an agreement was being negotiated with the South African Railways and Harbours Administration for the acquisition by the Commission of what was then known as the Colenso Undertaking. These important negotiations occupied some time, and on 24th December, 1926, an agreement was concluded between the Minister of Railways and Harbours and the Commission providing for the taking over of the Undertaking by the Commission on a date to be agreed.

Acquisition  
of Under-  
taking by  
Commission.

The date of transfer was subsequently fixed for midnight on 15/16th January, 1927, and on that date the Undertaking, which is now known as the Natal Central Undertaking, was taken over by the Commission.

The Commission's proposals in connection with the acquisition of the Colenso Undertaking were submitted to you for approval, in terms of Section 5 of the Electricity Act, 1922, under separate report, dated 3rd August, 1926, and these proposals were approved by you on 11th September, 1926.

The agreement between the Administration and the Commission provides, *inter alia* :



- (a) for payment of the capital cost of the Undertaking as at date of transfer being made by the Commission in terms of Section 19 of the Financial Adjustments Act, 1925, and also for payment being made of all expenditure incurred by the Administration on uncompleted contracts or departmental works, and of an amount, to be agreed, in respect of railage and harbour charges at public tariff rates on the materials, plant and equipment comprising the Undertaking, and in respect of any land necessarily forming part of, but not included in, the capital cost of the Undertaking;
- (b) for the Administration being responsible for the completion of all contracts and departmental works which had not, at the date of transfer, been completed;
- (c) for the Commission taking over all staff employed by the Administration on the Undertaking as at the date of transfer;
- (d) for the supply of electricity by the Commission to the Administration for traction and other purposes along the route of the Natal Main Line between Glencoe Junction and Pietermaritzburg, for the extension of the Undertaking or of the plant capacity thereof as may be necessary from time to time to meet increases in the Administration's requirements;
- (e) for co-operation between the Administration and the Commission with a view to securing the most efficient, economic and successful operation and development of the Undertaking and of the Administration's electric traction scheme;
- (f) for the agreement remaining in force so long as the Commission remains the Authorised and Licensed Undertaker, in terms of the Electricity Act, 1922, for this Undertaking.

The Colenso Power Station is situated on the south bank of the Tugela River close to Colenso Railway Station, water for boiler feed and for the circulating water system being obtained from the Tugela River.

The installed capacity of the Power Station is 60,000 kilowatts on maximum continuous rating. The generating plant consists of five 12,000 kilowatt turbo alternators which are each designed to carry 20,000 kilowatts for two minutes at a time. The steam raising

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plant consists of eight boilers, each having a normal evaporation of 60,000 lbs. of steam per hour, but capable, when required, of working continuously at 25 per cent. overload.

Space has been provided in the engine room for a sixth generating set.

There is a workshop and a store attached to the Power Station. There is also a small hospital for natives near the Power Station site.

As housing accommodation was not available in the Colenso Township the Administration had to build quarters for the staff and also a Native Compound. There are 36 brick residences, but as these were insufficient, 10 wood and iron houses and two blocks of single quarters used during the construction period had to be retained for the accommodation of the permanent staff. The single quarters and some of the wood and iron houses are not in a fit condition to be occupied, and it is proposed to build additional brick houses for married men and proper permanent quarters for the single men.

Electricity is generated as three-phase alternating current at a frequency of 50 cycles per second and a pressure of 6,600 volts.

Adjoining the Power Station at Colenso is an outdoor sub-station, where the electricity is stepped up from 6,600 volts to 88,000 volts, at which pressure it is transmitted to the sub-stations along the route by means of duplicate 88,000 volt overhead transmission lines carried on steel towers which extend from Colenso in a northerly direction to Glencoe Junction and in a southerly direction to Pietermaritzburg. The two transmission lines follow alternative routes more or less parallel and converge at the traction sub-stations, to which connections are made from both lines.

The transmission system is divided into three sections. viz. :—

Glencoe Junction—Colenso,

Colenso—New Leigh,

New Leigh—Pietermaritzburg,

sectioning equipment being provided at Colenso and New Leigh sub-stations. Either line may be in use on any one section, irrespective of which line is in use on the other two sections.

Apart from the step-up sub-station adjoining the Power Station at Colenso there are 12 traction sub-stations situated at :

1. Glencoe Junction
2. Wessels Nek
3. Daimana
4. Colenso
5. Frere
6. Estcourt
7. Willbrook
8. New Leigh
9. Nottingham Road
10. Lidgetton
11. Cedara
12. Pietermaritzburg.

These traction sub-stations, with the exception of the one at Colenso, are equipped with outdoor transformers for stepping down the electricity from 88,000 to 6,600 volts, at which pressure it is led into the sub-station buildings, where, by means of motor generator sets, it is converted from alternating to direct current for traction purposes. The sub-station motor generator units each have a capacity of 2,000 kilowatts direct current. The traction supply is delivered from the sub-stations to the feeders to the overhead track conductors by means of underground cables at a pressure of 3,000 volts direct current.

Each sub-station, in addition to providing direct current at 3,000 volts for traction purposes, is a distribution centre from which three-phase alternating current can be supplied for industrial and other purposes.

The sub-station at Estcourt is a three-unit station; those at Glencoe Junction, Wessels Nek, Daimana, Colenso, New Leigh, Lidgetton and Pietermaritzburg are two-unit stations; and those at Frere, Willbrook, Nottingham Road and Cedara are single-unit stations.

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Extension  
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Prior to the acquisition of the Undertaking by the Commission, the Administration had under consideration a recommendation by its Consulting Engineers for the extension of the Undertaking to

meet anticipated increases in traffic beyond the tonnage for which the scheme was designed. This question was referred to the Commission by the Administration as one of considerable urgency and, prior to the actual date of transfer, the Commission commenced an investigation as to the necessity for and the extent of the extensions to meet the Administration's estimated traffic requirements and the requirements of the Commission's other consumers in Natal.

As a result of this investigation it was decided, in consultation with the Administration,

- (a) to extend the boiler house at the Colenso Power Station to provide for the accommodation of four more boilers ;
- (b) to proceed at once 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, a duplicate of the set already installed.

The following contracts have been placed in connection with this extension :—

Contractor.	Plant and Work.
Reunert & Lenz, Ltd., Johannesburg	Boilers and accessories.
Wilson & Herd, Ltd., Johannesburg ...	Motor generator set, transformer, switchgear and accessories for Willbrook Sub-station.
Wade & Dorman, Ltd., Johannesburg	Structural steelwork for boiler house and Willbrook Sub-station extension.
A. Stuart, Germiston ... ..	Excavations, foundations and building work at Colenso and Willbrook.

Work in connection with the extension of the boiler house at Colenso and the Willbrook sub-station is proceeding.

On the basis of the Administration's estimates of the probable traffic to be handled over the electrified line during the next few years, it would appear that two additional boilers and additional sub-station equipment are likely to be required within a comparatively short time if the Administration's anticipations as to the growth of traffic are realised.

Other works  
to be  
carried out.

As already mentioned, improved and additional housing accommodation is necessary to accommodate properly the present staff. Under the Administration's organisation, the Headquarters of the Distribution Department were situated at Estcourt, due partly to the absence of adequate office and housing accommodation at Colenso. As this arrangement was a provisional one the Distribution Department was accommodated in temporary wood and iron offices at Estcourt, where a temporary wood and iron store for distribution equipment was also erected.

After careful investigation the Commission decided to make Colenso the Headquarters of the Undertaking and to place the Power Station and the Distribution Department under centralised control there. This will necessitate the building of new offices for the Resident Engineer and the Distribution Headquarters Staff, a new store (the present stores accommodation being inadequate), a test house and quarters for the Distribution Staff. It will also be necessary to build new Recreation Rooms, as the present wood and iron buildings, erected for the Construction Staff, are inconveniently situated for the Permanent Staff and are in a dilapidated condition.

Licence.

On 21st March, 1927, formal application was made to the Electricity Control Board for a licence for the Natal Central Undertaking in substitution for the Permit granted to the Commission by the Control Board on 26th June, 1925, for the re-sale of electricity purchased from the Administration.

On 29th June, 1927, the Control Board granted the Commission a Licence to acquire and carry on an Undertaking for the supply of electricity in the Central area of the Province of Natal, and for that purpose

- (a) to acquire from the Administration, operate, use and maintain
  - (i) a Power Station situate on the south bank of the Tugela River, close to the Colenso Railway Station, together with all plant, machinery and apparatus for generating and delivering, transforming, converting, switching and metering electricity, and all plant, machinery, buildings and works incidental to or required in connection with the operation and maintenance of the Power Station;

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- (ii) duplicate overhead 88,000 volt transmission lines between Pietermaritzburg and Glencoe Junction connecting the Power Station with the sub-stations referred to in paragraph (iii) ; and
  - (iii) twelve sub-stations situated at Glencoe Junction, Wessels Nek, Daimana, Colenso, Frere, Estcourt, Willbrook, New Leigh, Nottingham Road, Lidgetton, Cedara and Pietermaritzburg, together with all plant, machinery and apparatus for transforming, converting, switching, metering and delivering electricity, and all buildings and other works incidental to or required in connection with the operation and maintenance of the sub-stations ; and
- (b) to carry out the terms and conditions of the agreement dated 24th December, 1926, between the Commission and the Administration.

The Licence provides, inter alia :—

- (1) that the Commission may add to, alter or enlarge the works comprising the Undertaking, provision being made for the rated capacity of the Power Station being increased up to 100,000 kilowatts ;
- (2) that the area of supply shall be
  - (i) the area from time to time belonging to the Administration along the route of the electrified section of the Natal Main Line between Pietermaritzburg and Glencoe Junction and of any other section of line to which the existing railway electrification scheme may be extended and to which electricity can economically be supplied from the Natal Central Undertaking ;
  - (ii) an area within eight miles of the electrified section of the Natal Main Line of railway between Pietermaritzburg and Glencoe Junction and of any other section of line to which the existing railway electrification scheme may be extended, exclusive of the area of jurisdiction of any urban local

authority and exclusive of the area of supply of any urban local authority outside the area of jurisdiction of such local authority, as approved from time to time by the Board, except with the consent of such local authority in either case;

- (3) that, subject to the provisions of the Electricity Act, 1922, the Commission is authorised and required to supply electricity to
- (i) any consumer in the area referred to in paragraph (2) ; and
  - (ii) the South African Railways and Harbours Administration upon the terms and conditions set out in the agreement dated 24th December, 1926, between the Commission and the Administration ;
- (4) that the standard prices to be charged by the Commission shall be those stated in the first schedule to the Licence as amended from time to time in accordance with the provisions of the Electricity Act, 1922.

Supplies to  
Consumers.

Reference has been made in previous reports to the supply of electricity to consumers along the route of the electrified section of the Natal Main Line, which was commenced by the Commission prior to and in contemplation of the transfer of the whole Undertaking from the Administration to the Commission.

In its last annual report, the Commission referred to the agreements entered into with the Municipalities of Pietermaritzburg, Ladysmith and Estcourt, and with the Glencoe Local Board. Since the date of that report, negotiations with the Government School of Agriculture at Cedara for a supply of electricity have been completed and a formal agreement has been concluded with the Government in connection with this supply.

The supply of electricity to the Municipalities of Ladysmith and Estcourt was commenced in March, 1926, and to the Glencoe Local Board in August, 1926. The supply to the Pietermaritzburg Municipality was commenced in June, 1927, and the supply to Cedara School of Agriculture will be commenced shortly.

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Arrangements are in progress for the lighting of the Township of Colenso, and negotiations with other prospective consumers along the line between Pietermaritzburg and Glencoe Junction are proceeding.

Since the taking over of the Natal Central Undertaking by the Commission the operation has been satisfactory and record tonnages above those for which the scheme was designed have been handled. General.

The Commission has been fortunate in taking over with the Undertaking a capable, conscientious and enthusiastic staff.

Apart from the payment made by the Commission to the Administration (as part of the construction costs) of railage and harbour charges at public tariff rates on the materials, plant and equipment forming part of the Undertaking, the Commission also pays railage and other charges at public tariff rates on coal, stores and other materials required in connection with the operation and maintenance of the Undertaking. These payments, which were not made or taken into account by the Administration during the period the Administration was operating the Undertaking, but which now accrue as revenue to the Administration's Transportation and other Departments, naturally result in an appreciable apparent increase in operating and maintenance costs.

The Commission would also mention that, although the Power Station and part of the plant was started up by the Administration on 28th May, 1925, over 18 months before the Commission took over, no depreciation was allowed by the Administration on the property which was taken over by the Commission at cost to the Administration, plus the charges mentioned.

Apart from the adjustment made in the Treasury books, in terms of Clause 19 of the Financial Adjustments Act, 1925, representing the capital expenditure at the date of transfer, amounting to

to	...	...	...	...	£2,771,334
the Commission has paid over to the Administration in cash in respect of					
Railage and harbour charges	...	...	...	...	250,635
Stores taken over	...	...	...	...	64,667
Works uncompleted at date of transfer	...	...	...	...	21,757
Total					£3,108,393

Arrangements are in progress for the lighting of the Township of Colenso, and negotiations with other prospective consumers along the line between Pietermaritzburg and Glencoe Junction are proceeding.

Since the taking over of the Natal Central Undertaking by the Commission the operation has been satisfactory and record tonnages above those for which the scheme was designed have been handled. General.

The Commission has been fortunate in taking over with the Undertaking a capable, conscientious and enthusiastic staff.

Apart from the payment made by the Commission to the Administration (as part of the construction costs) of railage and harbour charges at public tariff rates on the materials, plant and equipment forming part of the Undertaking, the Commission also pays railage and other charges at public tariff rates on coal, stores and other materials required in connection with the operation and maintenance of the Undertaking. These payments, which were not made or taken into account by the Administration during the period the Administration was operating the Undertaking, but which now accrue as revenue to the Administration's Transportation and other Departments, naturally result in an appreciable apparent increase in operating and maintenance costs.

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Works uncompleted at date of transfer	...	...	...	...	21,757
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Uncompleted and departmental works in hand by the Administration at the date of transfer, which have since been completed, include :—

- (a) Intake regulator on Tugela River.
- (b) Barrage on Tugela River.
- (c) Stoker alterations.
- (d) Ventilation of sub-stations.
- (e) Installation of high speed circuit breakers.

With the exception of the rebuilding of certain stator cores, which is in progress, only a few minor works belonging to the original scheme now remain to be completed.

## WITBANK UNDERTAKING.

The Witbank Power Station consists of three main generating sets of 20,000 kilowatts each, giving a total installed capacity of 60,000 kilowatts, and twelve boilers, each of a normal capacity of 70,000 lbs. of steam per hour.

The main features of this Undertaking were described in the Commission's last annual report.

The capital expenditure on the Witbank Undertaking to 31st December, 1926, was £1,299,054.

The first 20,000 kilowatt set was started up provisionally on 3rd May, 1926, the second generating set on 15th July, 1926, and the third generating set on 25th October, 1926. Thereafter some time was occupied in final adjustments and tests and in completing various miscellaneous items of construction, the work being sufficiently advanced to admit of the Undertaking being placed in commercial operation on 1st July, 1927. Progress of work.

In the Commission's last two annual reports, reference was made to the question of accommodation for the operating staff at Witbank. Apart from the Resident and Assistant Resident Engineers' houses, the following residences have been provided for the staff:—

Twenty married quarters.

Twenty-four single quarters.

In the absence of sufficient improvement in the housing position at Witbank and in view of the extension of the Power Station, to which reference is made hereafter, it had been found necessary to extend the housing programme by the construction of two additional married quarters and a further block of twelve-roomed single quarters. These buildings are now in course of construction.

Owing to the increased power requirements of the Victoria Falls and Transvaal Power Co., Ltd., on the Witwatersrand, and to the electricity requirements of consumers in the Witbank area, it Extension of Witbank Power Station.

## WITBANK UNDERTAKING.

The Witbank Power Station consists of three main generating sets of 20,000 kilowatts each, giving a total installed capacity of 60,000 kilowatts, and twelve boilers, each of a normal capacity of 70,000 lbs. of steam per hour.

The main features of this Undertaking were described in the Commission's last annual report.

The capital expenditure on the Witbank Undertaking to 31st December, 1926, was £1,299,054.

The first 20,000 kilowatt set was started up provisionally on 3rd May, 1926, the second generating set on 15th July, 1926, and the third generating set on 25th October, 1926. Thereafter some time was occupied in final adjustments and tests and in completing various miscellaneous items of construction, the work being sufficiently advanced to admit of the Undertaking being placed in commercial operation on 1st July, 1927. Progress of work.

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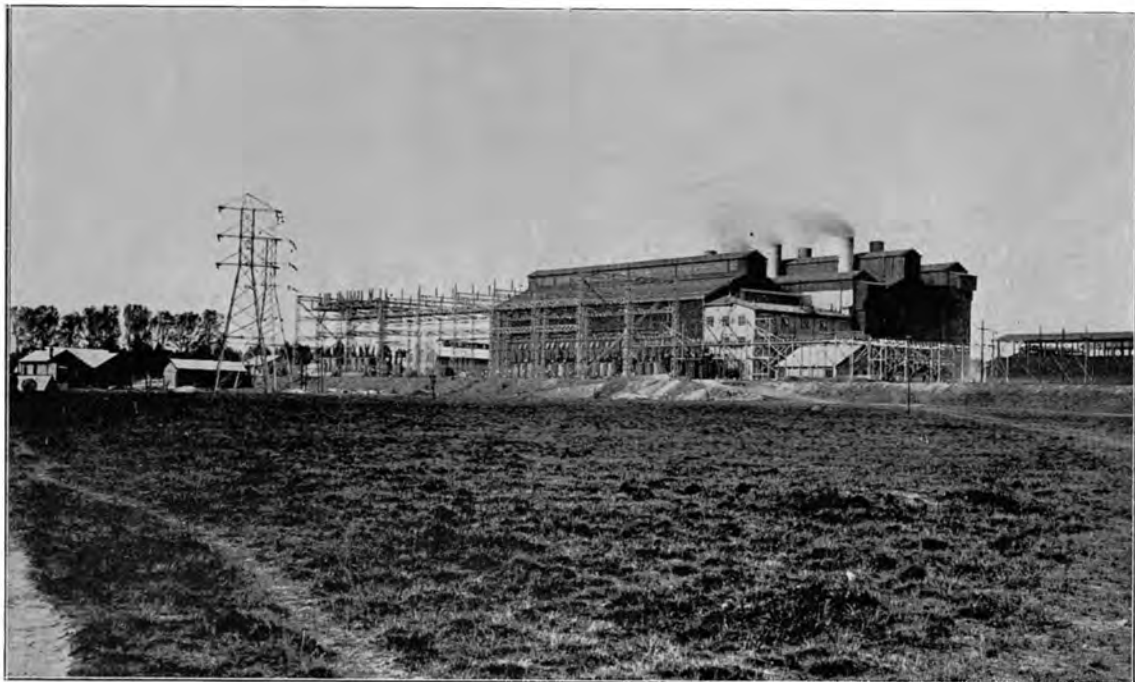
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Witbank Power Station—132,000 volt Transmission Line Tower and Outdoor Sub-Station in Foreground.



Witbank Power Station—Coal Staithe and Spray Ponds in Foreground.

has been decided to extend the Witbank Power Station by the installation of a fourth 20,000 kilowatt generating set and three additional boilers. This will bring the installed capacity of the generating plant in the Power Station up to 80,000 kilowatts.

The following contracts have been placed in connection with this extension :—

Contractor.	Plant and Work.
C. A. Parsons & Co., Ltd., Newcastle-upon-Tyne ... ..	20,000 k.w. turbo alternator and water cooling plant.
Babcock & Wilcox, Ltd., London ...	Boilers, chimneys and forced and induced draught plant.
Drysdale & Co., Ltd., Glasgow ...	Vertical spindle pump and motor.
A. Stuart, Gerniston ... ..	Excavations, foundations and cooling pond.

A commencement has been made with excavation and foundation work on the site, and it is anticipated that the installation of this additional plant will be completed towards the end of next year.

Since the Commission's last annual report was submitted, the following further contracts have been placed in connection with the Commission's distribution system within its area of supply at Witbank :—

Contracts  
for  
distribution  
system.

Contractor.	Plant and Work.
A. Stuart, Gerniston ... ..	Sub-station and office building at Witbank Township and excavations for cables.
Bartle & Co., Ltd., Johannesburg ...	Transformers.
C. Kelley & Partners, Ltd., Johannesburg ... ..	21 k.v. overhead transmission lines.
E. J. Rowe, Witbank ... ..	Laying of power and pilot cables.

The contracts with Messrs. British Insulated Cables (S.A.), Ltd., for cables and accessories, and with Messrs. A. Reyrolle & Co., Ltd., for sub-station switchgear, have been extended to cover additional cable and switchgear required in connection with the supplies to other consumers since secured.

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Amendment  
of Witbank  
Licence, 1925.

In the Commission's annual report dated 30th June, 1925, a résumé was given of the terms and conditions of the Licence granted to the Commission by the Electricity Control Board on 6th April, 1925, in respect of the Witbank Undertaking. When in January of that year the Commission made application to the Control Board for this Licence, it was not known what consumers would be obtained. In the circumstances, the layout of the local distribution system could not then be determined, and prices for the supply of electricity, including distribution to consumers in the Witbank area, could not be fixed. Arrangements had therefore to be made to specify in the schedule of standard prices the generation costs only and to provide for the addition to be made to such costs for distribution to be subject to the approval of the Electricity Control Board.

After a start had been made with the distribution system the Commission was in a position to submit standard prices, including distribution, which, subject to the provisions of Section 26 of the Electricity Act, 1922, are applicable within its area of supply, and application was accordingly made to the Electricity Control Board on 21st March, 1927, for the amendment of the standard prices in the first schedule to the Witbank Licence, 1925, and for certain other consequential amendments to that Licence. On 29th June, 1927, the Control Board granted the amendments asked for.

Supplies to  
Consumers.

The Commission's 21,000 volt distribution system in the Witbank area consists of 8 miles of underground cables and 12 miles of overhead lines transmitting electricity to sub-stations situated in the Witbank Township and on the respective consumers' premises. The reticulation system in the Witbank Municipal area, which has also been carried out by the Commission, consists mainly of overhead lines for the distribution of electricity to all consumers, residential and otherwise, within the township as well as for street lighting purposes, the pressure of supply being the standard pressure of 380/220 volts.

One large industrial consumer has transferred its works to Witbank to obtain the benefits of the cheap power available there from the Commission's Undertaking. This consumer's works have been completed, and the supply of electricity thereto from the Witbank Power Station was commenced in December, 1926. The supply to consumers within the Township and for street lighting purposes was started in August, 1927.

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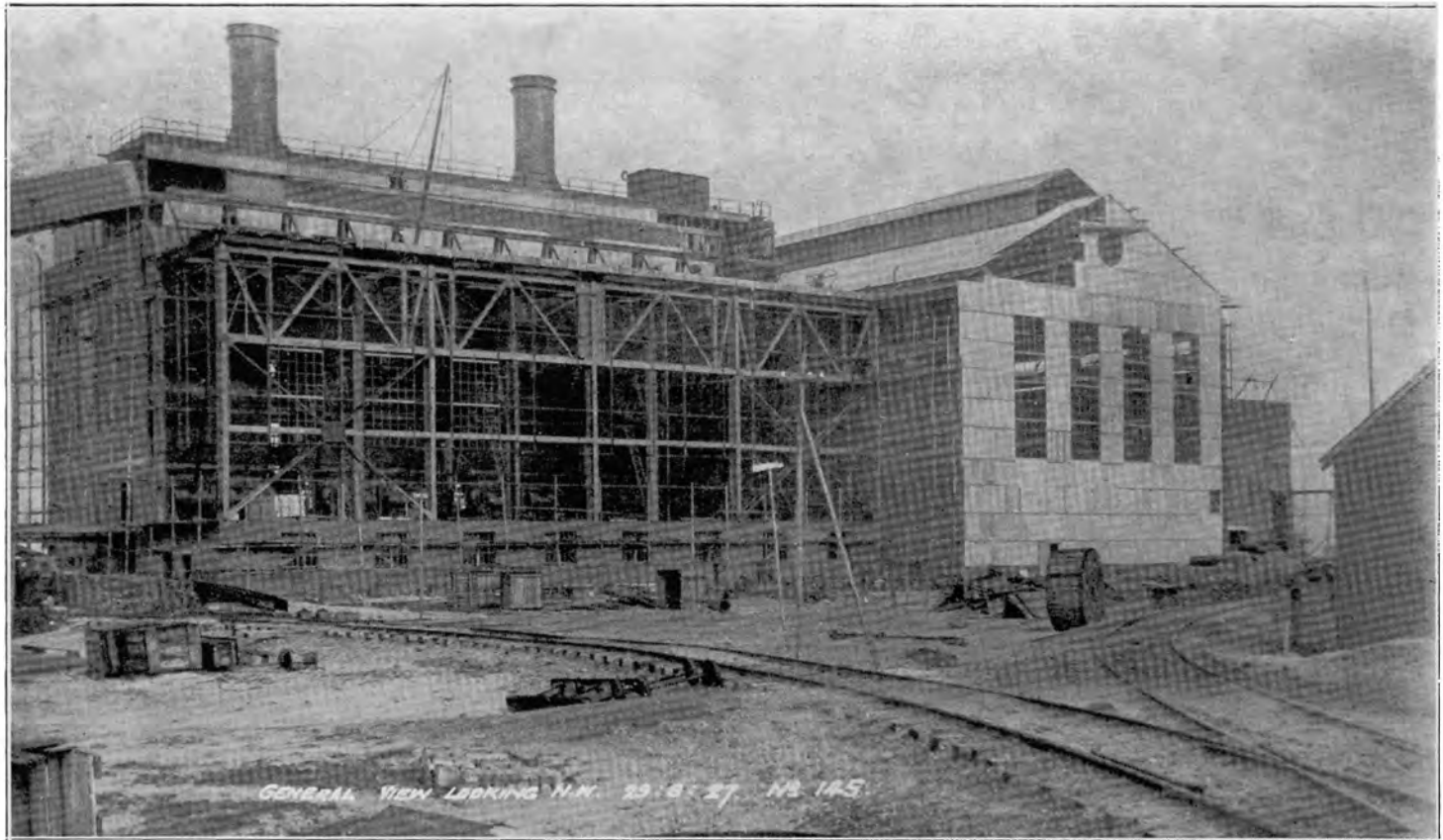
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Four colliery companies have decided to take supplies of electricity from the Witbank Undertaking and the supply to two of them has been commenced.

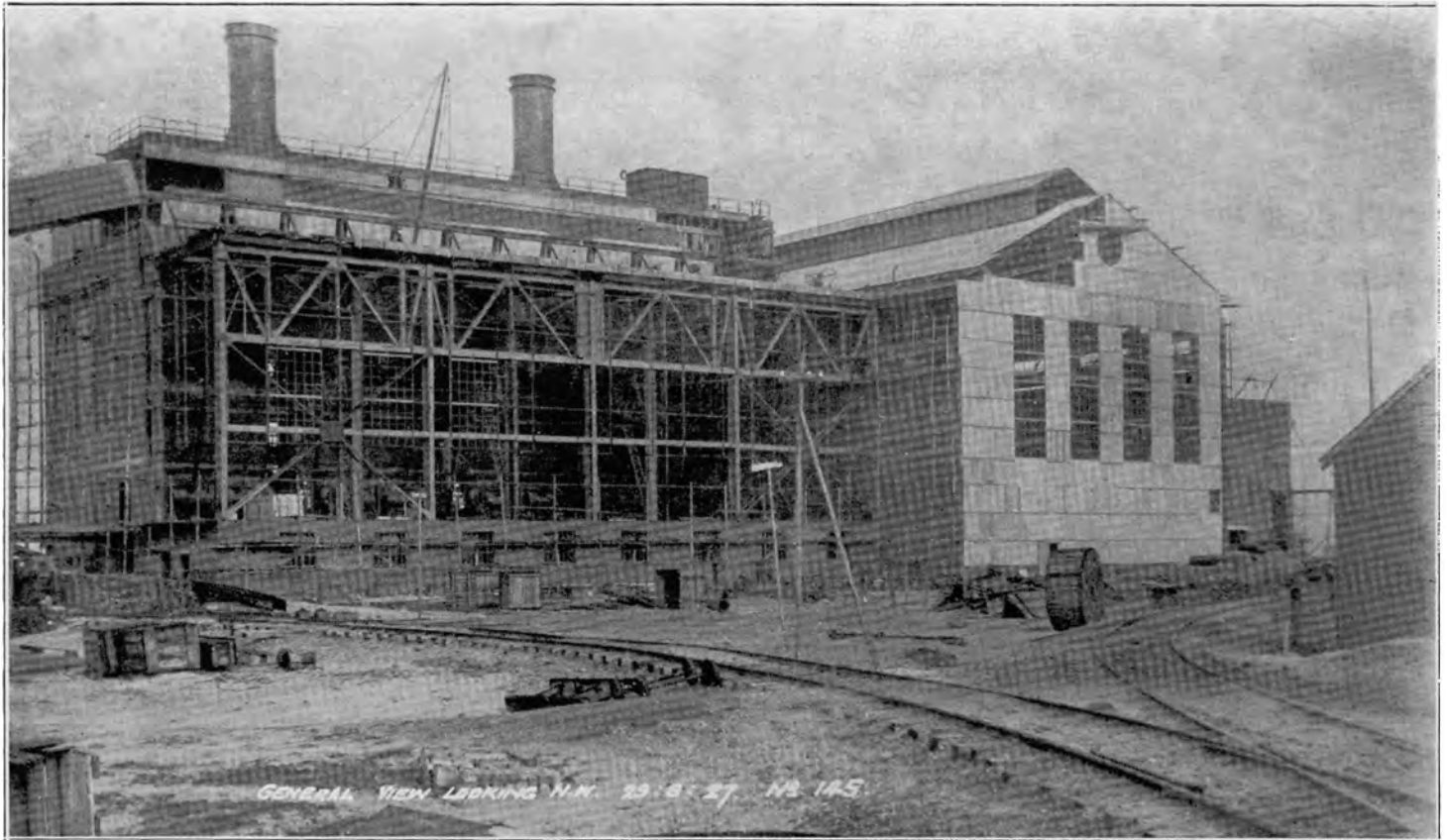
Negotiations are proceeding with other prospective consumers in the district.

The notified maximum demands of the consumers secured to date in the Witbank district aggregate over 4,000 kilovolt amperes.

The Commission's largest consumer is, of course, the Victoria Falls Company, which takes all the surplus electricity that can be generated at the Witbank Power Station. From the date of the starting up of the first generating set on 3rd May, 1926, to 30th June, 1927, this Company had taken no less than 374,158,070 units, notwithstanding that during that period the Power Station had not been sufficiently completed to be placed in commercial service.



Salt River Power Station—Boiler House Extension in Foreground.



Salt River Power Station—Boiler House Extension in Foreground.



## CAPETOWN UNDERTAKING.

The Salt River Power Station consists of three main generating sets of 10,000 kilowatts each and four boilers each of a normal capacity of 60,000 lbs. of steam per hour. The Undertaking also includes a step-up sub-station at the Power Station site, rotary converter sub-stations at Three Anchor Bay, Milnerton Junction, Claremont, Diep River, Muizenberg and Glencairn; 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; duplicate 33,000 volt underground cables connecting the Muizenberg and Glencairn sub-stations, a 33,000 volt underground cable and a 33,000 volt overhead line (the latter being provided by the Railway Administration on the track structures) connecting the step-up sub-station with the sub-stations at Claremont, Diep River and Muizenberg and a 33,000 volt distribution system extending to the Cape Explosive Works at Somerset West and to Wellington.

Electricity is generated at the Salt River Power Station at 12,000 volts, which is also the generation voltage at the Capetown Corporation's Dock Road Power Station with which it is connected.

The main features of this Undertaking were described in the Commission's last annual report.

The capital expenditure on the Capetown Undertaking to 31st December, 1926, amounted to £588,505.

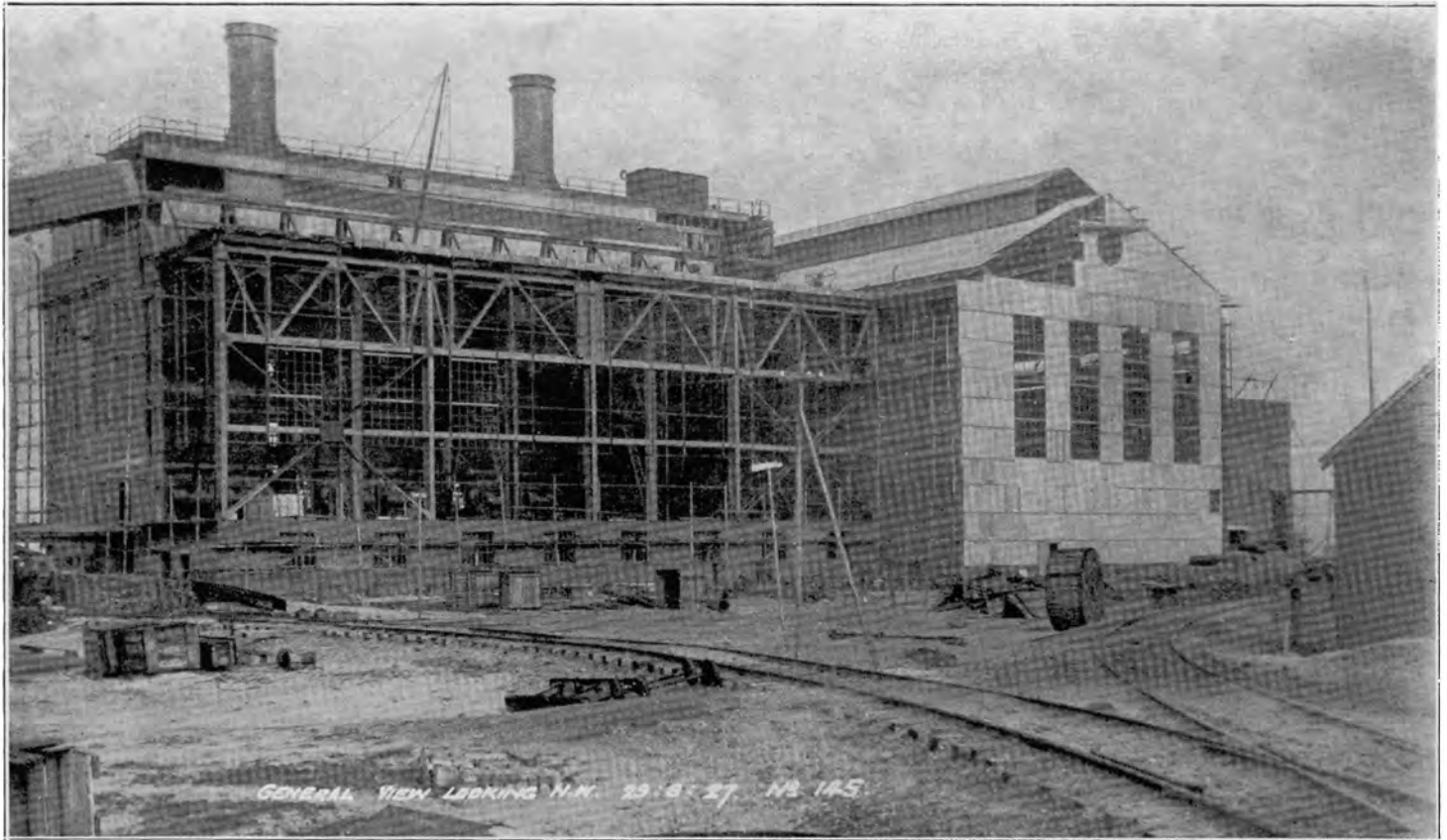
Since the Commission's last annual report was submitted, the following additional contracts have been placed for plant, equipment and work in connection with the Capetown Undertaking:—

Contractor.	Plant and Work.
E. A. Shaw & Co., Capetown ... ..	Power Station lighting installation.
Albert Vaux, Ltd., Capetown ... ..	Turbine oil filtration plant.
S.A. Ironworks, Capetown ... ..	Cast iron specials for circulating water works.

The Salt River Power Station is practically completed, but meanwhile the small load that is being taken on the Sea Point Line can be more economically supplied from the Dock Road Power Station belonging to the Capetown Corporation.

Contracts.

Progress of work.



Salt River Power Station—Boiler House Extension in Foreground.

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Contracts.

Progress of work.

The intake works for sea water for circulating through the condensers is proceeding satisfactorily. Heavy north-west seas at a much earlier date than usual resulted in some of the temporary piling being displaced in April, 1927. Fortunately, no damage was done to the permanent works. Pending the completion of the intake works, use will be made of the spray pond for cooling the circulating water.

The power, pilot and telephone cables have all been delivered, and the laying thereof is practically completed.

The step-up sub-station adjoining the Power Station, where supplies are stepped up from the generation voltage to 33,000 volts for transmission to the traction sub-stations at Claremont, Diep River, Muizenberg and Glencairn and to the rural supply lines to Somerset West and Wellington, is nearing completion.

The sub-station at Three Anchor Bay has been completed and is in use in connection with the service of electric trains which has just been started on the Sea Point Line. The sub-station buildings at Claremont and Diep River have been completed, and work is well advanced with the machinery and equipment in these two sub-stations. The sub-station building at Milnerton Junction has just been completed, and the buildings at Muizenberg and Glencairn are nearing completion.

Reference was made in the Commission's last annual report to the construction of a 33,000 volt distribution system in the Cape rural areas, and to the consumers which had been secured in these areas.

The supply to the Bellville Brick and Tile Works was commenced in June, 1926, to the Paarl Municipality in December, 1926, and to the Cape Explosives Works in September, 1927. Other consumers are now being connected.

Pending the starting up of the Commission's Power Station at Salt River, the supplies to these consumers are, by arrangement, being given from the Capetown Corporation's Power Station at Dock Road.

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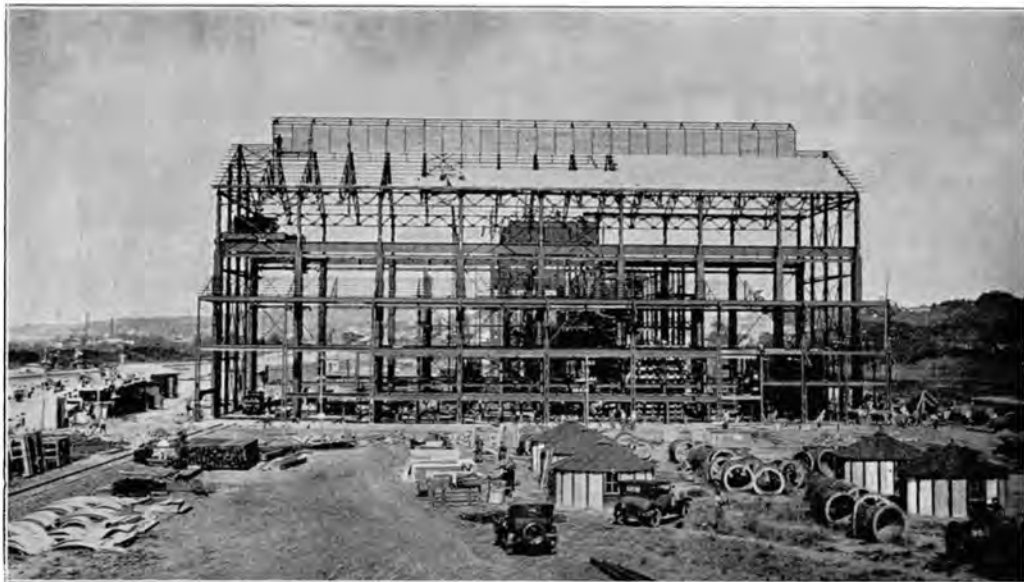
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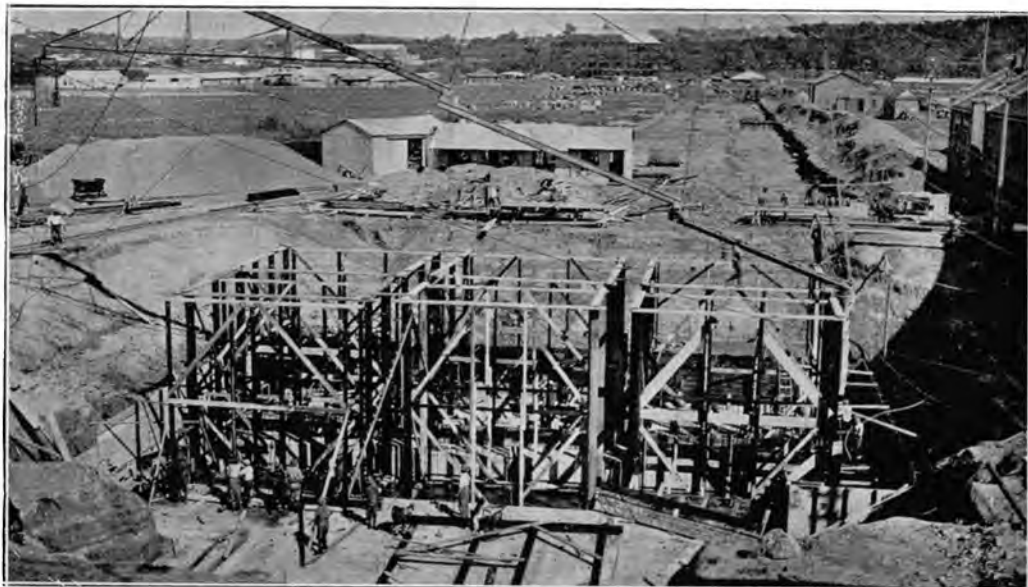


The Commission has been considering the possibility of a hydro-electric scheme at Gordon's Bay, using for the purpose the surplus water available from the Capetown Corporation's augmented Steenbras Scheme, which is now nearing completion. The Capetown Corporation has agreed to the principle of the surplus water available being used by the Commission for the development of electric power. A survey of the scheme has been made and detailed estimates are in course of preparation with a view to determining the economic possibilities of the scheme which, by means of a transmission line from Gordon's Bay to Somerset West, will feed into the Commission's existing distribution system at the latter point. Such a scheme would enable supplies of electricity to be given in Gordon's Bay and the surrounding districts, and would afford an alternative supply to the Cape Explosives Works at Somerset West.

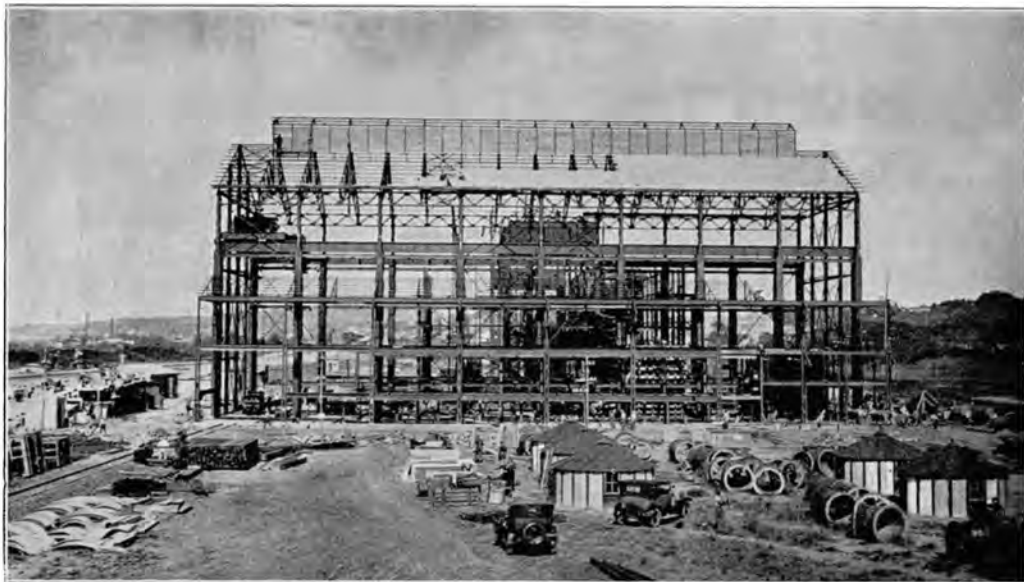
Gordon's  
Bay hydro-  
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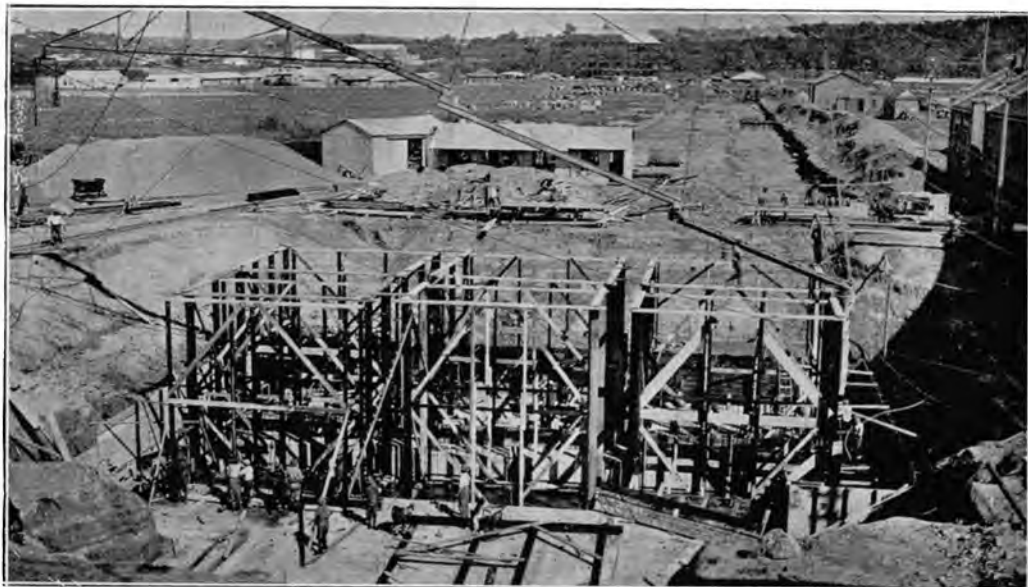
Congella Power Station in course of erection.



Congella Power Station—Pump House in course of construction  
(Power Station in middle distance).



Congella Power Station in course of erection.



Congella Power Station—Pump House in course of construction  
(Power Station in middle distance).

## DURBAN UNDERTAKING.

The Durban Undertaking will consist of a Power Station, the initial installation proposed being 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 main features of this scheme were described in the Commission's last annual report.

The capital expenditure on the Durban Undertaking to 31st December, 1926, amounted to £39,304.

Since the Commission's last annual report was submitted, the following additional contracts have been placed for plant, equipment and work in connection with the Durban Undertaking. Contracts.

Contractor.	Plant and Work.
Stewarts & Lloyds, Ltd., Johannesburg ... ..	Cast iron pipes and joints.
Wright, Boag & Co., Ltd., Johannesburg ... ..	Cast iron specials.
Associated Engineers' Co., Ltd., Johannesburg ... ..	Circulating water pipes.
Dougall & Munro, Ltd., Durban ...	Extension of graving dock quay wall, culvert and tunnel for circulating water intake, pump house and brickwork in connection with Power Station buildings.
A. Stuart, Germiston ... ..	Laying and jointing of circulating water piping, etc.
Blane & Co., Ltd., Johannesburg ...	Penstocks.
S.A. Scale Co., Ltd., Johannesburg ...	Weighbridge.
A. Reyrolle & Co., Ltd., Johannesburg	Power Station cabling.
Metropolitan-Vickers Electrical Co., Ltd., Johannesburg ... ..	Switchgear and motor generator sets for Bailey control.
Gilbert Hamer & Co., Ltd., Durban ...	Steelwork for pump house.

The bulk of the steelwork for this station and the engine-room crane have been erected, and the erection of the generators and boilers is now in hand. The circulating water intake pipes have been laid, the pump house is in course of construction, as is also the intake channel near the entrance to the Graving Dock. A start has been made with the coaling plant. Progress of work.

## DURBAN UNDERTAKING.

The Durban Undertaking will consist of a Power Station, the initial installation proposed being 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.

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An endeavour is being made to start up the first generating set early next year.

Supple-  
mentary  
Agreement  
with Durban  
Corporation.

Reference was made in the Commission's last annual report to the revised arrangements agreed upon between the Commission and the Durban Corporation consequent upon the rapid and progressive increase in the demand for electricity in the Durban area. These arrangements formed the subject of a supplementary agreement entered into on 6th May, 1927, between the Commission and the Durban Corporation.

Licence.

On 17th May, 1927, application was made to the Electricity Control Board for a Licence for the Durban Undertaking, and on 29th June, 1927, the Control Board granted to the Commission a Licence to establish and carry on an undertaking for the supply of electricity at Durban, and for that purpose to construct, operate, use and maintain

- (a) a Power Station on a site, approximately 20 acres in extent, situate on the Congella Lands between the new Graving Dock and the Umbilo Railway Station, together with all plant, machinery and apparatus for generating and delivering, transforming, converting, switching and metering electricity, and all plant, machinery, buildings and works incidental to or required from time to time in connection with the operation and maintenance of the Power Station ;
- (b) such transmission and distribution lines, cables, substations and other equipment and such buildings or other works incidental thereto as may be required from time to time for supplying electricity in the area and to consumers authorised under the Licence.

The Licence provides, inter alia :—

- (i) that the Commission may add to, alter or enlarge the works comprising the Undertaking, provision being made for the rated capacity of the Power Station being increased up to 100,000 kilowatts ;
- (ii) that the area of supply shall be
  - (a) the area from time to time belonging to the South African Railways and Harbours Administration within a radius of 42 miles from the Power Station ;

An endeavour is being made to start up the first generating set early next year.

Supple-  
mentary  
Agreement  
with Durban  
Corporation.

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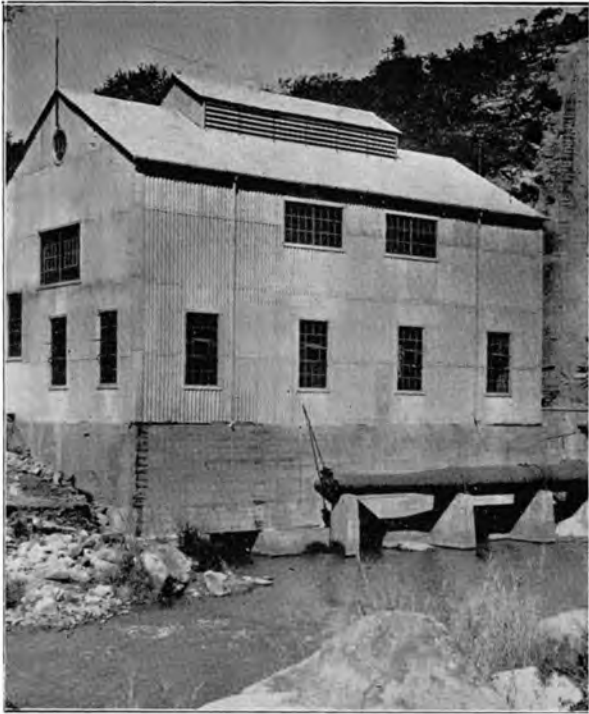
- (a) a Power Station on a site, approximately 20 acres in extent, situate on the Congella Lands between the new Graving Dock and the Umbilo Railway Station, together with all plant, machinery and apparatus for generating and delivering, transforming, converting, switching and metering electricity, and all plant, machinery, buildings and works incidental to or required from time to time in connection with the operation and maintenance of the Power Station ;
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- (ii) that the area of supply shall be
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Sabie Gorge Scheme—Diversion Weir and Intake Works.



Sabie Gorge Power Station.



Sabie Gorge Scheme—Pipe Line  
and Power Station.



An endeavour is being made to start up the first generating set early next year.

Supple-  
mentary  
Agreement  
with Durban  
Corporation.

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- (b) such transmission and distribution lines, cables, substations and other equipment and such buildings or other works incidental thereto as may be required from time to time for supplying electricity in the area and to consumers authorised under the Licence.

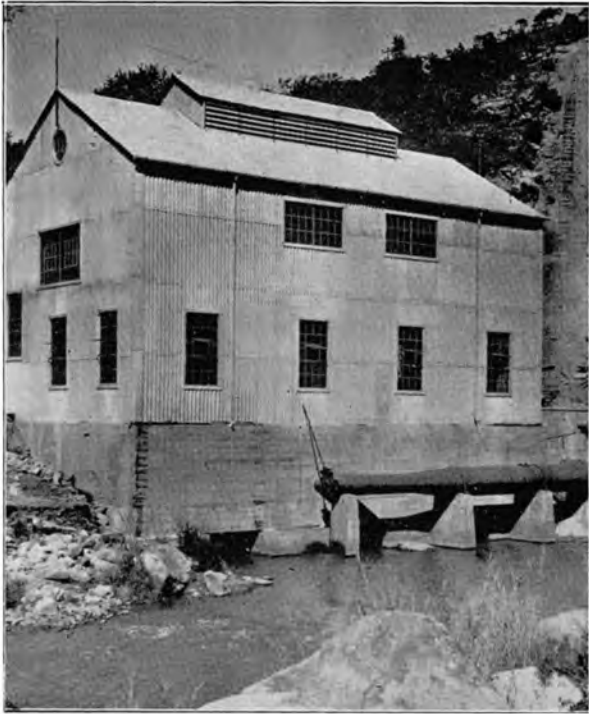
The Licence provides, inter alia :—

- (i) that the Commission may add to, alter or enlarge the works comprising the Undertaking, provision being made for the rated capacity of the Power Station being increased up to 100,000 kilowatts ;
- (ii) that the area of supply shall be
  - (a) the area from time to time belonging to the South African Railways and Harbours Administration within a radius of 42 miles from the Power Station ;

- (b) an area within five miles of any line of railway situate inside a radius of 42 miles from the Power Station as and when any such line of railway is electrified, or as and when, for other reasons, a supply of electricity within such area becomes economically practicable, but exclusive of the area of supply of the Natal Central Undertaking, and exclusive of the area of jurisdiction of any urban local authority and exclusive of the area of supply of any urban local authority outside the area of jurisdiction of such local authority as approved from time to time by the Board, except with the consent of such local authority in either case.
- (iii) that, subject to the provisions of the Electricity Act, 1922, the Commission is authorised and is required to supply electricity to
  - (a) any consumer in the area referred to in (ii), and
  - (b) the Corporation of the Borough of Durban ;
- (iv) that the standard prices to be charged by the Commission shall be those stated in the first schedule to the Licence as amended from time to time in accordance with the provisions of the Electricity Act, 1922.



Sabie Gorge Scheme—Diversion Weir and Intake Works.



Sabie Gorge Power Station.



Sabie Gorge Scheme—Pipe Line  
and Power Station.

## SABIE UNDERTAKING.

The Sabie Undertaking has practically been completed. The Gorge scheme was started up provisionally for testing purposes in March, 1927, and has been in continuous operation since April, 1927. There is still some work to be done, but it is hoped to have the scheme in commercial operation by the end of the year. The Gorge station has an installed capacity of 1,350 kilowatts, made up of three generating sets of 450 kilowatts each. The Malieveld station—a small stop-gap scheme which had been in continuous operation from 1st December, 1925—was closed down in May, 1927, and for the time being remains as a standby to the Gorge Station. A 22,000 volt transmission line conveys the electricity from the Sabie Gorge Power Station to Sabie, and a 3,300 volt distribution line has been erected from the sub-station at Sabie for the supply of electricity to consumers in the Golden Valley area.

The Undertaking was fully described in the Commission's last annual report.

The capital expenditure on the Sabie Undertaking to 31st December, 1926, amounted to £88,945.

Formal contracts for the supply of electricity from the Sabie Undertaking have been concluded with the principal consumers in the district, and it is anticipated that the availability of an adequate supply of electricity for mining, industrial and other purposes will encourage and result in developments in the Sabie district which have previously been hampered owing to the shortage of power.

Electricity has been supplied from the Sabie Undertaking as follows up to 31st August, 1927 :—

	From Malieveld Power Station. Units.	From Sabie Gorge Power Station, Units.	Total. Units.
November, 1925, to 31st December, 1926 ... ..	727,401	—	727,401
1st January to 31st August, 1927 ...	274,335	798,635	1,072,970
Total ... ..	...	...	<u>1,800,371</u>

## MUNICIPAL SCHEMES.

Up to the date of this report 105 Municipal electricity schemes have been reported upon by the Commission in terms of Section 38 of the Electricity Act, 1922, and supplementary reports upon tenders have been submitted in respect of 39 schemes.

During the year 1926, the following schemes were reported upon:—

## CAPE.

Adelaide.	*Dordrecht.	*Queenstown.
Aliwal North	*Fort Beaufort.	*Somerset West.
Barkly East.	George.	Sterkstroom.
Colesburg.	*Hopetown.	Tarkastad.
Cradock.	Middelburg.	Umtata.
De Aar.	*Moorreesburg.	Wellington.
	Paarl.	

## TRANSVAAL.

Klerksdorp.	Rustenburg.	Zeerust.
Koster.	Warmbaths.	

## ORANGE FREE STATE.

Bethlehem.	Fauresmith.	*Rouxville.
Edenburg.	Heilbron.	Senekal.
	Petrus Steyn.	

## NATAL.

Newcastle.	Vryheid.
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## SOUTH-WEST AFRICA PROTECTORATE.

Keetmanshoop.

\* Reports on tenders only.

Of the 105 Municipal electricity schemes reported upon since the establishment of the Commission in March, 1923, i.e., a little over four years ago, no less than 52 were new schemes.

## GENERAL.

In terms of Section 14 of the Electricity Act, 1922, the Commission submits for the year 1926—

- As Annexure " A " :  
The Report of the Auditors.
- As Annexure " B " :  
Balance Sheet, duly audited.
- As Annexure " C " :  
Schedule of Expenditure on Capital Account.
- As Annexure " D " :  
Revenue and Expenditure Account for period 1st September to 31st December, 1926, in respect of the Colenso Undertaking (Local Supplies).
- As Annexure " E " :  
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.

By Order of the Commission,

I have the honour to be,

Sir,

Your obedient servant,



SECRETARY.

**THE REPORT OF THE AUDITORS.**

Johannesburg,  
30th June, 1927.

The Chairman and Members,  
Electricity Supply Commission,  
Johannesburg.

GENTLEMEN,

We have to report that we have audited the Books and Accounts of the Commission for the calendar year 1926, 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 figures in the Balance Sheet must be taken in conjunction with the Note appearing thereon. We desire, further, to make it clear that while the amount of £1,017,296 7s. 5d. shown in the first paragraph of the Note comprises definite commitments at the date of the Balance Sheet, considerable further expenditure, to which the Commission was at that date not definitely committed, will be necessary to complete the Undertakings referred to.

During the year 1926 only one small portion of the Commission's Undertakings was earning revenue in actual full operation. This relates to portion of the local supplies of the Natal Central Undertaking, wherein, under arrangement with the South African Railways and Harbours Administration, power was supplied from the Colenso Generating Station to certain municipalities in Central Natal. This portion of the Undertaking was deemed to come into operation as from 1st September, 1926, and a Revenue and Expenditure Account covering the supply from that date is included in the Accounts. The cost of power supplied by the Railway Administration may still be subject to adjustment.

Power has been produced and supplied to consumers during preliminary working at the Power Stations at Witbank and Sabie. As these stations were not completed or consequently in full operation during the year, the proceeds of such power, after deducting cost of production, will (pending completion of construction) be applied in reduction of the capital cost of the respective Undertakings. A similar position exists in connection with the temporary supply of power to consumers of the Capetown Undertaking, the power being purchased from the Corporation of Capetown by the Commission.

Included in the expenditure on capital account appearing in the Balance Sheet is an amount of £67,973 8s. 3d. representing administrative and other general expenditure which has not as yet been apportioned. This expenditure relates to all Undertakings except the portion of the Natal Central local supplies actually brought into

operation on 1st September, 1926, and will be allocated during 1927. An amount, subject to adjustment, has been allocated to this portion of the Natal Central local supplies to cover the proportion of the general expenditure relating thereto.

Subject to the above and the remarks in Paragraph (c) below, 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) In view of the circumstances dealt with under (b) above, the only provision necessary at 31st December, 1926, for redemption of funds borrowed for capital works relates to that portion of the Natal Central Undertaking in operation in 1926.

The whole of the funds borrowed by the Commission to date have been in the form of advances by the Union Treasury. These advances have been subject to interest, and, in addition, there has been charged the cost of raising the moneys.

The terms on which the advances are made provide that they shall be redeemed not later than 31st December, 1950, but the method of redemption has not been decided. A provisional amount of £37 12s. 8d. has been set aside at 31st December, 1926, on account of the redemption of the sum of £5,029 1s. 1d., being the amount expended on that portion of the Natal Central Undertaking brought into operation on 1st September, 1926. This provisional amount will be recalculated and adjusted when the remainder of the Natal Central Undertaking is in operation under the control of the Commission. Subject to this, we consider that due provision has been made for redemption of moneys borrowed.

- (d) The value of the assets of the Commission is correctly stated.
- (e) The reserve required under Clause 9 of the Electricity Act, 1922, has not yet been established, as, with the exception of a portion of the Natal Central local supplies, no permanent plant has been brought into full operation at 31st December, 1926.
- (f) All our requirements and recommendations as Auditors have been complied with and carried out.

ALEX. AIKEN & CARTER.

B. HALSEY.



# Electricity Supply Commission.

## BALANCE SHEET at 31st DECEMBER, 1926.

LIABILITIES.	ASSETS.
Advance Account ... .. £1,929,330 7 8	Expenditure on Capital Account ... .. £2,090,452 16 1
Treasury of the Union of South Africa.	Capetown Undertaking ... £588,505 8 11
Sundry Creditors ... .. 188,142 13 4	Colenso Undertaking ... .. 6,670 14 9
Interest Fund ... .. £97 9 10	Durban Undertaking ... .. 39,304 4 2
Redemption Fund ... .. 37 12 8	Sabie Undertaking ... .. 88,944 16 0
135 2 6	Witbank Undertaking ... 1,299,054 4 0
	Expenditure for Allocation ... 67,973 8 3
	19,621 8 6
	Sundry Debtors and Payments in Advance ... .. 7,398 16 5
	Cash at Bankers and in Hand ... .. 135 2 6
	Interest and Repayment Fund Bank Account ... ..
£2,117,608 3 6	£2,117,608 3 6

NOTE.—In addition to the liabilities shown above, the Commission is liable to the extent of £1,017,296 7s. 5d. in respect of commitments on contracts not yet completed in connection with the Undertakings at Capetown, Durban, Sabie and Witbank and local supplies in Natal.

The Commission has entered into an agreement with the South African Railways and Harbours Administration under which the Colenso Generating Station (together with main transmission lines and sub-stations) is acquired by the Commission in 1927. The purchase consideration is the capital cost to the Administration at date of transfer, the amount of which has not yet been ascertained.

Johannesburg,  
30th June, 1927.

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

Referred to in our Report of 30th June, 1927.

Johannesburg,  
30th June, 1927.

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

operation on 1st September, 1926, and will be allocated during 1927. An amount, subject to adjustment, has been allocated to this portion of the Natal Central local supplies to cover the proportion of the general expenditure relating thereto.

Subject to the above and the remarks in Paragraph (c) below, 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) In view of the circumstances dealt with under (b) above, the only provision necessary at 31st December, 1926, for redemption of funds borrowed for capital works relates to that portion of the Natal Central Undertaking in operation in 1926.

The whole of the funds borrowed by the Commission to date have been in the form of advances by the Union Treasury. These advances have been subject to interest, and, in addition, there has been charged the cost of raising the moneys.

The terms on which the advances are made provide that they shall be redeemed not later than 31st December, 1950, but the method of redemption has not been decided. A provisional amount of £37 12s. 8d. has been set aside at 31st December, 1926, on account of the redemption of the sum of £5,029 1s. 1d., being the amount expended on that portion of the Natal Central Undertaking brought into operation on 1st September, 1926. This provisional amount will be recalculated and adjusted when the remainder of the Natal Central Undertaking is in operation under the control of the Commission. Subject to this, we consider that due provision has been made for redemption of moneys borrowed.

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- (f) All our requirements and recommendations as Auditors have been complied with and carried out.

ALEX. AIKEN & CARTER.

B. HALSEY.

# Electricity Supply Commission.

## SCHEDULE OF EXPENDITURE ON CAPITAL ACCOUNT to 31st December, 1926.

Expenditure in connection with Electricity Undertakings.	Amount Expended to 31st Dec., 1925.	Amount Expended during 1926.	Total to 31st Dec., 1926.
<b>CAPETOWN UNDERTAKING:</b>			
Land ... ..	£16,030 8 10	£1,139 14 6	£17,170 3 4
Buildings and Other Structures ... ..	45,121 5 0	160,659 19 7	205,781 4 7
Machinery and Plant ... ..	1,015 8 3	275,658 2 1	276,673 10 4
General Expenditure ... ..	35,393 8 6	25,284 19 3	60,678 7 9
Interest during Construction and Cost of Raising Money ... ..	2,354 13 9	25,847 9 2	28,202 2 11
	<b>£99,915 4 4</b>	<b>£488,590 4 7</b>	<b>£588,505 8 11</b>
<b>COLENZO UNDERTAKING:</b>			
Local Supplies in Operation, Buildings, Equipment, Interest, Cost of Raising Money and General Expenditure ... ..	£1,872 18 6	£3,156 2 7	£5,029 1 1
General Expenditure ... ..	—	1,641 13 8	1,641 13 8
	<b>£1,872 18 6</b>	<b>£4,797 16 3</b>	<b>£6,670 14 9</b>
<b>DURBAN UNDERTAKING:</b>			
Land ... ..	—	£8,750 0 0	£8,750 0 0
Buildings and Other Structures ... ..	—	8,024 2 7	8,024 2 7
Machinery and Plant ... ..	—	420 3 2	420 3 2
General Expenditure ... ..	£8,539 0 3	11,463 0 10	20,002 1 1
Interest during Construction and Cost of Raising Money ... ..	277 15 4	1,830 2 0	2,107 17 4
	<b>£8,816 15 7</b>	<b>£30,487 8 7</b>	<b>£39,304 4 2</b>
<b>SABIE UNDERTAKING:</b>			
Land ... ..	£510 0 0	—	£510 0 0
Buildings and Other Structures ... ..	2,936 17 8	£36,050 19 5	38,987 17 1
Machinery and Plant ... ..	20,283 16 1	14,768 4 0	35,052 0 1
General Expenditure ... ..	6,100 16 8	4,071 17 2	10,172 13 10
Interest during Construction and Cost of Raising Money ... ..	313 10 3	3,908 14 9	4,222 5 0
	<b>£30,145 0 8</b>	<b>£58,799 15 4</b>	<b>£88,944 16 0</b>
<b>WITBANK UNDERTAKING:</b>			
Capital Cost of Power Station, including Land, Buildings, Machinery and Plant, etc., <i>Less</i> Revenue derived from Sales of Water and Electricity during Construction ... ..	£744,648 3 8	£444,966 17 2	£1,189,615 0 10
Local and Municipal Supplies—			
Land ... ..	—	79 15 0	79 15 0
Buildings and Other Structures ... ..	—	1,409 6 0	1,409 6 0
Machinery and Plant ... ..	—	18,869 1 11	18,869 1 11
General Expenditure ... ..	2,875 18 6	1,621 3 6	4,497 2 0
Interest during Construction and Cost of Raising Money ... ..	4,623 3 3	79,960 15 0	84,583 18 3
	<b>£752,147 5 5</b>	<b>£546,906 18 7</b>	<b>£1,299,054 4 0</b>
<b>EXPENDITURE FOR ALLOCATION:</b>			
Administration Expenses ... ..	£36,763 6 1	£14,363 0 3	£51,126 6 4
Auditors' Fees and Expenses ... ..	385 16 11	362 9 6	748 6 5
Consulting Engineers' Fees and Expenses: General	3,185 13 3	1,004 16 1	4,190 9 4
Furniture and Office Equipment (Head Office) ...	3,011 0 8	1,590 10 5	4,601 11 1
Legal Expenses: General ... ..	109 10 0	—	109 10 0
Insurance Premiums ... ..	25 3 3	62 2 4	87 5 7
Interest during Construction and Cost of Raising Money: General ... ..	3,015 1 3	4,094 18 3	7,109 19 6
	<b>£46,495 11 5</b>	<b>£21,477 16 10</b>	<b>£67,973 8 3</b>
<b>SUMMARY:</b>			
CAPETOWN UNDERTAKING ... ..	<b>£99,915 4 4</b>	<b>£488,590 4 7</b>	<b>£588,505 8 11</b>
COLENZO UNDERTAKING ... ..	<b>1,872 18 6</b>	<b>4,797 16 3</b>	<b>6,670 14 9</b>
DURBAN UNDERTAKING ... ..	<b>8,816 15 7</b>	<b>30,487 8 7</b>	<b>39,304 4 2</b>
SABIE UNDERTAKING ... ..	<b>30,145 0 8</b>	<b>58,799 15 4</b>	<b>88,944 16 0</b>
WITBANK UNDERTAKING ... ..	<b>752,147 5 5</b>	<b>546,906 18 7</b>	<b>1,299,054 4 0</b>
EXPENDITURE FOR ALLOCATION ... ..	<b>46,495 11 5</b>	<b>21,477 16 10</b>	<b>67,973 8 3</b>
	<b>£939,392 15 11</b>	<b>£1,151,060 0 2</b>	<b>£2,090,452 16 1</b>

# Electricity Supply Commission.

## COLENZO UNDERTAKING (LOCAL SUPPLIES).

Dr. Revenue and Expenditure Account for the Period 1st September, 1926, to 31st December, 1926. Cr.

Dr.		Cr.	
<p>To Power Purchased from South African Railways and Harbours ... .. £1,015 16 6</p> <p>„ Capital Charges ... .. 135 2 6</p> <p>„ Interest on Capital Cost <i>5.018</i> .. £97 9 10</p> <p>„ Redemption of Capital Cost <i>1.937</i> 37 12 8</p> <p>„ Administration Expenses ... .. 15 18 0</p> <p>„ Fire Insurance ... .. 1 14 7</p> <p style="text-align: right; border-top: 1px solid black;">£1,168 11 7</p>	<p style="text-align: right; margin-right: 20px;"><i>122 days</i></p> <p>By Sales of Electrical Energy (to Municipalities 371,529 units) ... .. £1,168 11 7</p> <p style="text-align: right; border-top: 1px solid black;">£1,168 11 7</p>		

Johannesburg,  
3rd May, 1927.

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

Referred to in our Report of 30th June, 1927.

Johannesburg,  
30th June, 1927.

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

# Electricity Supply Commission.

## COLENZO UNDERTAKING (LOCAL SUPPLIES).

Dr. Revenue and Expenditure Account for the Period 1st September, 1926, to 31st December, 1926. Cr.

Dr.		Cr.	
<p>To Power Purchased from South African Railways and Harbours ... .. £1,015 16 6</p> <p>„ Capital Charges ... .. 135 2 6</p> <p>„ Interest on Capital Cost <i>5.018</i> .. £97 9 10</p> <p>„ Redemption of Capital Cost <i>1.937</i> 37 12 8</p> <p>„ Administration Expenses ... .. 15 18 0</p> <p>„ Fire Insurance ... .. 1 14 7</p> <p style="text-align: right; border-top: 1px solid black;">£1,168 11 7</p>	<p>By Sales of Electrical Energy (to Municipalities 371,529 units) ... .. £1,168 11 7</p> <p style="text-align: right; border-top: 1px solid black;">£1,168 11 7</p>		

Johannesburg,  
3rd May, 1927.

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

Referred to in our Report of 30th June, 1927.

Johannesburg,  
30th June, 1927.

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

# Electricity Supply Commission.

ANNEXURE "E."

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, 1926.

Area.			Farm.	District.	Title.	Purchase Price or Rental.	Acquired From.	Purpose For Which Required.	
Morgen.	Sq. Roods.	Sq. Feet.							
<b>CAPETOWN UNDERTAKING.</b>									
9	210	—		Lot P.12, Paarden Island, C.P.	Freehold	£15,567 3 2	Capetown Corporation	Power Station Site.	
2	540	—		Lot Super Power Station, Salt River Mouth, C.P.	Government Grant	100 0 0	Govt. of Union of S.A.		
—	477	52		Lot A, Huguenot, C.P.	Freehold	350 0 0	P. Goldberg		Sub-station Site.
—	274	37		Diep River, C.P.	Freehold	250 0 0	C. D. B. Stiles		Sub-station Site.
—	76	128		Three Anchor Bay, C.P.	Leasehold	1 0 0	Capetown Corporation		Sub-station Site.
—	8	79		Lot 3B, Bellville, C.P.	Freehold	180 0 0	E. C. Edwards		Sub-station and Depôt Site.
—	561	140		Lot C, Ronde Vlei, C.P.	Freehold	60 0 0	J. L. Berkeley		Sub-station and Depôt Site.
—	95	108		Bellville, C.P. Glencairn, C.P.	Government Grant Government Grant	75 0 0 25 0 0	Govt. of Union of S.A. Govt. of Union of S.A.		Sub-station Site. Sub-station Site.
<b>SABIE UNDERTAKING.</b>									
			Bergvliet No. 397	Pilgrims Rest, Transvaal	Water Right (Sabie River)		Water Court, District No. 22, Transvaal	Hydro-electric Power Station.	
			Bergvliet No. 397	Pilgrims Rest, Transvaal	Servitudes of Abutment, Acqueduct, Storage, Right-of-Way, etc.	500 0 0	S. H. Coetzee	Dam, Water Race, Pipeline, Power Station and Auxiliary Works.	
			Grootfontein No. 29	Pilgrims Rest, Transvaal	Surface Right Permit		Dept. of Mines	Overhead Power Line and Sub-station.	
			Rietfontein No. 84	Pilgrims Rest, Transvaal	Surface Right Permit		Dept. of Mines	Overhead Power Line and Roadway.	
			Rietfontein No. 84	Pilgrims Rest, Transvaal	Surface Right Permit		Dept. of Mines	Roadway.	
<b>WITBANK UNDERTAKING.</b>									
67	26	—	Witbank No. 141, Portion R	Middelburg, Transvaal	Freehold, excluding all Rights to Coal	271 10 0	Witbank Colliery, Ltd.	Power Station Site.	
44	269	—	Joubertsrust No. 554, Portions J and M	Middelburg, Transvaal	Freehold, excluding all Rights to Coal		Witbank Colliery, Ltd.	Railway Sidings and Loops, Open Drains, Power Conductors, Reservoir Site, and Access.	
			Joubertsrust No. 554 and Witbank No. 141	Middelburg, Transvaal	Servitudes and Rights-of-Way			Dam and Works.	
11	248	—	Doornpoort No. 196, Portion S.2	Middelburg, Transvaal	Servitude in Perpetuity			Submerged Ground.	
259	—	—	Doornpoort No. 196, Portion S.1	Middelburg, Transvaal	Servitude of Storage in Perpetuity	2,750 0 0	Transvaal and Delagoa Bay Investment Co., Ltd.	Gauging Weir.	
—	42	—	Doornpoort No. 196, Portion S.3	Middelburg, Transvaal	Servitude in Perpetuity			Access.	
7	505	—	Doornpoort No. 196, Zeekoewater No. 520, Portion S.1 of Portion A	Middelburg, Transvaal	Right-of-Way. Servitude of Storage in Perpetuity	150 0 0	J. P. Reyneke	Submerged Ground.	
			Zeekoewater No. 520, Portion A	Middelburg, Transvaal	Right-of-Way in Perpetuity.			Access for Transvaal and Delagoa Bay Investment Co., Ltd.	
			Zeekoewater No. 520, Portion A	Middelburg, Transvaal	Servitude of Right-of-Way in Perpetuity	50 0 0	J. P. Reyneke	Roadway giving Access to Dam, including Joint Use of Portion of Roadway with Transvaal and Delagoa Bay Investment Co., Ltd.	
			Zeekoewater No. 520, Portion A	Middelburg, Transvaal	Servitude of Right-of-Way in Perpetuity	250 0 0	J. P. Reyneke	Power Conductors, Water Pipeline and Access.	
			Zeekoewater No. 520, Portion B	Middelburg, Transvaal	Servitude of Right-of-Way in Perpetuity	600 0 0	P. J. D. Steenkamp	Power Conductors, Water Pipeline and Access.	
			Klipfontein No. 60, Portion E +	Witbank, Transvaal	Servitude of Right-of-Way in Perpetuity		S.A. Coal Estates (Witbank), Ltd.	Railway Siding and Loop.	
			Blesboklaagte No. 29	Witbank, Transvaal	Servitude in Perpetuity	60 0 0	M. C. Pretorius	Underground Cables.	

*H. M. Kek*  
*1-11-1927*

Electricity Supply Commission.

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# ANNUAL REPORT

of the

# COMMISSION

for the

Year ended 31st December, 1926,

with a

brief review of its activities

up to

30th September, 1927.

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Radford, Adlington, Ltd., Printers,  
Johannesburg.

1927.

MEMBERS OF THE  
**Electricity Supply Commission.**

---

DR. HENDRIK JOHANNES VAN DER BIJL, Chairman.

JAMES RENWICK FULTON.

ALBERT MICHAEL JACOBS.



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# Electricity Supply Commission.

Electricity House,  
82, Marshall Street,  
Johannesburg,

30th September, 1927.

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 fourth annual report—for the year ended 31st December, 1926, together with a brief review of its activities up to the date of this report.

During the year 1926 a large amount of preliminary work was completed, the Witbank Power Station was started up and substantial progress made with construction work at that station and on the several other electricity Undertakings in hand by the Commission. Additional contracts have been entered into with consumers, and several other agreements negotiated, including an agreement with the Railway Administration for the acquisition by the Commission of the Colenso Power Station, transmission lines extending from Glencoe Junction to Pietermaritzburg, and the traction sub-stations forming part of the Natal railway electrification scheme, which were taken over by the Commission on 15/16th January of this year.

The year 1926 marks the commencement of supplies of electricity by the Commission, though on a comparatively small scale and principally from Undertakings still in the construction stage. As has been explained in earlier reports, several consumers within the areas of supply of the Commission's Undertakings had reached the stage when they had either to purchase electricity or instal new or additional generating plants of their own, and in order to meet the requirements of such consumers the Commission arranged either to press forward construction work on portions of its own plant so as to afford temporary relief or to purchase electricity for distribution to such consumers.

Electricity  
supplied.

Twelve consumers were supplied with electricity during the year or portion thereof, the total sales amounting to 161,758,522 units. made up as follows:—

Undertaking.	Date Supplies Started.	Units Sold, 1926.
Natal Central ... ..	March, 1926	719,666
Witbank ... ..	May, 1926	160,031,213
Capetown (Rural Supply Scheme) ...	May, 1926	280,242
Sabie (includes 75,943 units supplied in 1925) ... ..	November, 1925	727,401
Total ... ..		<u>161,758,522</u>

This is about the same number of units as were sold in 1926 by the three largest Municipal Electricity Undertakings in South Africa, viz., Johannesburg, Durban and Capetown, taken together.

In the case of the Natal Central Undertaking the supplies were purchased by the Commission from the Railway Administration and re-sold to consumers in terms of a Permit granted to the Commission by the Electricity Control Board on 26th June, 1925. The supplies from the Witbank and Sabie Undertakings were given while construction work was in progress, and in the case of the Capetown Undertaking (Rural Supply Scheme) the electricity is, by arrangement, being supplied by the Capetown Corporation pending the starting up of the Commission's power station at Salt River.

Commission's  
Under-  
takings.

The Undertakings acquired and being established by the Commission are as follows:—

(The Natal Central Undertaking is the only one acquired.)

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

An additional 20,000 kilowatt set and three additional boilers are being installed at Witbank which will bring up the plant capacity of that station to 80,000 kilowatts.

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

Summary of principal equipment installed or on order.

#### GENERATING PLANT.

(Including House Turbine Sets at Witbank and Capetown.)

No. of Sets.	Total Kilowatts installed or to be installed.	Total Kilovolt Amperes installed or to be installed.
22	209,000	243,000

#### BOILER PLANT.

No. of Boilers.	Total Capacity in Lbs. of Steam per Hour (normal rating).
35	2,250,000 lbs.

#### OVERHEAD TRANSMISSION LINES AND CABLES.

	88,000 volts Route Miles.	33,000 volts Route Miles.	22,000 volts Route Miles.	Under 22,000 volts Route Miles.	Total Route Miles.
Overhead Lines ...	275	61	24	8	368
Cables ...	—	28	8	6	42
Total ...	275	89	32	14	410

#### TELEPHONE LINES AND CABLES.

Overhead Lines. Route Miles.	Cables. Route Miles.	Total. Route Miles.
13	27	40

#### TRANSFORMERS.

(Step-up and Step-down.)

Total capacity installed or to be installed	Kilovolt Amperes.
... ..	298,000

#### TRACTION SUB-STATIONS.

No. of Sub-stations	Motor Generator Sets. No. of Sets.	Rating Kilowatts.	Rotary Converters. No. of Sets.	Rating Kilowatts.	Total. No. of Sets.	Rating Kilowatts.
18	22	44,000	12	24,000	34	68,000

#### NUMBER OF STAFF QUARTERS.

Married and Single Quarters	... ..	85
-----------------------------	--------	----



Colenso Power Station.



New Leigh Sub-Station.

## NATAL CENTRAL UNDERTAKING.

The Natal Central Undertaking consists of a Power Station at Colenso with a total installed capacity of 60,000 kilowatts; 275 miles of 88,000 volt transmission line, 13 main sub-stations, and other buildings and apparatus.

The Power Station, sub-stations, and transmission system comprising this Undertaking were constructed by the Railway Administration as part of the work involved in the conversion from steam to electric traction of the section of the Natal Main Line from Glencoe Junction to Mason's Mill, near Pietermaritzburg, which was authorised by Parliament in 1922. The Undertaking was started up in commercial service in three stages, the working of a complete service of electric trains over the whole section from Glencoe Junction to Pietermaritzburg having been commenced on 18th April, 1926

At the date of the Commission's last annual report, an agreement was being negotiated with the South African Railways and Harbours Administration for the acquisition by the Commission of what was then known as the Colenso Undertaking. These important negotiations occupied some time, and on 24th December, 1926, an agreement was concluded between the Minister of Railways and Harbours and the Commission providing for the taking over of the Undertaking by the Commission on a date to be agreed.

Acquisition  
of Under-  
taking by  
Commission.

The date of transfer was subsequently fixed for midnight on 15/16th January, 1927, and on that date the Undertaking, which is now known as the Natal Central Undertaking, was taken over by the Commission.

The Commission's proposals in connection with the acquisition of the Colenso Undertaking were submitted to you for approval, in terms of Section 5 of the Electricity Act, 1922, under separate report, dated 3rd August, 1926, and these proposals were approved by you on 11th September, 1926.

The agreement between the Administration and the Commission provides, *inter alia* :

- (a) for payment of the capital cost of the Undertaking as at date of transfer being made by the Commission in terms of Section 19 of the Financial Adjustments Act, 1925, and also for payment being made of all expenditure incurred by the Administration on uncompleted contracts or departmental works, and of an amount, to be agreed, in respect of railage and harbour charges at public tariff rates on the materials, plant and equipment comprising the Undertaking, and in respect of any land necessarily forming part of, but not included in, the capital cost of the Undertaking;
- (b) for the Administration being responsible for the completion of all contracts and departmental works which had not, at the date of transfer, been completed;
- (c) for the Commission taking over all staff employed by the Administration on the Undertaking as at the date of transfer;
- (d) for the supply of electricity by the Commission to the Administration for traction and other purposes along the route of the Natal Main Line between Glencoe Junction and Pietermaritzburg, for the extension of the Undertaking or of the plant capacity thereof as may be necessary from time to time to meet increases in the Administration's requirements;
- (e) for co-operation between the Administration and the Commission with a view to securing the most efficient, economic and successful operation and development of the Undertaking and of the Administration's electric traction scheme;
- (f) for the agreement remaining in force so long as the Commission remains the Authorised and Licensed Undertaker, in terms of the Electricity Act, 1922, for this Undertaking.

The Colenso Power Station is situated on the south bank of the Tugela River close to Colenso Railway Station, water for boiler feed and for the circulating water system being obtained from the Tugela River.

The installed capacity of the Power Station is 60,000 kilowatts on maximum continuous rating. The generating plant consists of five 12,000 kilowatt turbo alternators which are each designed to carry 20,000 kilowatts for two minutes at a time. The steam raising

plant consists of eight boilers, each having a normal evaporation of 60,000 lbs. of steam per hour, but capable, when required, of working continuously at 25 per cent. overload.

Space has been provided in the engine room for a sixth generating set.

There is a workshop and a store attached to the Power Station. There is also a small hospital for natives near the Power Station site.

As housing accommodation was not available in the Colenso Township the Administration had to build quarters for the staff and also a Native Compound. There are 36 brick residences, but as these were insufficient, 10 wood and iron houses and two blocks of single quarters used during the construction period had to be retained for the accommodation of the permanent staff. The single quarters and some of the wood and iron houses are not in a fit condition to be occupied, and it is proposed to build additional brick houses for married men and proper permanent quarters for the single men.

Electricity is generated as three-phase alternating current at a frequency of 50 cycles per second and a pressure of 6,600 volts.

Adjoining the Power Station at Colenso is an outdoor sub-station, where the electricity is stepped up from 6,600 volts to 88,000 volts, at which pressure it is transmitted to the sub-stations along the route by means of duplicate 88,000 volt overhead transmission lines carried on steel towers which extend from Colenso in a northerly direction to Glencoe Junction and in a southerly direction to Pietermaritzburg. The two transmission lines follow alternative routes more or less parallel and converge at the traction sub-stations, to which connections are made from both lines.

The transmission system is divided into three sections. viz. :—

Glencoe Junction—Colenso,

Colenso—New Leigh,

New Leigh—Pietermaritzburg,

sectioning equipment being provided at Colenso and New Leigh sub-stations. Either line may be in use on any one section, irrespective of which line is in use on the other two sections.



Apart from the step-up sub-station adjoining the Power Station at Colenso there are 12 traction sub-stations situated at :

1. Glencoe Junction
2. Wessels Nek
3. Daimana
4. Colenso
5. Frere
6. Estcourt
7. Willbrook
8. New Leigh
9. Nottingham Road
10. Lidgetton
11. Cedara
12. Pietermaritzburg.

These traction sub-stations, with the exception of the one at Colenso, are equipped with outdoor transformers for stepping down the electricity from 88,000 to 6,600 volts, at which pressure it is led into the sub-station buildings, where, by means of motor generator sets, it is converted from alternating to direct current for traction purposes. The sub-station motor generator units each have a capacity of 2,000 kilowatts direct current. The traction supply is delivered from the sub-stations to the feeders to the overhead track conductors by means of underground cables at a pressure of 3,000 volts direct current.

Each sub-station, in addition to providing direct current at 3,000 volts for traction purposes, is a distribution centre from which three-phase alternating current can be supplied for industrial and other purposes.

The sub-station at Estcourt is a three-unit station; those at Glencoe Junction, Wessels Nek, Daimana, Colenso, New Leigh, Lidgetton and Pietermaritzburg are two-unit stations; and those at Frere, Willbrook, Nottingham Road and Cedara are single-unit stations.

Extension  
of  
Undertaking.

Prior to the acquisition of the Undertaking by the Commission, the Administration had under consideration a recommendation by its Consulting Engineers for the extension of the Undertaking to

meet anticipated increases in traffic beyond the tonnage for which the scheme was designed. This question was referred to the Commission by the Administration as one of considerable urgency and, prior to the actual date of transfer, the Commission commenced an investigation as to the necessity for and the extent of the extensions to meet the Administration's estimated traffic requirements and the requirements of the Commission's other consumers in Natal.

As a result of this investigation it was decided, in consultation with the Administration,

- (a) to extend the boiler house at the Colenso Power Station to provide for the accommodation of four more boilers ;
- (b) to proceed at once 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, a duplicate of the set already installed.

The following contracts have been placed in connection with this extension :—

Contractor.	Plant and Work.
Reunert & Lenz, Ltd., Johannesburg	Boilers and accessories.
Wilson & Herd, Ltd., Johannesburg ...	Motor generator set, transformer, switchgear and accessories for Willbrook Sub-station.
Wade & Dorman, Ltd., Johannesburg	Structural steelwork for boiler house and Willbrook Sub-station extension.
A. Stuart, Germiston ... ..	Excavations, foundations and building work at Colenso and Willbrook.

Work in connection with the extension of the boiler house at Colenso and the Willbrook sub-station is proceeding.

On the basis of the Administration's estimates of the probable traffic to be handled over the electrified line during the next few years, it would appear that two additional boilers and additional sub-station equipment are likely to be required within a comparatively short time if the Administration's anticipations as to the growth of traffic are realised.

Other works  
to be  
carried out.

As already mentioned, improved and additional housing accommodation is necessary to accommodate properly the present staff. Under the Administration's organisation, the Headquarters of the Distribution Department were situated at Estcourt, due partly to the absence of adequate office and housing accommodation at Colenso. As this arrangement was a provisional one the Distribution Department was accommodated in temporary wood and iron offices at Estcourt, where a temporary wood and iron store for distribution equipment was also erected.

After careful investigation the Commission decided to make Colenso the Headquarters of the Undertaking and to place the Power Station and the Distribution Department under centralised control there. This will necessitate the building of new offices for the Resident Engineer and the Distribution Headquarters Staff, a new store (the present stores accommodation being inadequate), a test house and quarters for the Distribution Staff. It will also be necessary to build new Recreation Rooms, as the present wood and iron buildings, erected for the Construction Staff, are inconveniently situated for the Permanent Staff and are in a dilapidated condition.

Licence.

On 21st March, 1927, formal application was made to the Electricity Control Board for a licence for the Natal Central Undertaking in substitution for the Permit granted to the Commission by the Control Board on 26th June, 1925, for the re-sale of electricity purchased from the Administration.

On 29th June, 1927, the Control Board granted the Commission a Licence to acquire and carry on an Undertaking for the supply of electricity in the Central area of the Province of Natal, and for that purpose

- (a) to acquire from the Administration, operate, use and maintain
  - (i) a Power Station situate on the south bank of the Tugela River, close to the Colenso Railway Station, together with all plant, machinery and apparatus for generating and delivering, transforming, converting, switching and metering electricity, and all plant, machinery, buildings and works incidental to or required in connection with the operation and maintenance of the Power Station;

- (ii) duplicate overhead 88,000 volt transmission lines between Pietermaritzburg and Glencoe Junction connecting the Power Station with the sub-stations referred to in paragraph (iii) ; and
  - (iii) twelve sub-stations situated at Glencoe Junction, Wessels Nek, Daimana, Colenso, Frere, Estcourt, Willbrook, New Leigh, Nottingham Road, Lidgetton, Cedara and Pietermaritzburg, together with all plant, machinery and apparatus for transforming, converting, switching, metering and delivering electricity, and all buildings and other works incidental to or required in connection with the operation and maintenance of the sub-stations ; and
- (b) to carry out the terms and conditions of the agreement dated 24th December, 1926, between the Commission and the Administration.

The Licence provides, inter alia :—

- (1) that the Commission may add to, alter or enlarge the works comprising the Undertaking, provision being made for the rated capacity of the Power Station being increased up to 100,000 kilowatts ;
- (2) that the area of supply shall be
  - (i) the area from time to time belonging to the Administration along the route of the electrified section of the Natal Main Line between Pietermaritzburg and Glencoe Junction and of any other section of line to which the existing railway electrification scheme may be extended and to which electricity can economically be supplied from the Natal Central Undertaking ;
  - (ii) an area within eight miles of the electrified section of the Natal Main Line of railway between Pietermaritzburg and Glencoe Junction and of any other section of line to which the existing railway electrification scheme may be extended, exclusive of the area of jurisdiction of any urban local

authority and exclusive of the area of supply of any urban local authority outside the area of jurisdiction of such local authority, as approved from time to time by the Board, except with the consent of such local authority in either case;

- (3) that, subject to the provisions of the Electricity Act, 1922, the Commission is authorised and required to supply electricity to
- (i) any consumer in the area referred to in paragraph (2) ; and
  - (ii) the South African Railways and Harbours Administration upon the terms and conditions set out in the agreement dated 24th December, 1926, between the Commission and the Administration ;
- (4) that the standard prices to be charged by the Commission shall be those stated in the first schedule to the Licence as amended from time to time in accordance with the provisions of the Electricity Act, 1922.

Supplies to  
Consumers.

Reference has been made in previous reports to the supply of electricity to consumers along the route of the electrified section of the Natal Main Line, which was commenced by the Commission prior to and in contemplation of the transfer of the whole Undertaking from the Administration to the Commission.

In its last annual report, the Commission referred to the agreements entered into with the Municipalities of Pietermaritzburg, Ladysmith and Estcourt, and with the Glencoe Local Board. Since the date of that report, negotiations with the Government School of Agriculture at Cedara for a supply of electricity have been completed and a formal agreement has been concluded with the Government in connection with this supply.

The supply of electricity to the Municipalities of Ladysmith and Estcourt was commenced in March, 1926, and to the Glencoe Local Board in August, 1926. The supply to the Pietermaritzburg Municipality was commenced in June, 1927, and the supply to Cedara School of Agriculture will be commenced shortly.

Arrangements are in progress for the lighting of the Township of Colenso, and negotiations with other prospective consumers along the line between Pietermaritzburg and Glencoe Junction are proceeding.

Since the taking over of the Natal Central Undertaking by the Commission the operation has been satisfactory and record tonnages above those for which the scheme was designed have been handled. General.

The Commission has been fortunate in taking over with the Undertaking a capable, conscientious and enthusiastic staff.

Apart from the payment made by the Commission to the Administration (as part of the construction costs) of railage and harbour charges at public tariff rates on the materials, plant and equipment forming part of the Undertaking, the Commission also pays railage and other charges at public tariff rates on coal, stores and other materials required in connection with the operation and maintenance of the Undertaking. These payments, which were not made or taken into account by the Administration during the period the Administration was operating the Undertaking, but which now accrue as revenue to the Administration's Transportation and other Departments, naturally result in an appreciable apparent increase in operating and maintenance costs.

The Commission would also mention that, although the Power Station and part of the plant was started up by the Administration on 28th May, 1925, over 18 months before the Commission took over, no depreciation was allowed by the Administration on the property which was taken over by the Commission at cost to the Administration, plus the charges mentioned.

Apart from the adjustment made in the Treasury books, in terms of Clause 19 of the Financial Adjustments Act, 1925, representing the capital expenditure at the date of transfer, amounting to

to	...	...	...	...	£2,771,334
the Commission has paid over to the Administration in cash in respect of					
Railage and harbour charges	...	...	...	...	250,635
Stores taken over	...	...	...	...	64,667
Works uncompleted at date of transfer	...	...	...	...	21,757
Total					£3,108,393

Uncompleted and departmental works in hand by the Administration at the date of transfer, which have since been completed, include :—

- (a) Intake regulator on Tugela River.
- (b) Barrage on Tugela River.
- (c) Stoker alterations.
- (d) Ventilation of sub-stations.
- (e) Installation of high speed circuit breakers.

With the exception of the rebuilding of certain stator cores, which is in progress, only a few minor works belonging to the original scheme now remain to be completed.

## WITBANK UNDERTAKING.

The Witbank Power Station consists of three main generating sets of 20,000 kilowatts each, giving a total installed capacity of 60,000 kilowatts, and twelve boilers, each of a normal capacity of 70,000 lbs. of steam per hour.

The main features of this Undertaking were described in the Commission's last annual report.

The capital expenditure on the Witbank Undertaking to 31st December, 1926, was £1,299,054.

The first 20,000 kilowatt set was started up provisionally on 3rd May, 1926, the second generating set on 15th July, 1926, and the third generating set on 25th October, 1926. Thereafter some time was occupied in final adjustments and tests and in completing various miscellaneous items of construction, the work being sufficiently advanced to admit of the Undertaking being placed in commercial operation on 1st July, 1927. Progress of work.

In the Commission's last two annual reports, reference was made to the question of accommodation for the operating staff at Witbank. Apart from the Resident and Assistant Resident Engineers' houses, the following residences have been provided for the staff:—

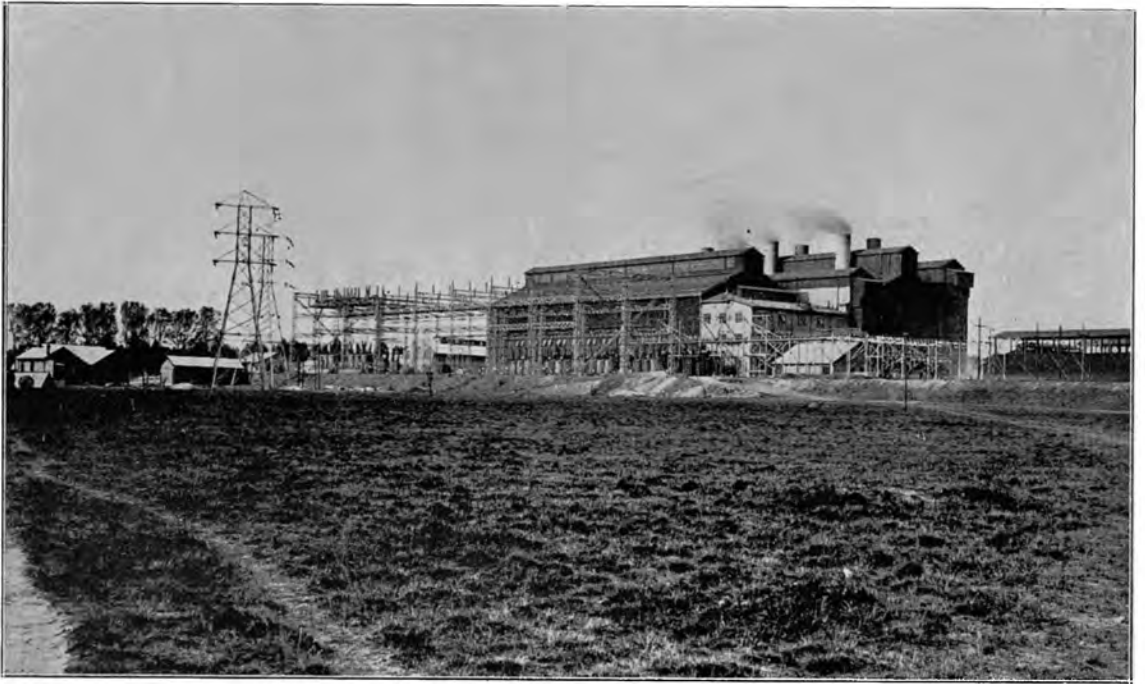
Twenty married quarters.

Twenty-four single quarters.

In the absence of sufficient improvement in the housing position at Witbank and in view of the extension of the Power Station, to which reference is made hereafter, it had been found necessary to extend the housing programme by the construction of two additional married quarters and a further block of twelve-roomed single quarters. These buildings are now in course of construction.

Owing to the increased power requirements of the Victoria Falls and Transvaal Power Co., Ltd., on the Witwatersrand, and to the electricity requirements of consumers in the Witbank area, it Extension of Witbank Power Station.





Witbank Power Station—132,000 volt Transmission Line Tower and Outdoor Sub-Station in Foreground.



Witbank Power Station—Coal Staithees and Spray Ponds in Foreground.

has been decided to extend the Witbank Power Station by the installation of a fourth 20,000 kilowatt generating set and three additional boilers. This will bring the installed capacity of the generating plant in the Power Station up to 80,000 kilowatts.

The following contracts have been placed in connection with this extension :—

Contractor.	Plant and Work.
C. A. Parsons & Co., Ltd., Newcastle-upon-Tyne ... ..	20,000 k.w. turbo alternator and water cooling plant.
Babcock & Wilcox, Ltd., London ...	Boilers, chimneys and forced and induced draught plant.
Drysdale & Co., Ltd., Glasgow ...	Vertical spindle pump and motor.
A. Stuart, Gerniston ... ..	Excavations, foundations and cooling pond.

A commencement has been made with excavation and foundation work on the site, and it is anticipated that the installation of this additional plant will be completed towards the end of next year.

Since the Commission's last annual report was submitted, the following further contracts have been placed in connection with the Commission's distribution system within its area of supply at Witbank :—

Contracts  
for  
distribution  
system.

Contractor.	Plant and Work.
A. Stuart, Gerniston ... ..	Sub-station and office building at Witbank Township and excavations for cables.
Bartle & Co., Ltd., Johannesburg ...	Transformers.
C. Kelley & Partners, Ltd., Johannesburg ... ..	21 k.v. overhead transmission lines.
E. J. Rowe, Witbank ... ..	Laying of power and pilot cables.

The contracts with Messrs. British Insulated Cables (S.A.), Ltd., for cables and accessories, and with Messrs. A. Reyrolle & Co., Ltd., for sub-station switchgear, have been extended to cover additional cable and switchgear required in connection with the supplies to other consumers since secured.

Amendment  
of Witbank  
Licence, 1925.

In the Commission's annual report dated 30th June, 1925, a résumé was given of the terms and conditions of the Licence granted to the Commission by the Electricity Control Board on 6th April, 1925, in respect of the Witbank Undertaking. When in January of that year the Commission made application to the Control Board for this Licence, it was not known what consumers would be obtained. In the circumstances, the layout of the local distribution system could not then be determined, and prices for the supply of electricity, including distribution to consumers in the Witbank area, could not be fixed. Arrangements had therefore to be made to specify in the schedule of standard prices the generation costs only and to provide for the addition to be made to such costs for distribution to be subject to the approval of the Electricity Control Board.

After a start had been made with the distribution system the Commission was in a position to submit standard prices, including distribution, which, subject to the provisions of Section 26 of the Electricity Act, 1922, are applicable within its area of supply, and application was accordingly made to the Electricity Control Board on 21st March, 1927, for the amendment of the standard prices in the first schedule to the Witbank Licence, 1925, and for certain other consequential amendments to that Licence. On 29th June, 1927, the Control Board granted the amendments asked for.

Supplies to  
Consumers.

The Commission's 21,000 volt distribution system in the Witbank area consists of 8 miles of underground cables and 12 miles of overhead lines transmitting electricity to sub-stations situated in the Witbank Township and on the respective consumers' premises. The reticulation system in the Witbank Municipal area, which has also been carried out by the Commission, consists mainly of overhead lines for the distribution of electricity to all consumers, residential and otherwise, within the township as well as for street lighting purposes, the pressure of supply being the standard pressure of 380/220 volts.

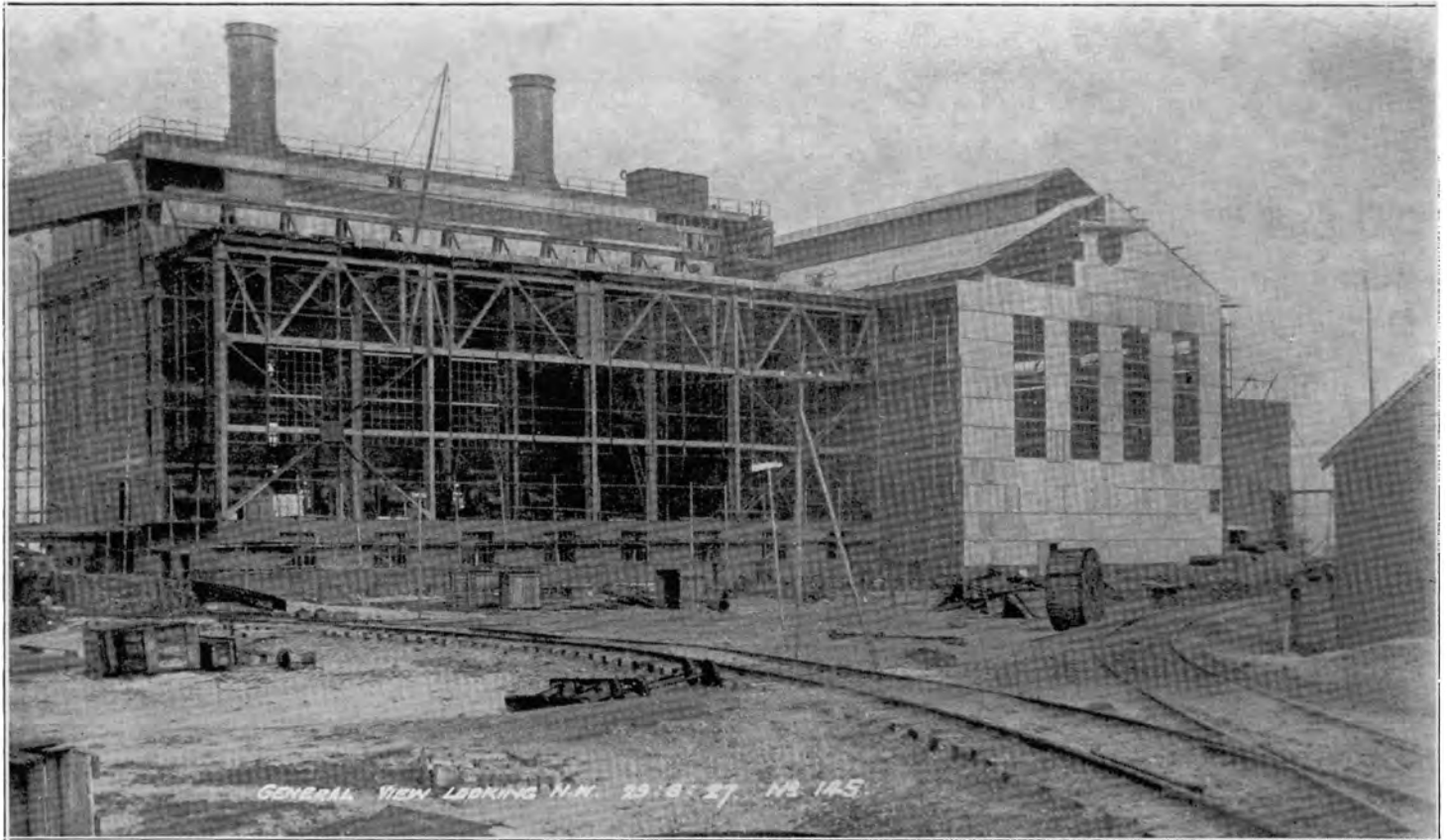
One large industrial consumer has transferred its works to Witbank to obtain the benefits of the cheap power available there from the Commission's Undertaking. This consumer's works have been completed, and the supply of electricity thereto from the Witbank Power Station was commenced in December, 1926. The supply to consumers within the Township and for street lighting purposes was started in August, 1927.

Four colliery companies have decided to take supplies of electricity from the Witbank Undertaking and the supply to two of them has been commenced.

Negotiations are proceeding with other prospective consumers in the district.

The notified maximum demands of the consumers secured to date in the Witbank district aggregate over 4,000 kilovolt amperes.

The Commission's largest consumer is, of course, the Victoria Falls Company, which takes all the surplus electricity that can be generated at the Witbank Power Station. From the date of the starting up of the first generating set on 3rd May, 1926, to 30th June, 1927, this Company had taken no less than 374,158,070 units, notwithstanding that during that period the Power Station had not been sufficiently completed to be placed in commercial service.



Salt River Power Station—Boiler House Extension in Foreground.

## CAPETOWN UNDERTAKING.

The Salt River Power Station consists of three main generating sets of 10,000 kilowatts each and four boilers each of a normal capacity of 60,000 lbs. of steam per hour. The Undertaking also includes a step-up sub-station at the Power Station site, rotary converter sub-stations at Three Anchor Bay, Milnerton Junction, Claremont, Diep River, Muizenberg and Glencairn; 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; duplicate 33,000 volt underground cables connecting the Muizenberg and Glencairn sub-stations, a 33,000 volt underground cable and a 33,000 volt overhead line (the latter being provided by the Railway Administration on the track structures) connecting the step-up sub-station with the sub-stations at Claremont, Diep River and Muizenberg and a 33,000 volt distribution system extending to the Cape Explosive Works at Somerset West and to Wellington.

Electricity is generated at the Salt River Power Station at 12,000 volts, which is also the generation voltage at the Capetown Corporation's Dock Road Power Station with which it is connected.

The main features of this Undertaking were described in the Commission's last annual report.

The capital expenditure on the Capetown Undertaking to 31st December, 1926, amounted to £588,505.

Since the Commission's last annual report was submitted, the following additional contracts have been placed for plant, equipment and work in connection with the Capetown Undertaking:—

Contractor.	Plant and Work.
E. A. Shaw & Co., Capetown ...	Power Station lighting installation.
Albert Vaux, Ltd., Capetown ...	Turbine oil filtration plant.
S.A. Ironworks, Capetown ...	Cast iron specials for circulating water works.

The Salt River Power Station is practically completed, but meanwhile the small load that is being taken on the Sea Point Line can be more economically supplied from the Dock Road Power Station belonging to the Capetown Corporation.

Contracts.

Progress of work.

The intake works for sea water for circulating through the condensers is proceeding satisfactorily. Heavy north-west seas at a much earlier date than usual resulted in some of the temporary piling being displaced in April, 1927. Fortunately, no damage was done to the permanent works. Pending the completion of the intake works, use will be made of the spray pond for cooling the circulating water.

The power, pilot and telephone cables have all been delivered, and the laying thereof is practically completed.

The step-up sub-station adjoining the Power Station, where supplies are stepped up from the generation voltage to 33,000 volts for transmission to the traction sub-stations at Claremont, Diep River, Muizenberg and Glencairn and to the rural supply lines to Somerset West and Wellington, is nearing completion.

The sub-station at Three Anchor Bay has been completed and is in use in connection with the service of electric trains which has just been started on the Sea Point Line. The sub-station buildings at Claremont and Diep River have been completed, and work is well advanced with the machinery and equipment in these two sub-stations. The sub-station building at Milnerton Junction has just been completed, and the buildings at Muizenberg and Glencairn are nearing completion.

Reference was made in the Commission's last annual report to the construction of a 33,000 volt distribution system in the Cape rural areas, and to the consumers which had been secured in these areas.

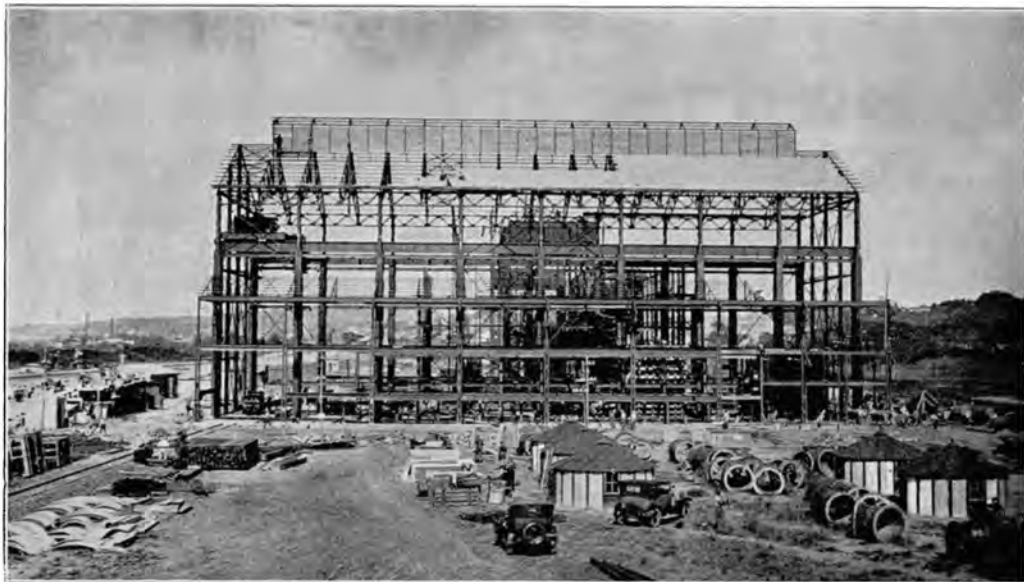
The supply to the Bellville Brick and Tile Works was commenced in June, 1926, to the Paarl Municipality in December, 1926, and to the Cape Explosives Works in September, 1927. Other consumers are now being connected.

Pending the starting up of the Commission's Power Station at Salt River, the supplies to these consumers are, by arrangement, being given from the Capetown Corporation's Power Station at Dock Road.

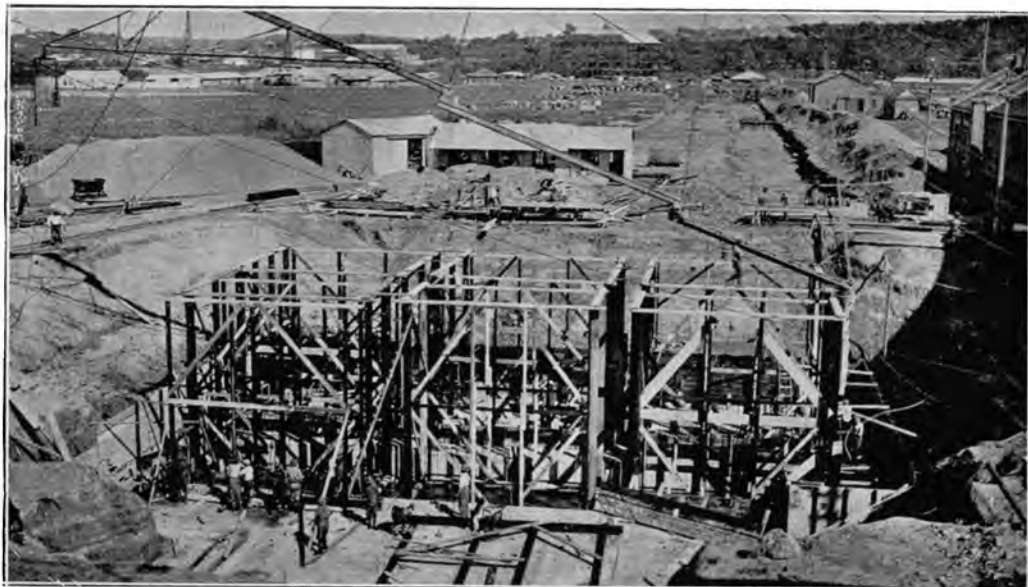
The Commission has been considering the possibility of a hydro-electric scheme at Gordon's Bay, using for the purpose the surplus water available from the Capetown Corporation's augmented Steenbras Scheme, which is now nearing completion. The Capetown Corporation has agreed to the principle of the surplus water available being used by the Commission for the development of electric power. A survey of the scheme has been made and detailed estimates are in course of preparation with a view to determining the economic possibilities of the scheme which, by means of a transmission line from Gordon's Bay to Somerset West, will feed into the Commission's existing distribution system at the latter point. Such a scheme would enable supplies of electricity to be given in Gordon's Bay and the surrounding districts, and would afford an alternative supply to the Cape Explosives Works at Somerset West.

Gordon's  
Bay hydro-  
electric  
scheme.





Congella Power Station in course of erection.



Congella Power Station—Pump House in course of construction  
(Power Station in middle distance).

## DURBAN UNDERTAKING.

The Durban Undertaking will consist of a Power Station, the initial installation proposed being 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 main features of this scheme were described in the Commission's last annual report.

The capital expenditure on the Durban Undertaking to 31st December, 1926, amounted to £39,304.

Since the Commission's last annual report was submitted, the following additional contracts have been placed for plant, equipment and work in connection with the Durban Undertaking. Contracts.

Contractor.	Plant and Work.
Stewarts & Lloyds, Ltd., Johannesburg ... ..	Cast iron pipes and joints.
Wright, Boag & Co., Ltd., Johannesburg ... ..	Cast iron specials.
Associated Engineers' Co., Ltd., Johannesburg ... ..	Circulating water pipes.
Dougall & Munro, Ltd., Durban ...	Extension of graving dock quay wall, culvert and tunnel for circulating water intake, pump house and brickwork in connection with Power Station buildings.
A. Stuart, Germiston ... ..	Laying and jointing of circulating water piping, etc.
Blane & Co., Ltd., Johannesburg ...	Penstocks.
S.A. Scale Co., Ltd., Johannesburg ...	Weighbridge.
A. Reyrolle & Co., Ltd., Johannesburg	Power Station cabling.
Metropolitan-Vickers Electrical Co., Ltd., Johannesburg ... ..	Switchgear and motor generator sets for Bailey control.
Gilbert Hamer & Co., Ltd., Durban ...	Steelwork for pump house.

The bulk of the steelwork for this station and the engine-room crane have been erected, and the erection of the generators and boilers is now in hand. The circulating water intake pipes have been laid, the pump house is in course of construction, as is also the intake channel near the entrance to the Graving Dock. A start has been made with the coaling plant. Progress of work.

An endeavour is being made to start up the first generating set early next year.

Supple-  
mentary  
Agreement  
with Durban  
Corporation.

Reference was made in the Commission's last annual report to the revised arrangements agreed upon between the Commission and the Durban Corporation consequent upon the rapid and progressive increase in the demand for electricity in the Durban area. These arrangements formed the subject of a supplementary agreement entered into on 6th May, 1927, between the Commission and the Durban Corporation.

Licence.

On 17th May, 1927, application was made to the Electricity Control Board for a Licence for the Durban Undertaking, and on 29th June, 1927, the Control Board granted to the Commission a Licence to establish and carry on an undertaking for the supply of electricity at Durban, and for that purpose to construct, operate, use and maintain

- (a) a Power Station on a site, approximately 20 acres in extent, situate on the Congella Lands between the new Graving Dock and the Umbilo Railway Station, together with all plant, machinery and apparatus for generating and delivering, transforming, converting, switching and metering electricity, and all plant, machinery, buildings and works incidental to or required from time to time in connection with the operation and maintenance of the Power Station ;
- (b) such transmission and distribution lines, cables, substations and other equipment and such buildings or other works incidental thereto as may be required from time to time for supplying electricity in the area and to consumers authorised under the Licence.

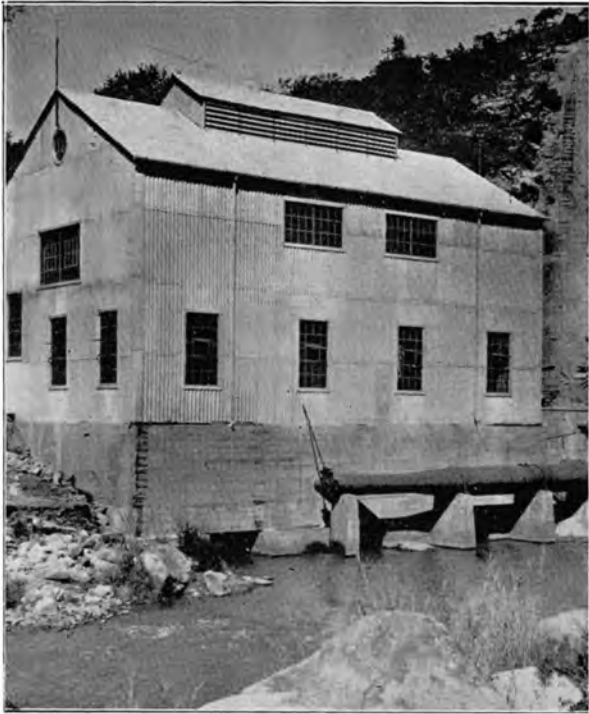
The Licence provides, inter alia :—

- (i) that the Commission may add to, alter or enlarge the works comprising the Undertaking, provision being made for the rated capacity of the Power Station being increased up to 100,000 kilowatts ;
- (ii) that the area of supply shall be
  - (a) the area from time to time belonging to the South African Railways and Harbours Administration within a radius of 42 miles from the Power Station ;

- (b) an area within five miles of any line of railway situate inside a radius of 42 miles from the Power Station as and when any such line of railway is electrified, or as and when, for other reasons, a supply of electricity within such area becomes economically practicable, but exclusive of the area of supply of the Natal Central Undertaking, and exclusive of the area of jurisdiction of any urban local authority and exclusive of the area of supply of any urban local authority outside the area of jurisdiction of such local authority as approved from time to time by the Board, except with the consent of such local authority in either case.
- (iii) that, subject to the provisions of the Electricity Act, 1922, the Commission is authorised and is required to supply electricity to
  - (a) any consumer in the area referred to in (ii), and
  - (b) the Corporation of the Borough of Durban ;
- (iv) that the standard prices to be charged by the Commission shall be those stated in the first schedule to the Licence as amended from time to time in accordance with the provisions of the Electricity Act, 1922.



Sabie Gorge Scheme—Diversion Weir and Intake Works.



Sabie Gorge Power Station.



Sabie Gorge Scheme—Pipe Line  
and Power Station.

## SABIE UNDERTAKING.

The Sabie Undertaking has practically been completed. The Gorge scheme was started up provisionally for testing purposes in March, 1927, and has been in continuous operation since April, 1927. There is still some work to be done, but it is hoped to have the scheme in commercial operation by the end of the year. The Gorge station has an installed capacity of 1,350 kilowatts, made up of three generating sets of 450 kilowatts each. The Malieveld station—a small stop-gap scheme which had been in continuous operation from 1st December, 1925—was closed down in May, 1927, and for the time being remains as a standby to the Gorge Station. A 22,000 volt transmission line conveys the electricity from the Sabie Gorge Power Station to Sabie, and a 3,300 volt distribution line has been erected from the sub-station at Sabie for the supply of electricity to consumers in the Golden Valley area.

The Undertaking was fully described in the Commission's last annual report.

The capital expenditure on the Sabie Undertaking to 31st December, 1926, amounted to £88,945.

Formal contracts for the supply of electricity from the Sabie Undertaking have been concluded with the principal consumers in the district, and it is anticipated that the availability of an adequate supply of electricity for mining, industrial and other purposes will encourage and result in developments in the Sabie district which have previously been hampered owing to the shortage of power.

Electricity has been supplied from the Sabie Undertaking as follows up to 31st August, 1927 :—

	From Malieveld Power Station. Units.	From Sabie Gorge Power Station. Units.	Total. Units.
November, 1925, to 31st December, 1926 ... ..	727,401	—	727,401
1st January to 31st August, 1927 ...	274,335	798,635	1,072,970
Total ... ..	...	...	<u>1,800,371</u>

Supply to  
Consumers.

## MUNICIPAL SCHEMES.

Up to the date of this report 105 Municipal electricity schemes have been reported upon by the Commission in terms of Section 38 of the Electricity Act, 1922, and supplementary reports upon tenders have been submitted in respect of 39 schemes.

During the year 1926, the following schemes were reported upon:—

## CAPE.

Adelaide.	*Dordrecht.	*Queenstown.
Aliwal North	*Fort Beaufort.	*Somerset West.
Barkly East.	George.	Sterkstroom.
Colesburg.	*Hopetown.	Tarkastad.
Cradock.	Middelburg.	Umtata.
De Aar.	*Moorreesburg.	Wellington.
	Paarl.	

## TRANSVAAL.

Klerksdorp.	Rustenburg.	Zeerust.
Koster.	Warmbaths.	

## ORANGE FREE STATE.

Bethlehem.	Fauresmith.	*Rouxville.
Edenburg.	Heilbron.	Senekal.
	Petrus Steyn.	

## NATAL.

Newcastle.	Vryheid.
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## SOUTH-WEST AFRICA PROTECTORATE.

Keetmanshoop.

\* Reports on tenders only.

Of the 105 Municipal electricity schemes reported upon since the establishment of the Commission in March, 1923, i.e., a little over four years ago, no less than 52 were new schemes.

## GENERAL.

In terms of Section 14 of the Electricity Act, 1922, the Commission submits for the year 1926—

- As Annexure " A " :  
The Report of the Auditors.
- As Annexure " B " :  
Balance Sheet, duly audited.
- As Annexure " C " :  
Schedule of Expenditure on Capital Account.
- As Annexure " D " :  
Revenue and Expenditure Account for period 1st September to 31st December, 1926, in respect of the Colenso Undertaking (Local Supplies).
- As Annexure " E " :  
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.

By Order of the Commission,

I have the honour to be,

Sir,

Your obedient servant,



SECRETARY.



**THE REPORT OF THE AUDITORS.**

Johannesburg,  
30th June, 1927.

The Chairman and Members,  
Electricity Supply Commission,  
Johannesburg.

GENTLEMEN,

We have to report that we have audited the Books and Accounts of the Commission for the calendar year 1926, 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 figures in the Balance Sheet must be taken in conjunction with the Note appearing thereon. We desire, further, to make it clear that while the amount of £1,017,296 7s. 5d. shown in the first paragraph of the Note comprises definite commitments at the date of the Balance Sheet, considerable further expenditure, to which the Commission was at that date not definitely committed, will be necessary to complete the Undertakings referred to.

During the year 1926 only one small portion of the Commission's Undertakings was earning revenue in actual full operation. This relates to portion of the local supplies of the Natal Central Undertaking, wherein, under arrangement with the South African Railways and Harbours Administration, power was supplied from the Colenso Generating Station to certain municipalities in Central Natal. This portion of the Undertaking was deemed to come into operation as from 1st September, 1926, and a Revenue and Expenditure Account covering the supply from that date is included in the Accounts. The cost of power supplied by the Railway Administration may still be subject to adjustment.

Power has been produced and supplied to consumers during preliminary working at the Power Stations at Witbank and Sabie. As these stations were not completed or consequently in full operation during the year, the proceeds of such power, after deducting cost of production, will (pending completion of construction) be applied in reduction of the capital cost of the respective Undertakings. A similar position exists in connection with the temporary supply of power to consumers of the Capetown Undertaking, the power being purchased from the Corporation of Capetown by the Commission.

Included in the expenditure on capital account appearing in the Balance Sheet is an amount of £67,973 8s. 3d. representing administrative and other general expenditure which has not as yet been apportioned. This expenditure relates to all Undertakings except the portion of the Natal Central local supplies actually brought into

operation on 1st September, 1926, and will be allocated during 1927. An amount, subject to adjustment, has been allocated to this portion of the Natal Central local supplies to cover the proportion of the general expenditure relating thereto.

Subject to the above and the remarks in Paragraph (c) below, 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) In view of the circumstances dealt with under (b) above, the only provision necessary at 31st December, 1926, for redemption of funds borrowed for capital works relates to that portion of the Natal Central Undertaking in operation in 1926.

The whole of the funds borrowed by the Commission to date have been in the form of advances by the Union Treasury. These advances have been subject to interest, and, in addition, there has been charged the cost of raising the moneys.

The terms on which the advances are made provide that they shall be redeemed not later than 31st December, 1950, but the method of redemption has not been decided. A provisional amount of £37 12s. 8d. has been set aside at 31st December, 1926, on account of the redemption of the sum of £5,029 1s. 1d., being the amount expended on that portion of the Natal Central Undertaking brought into operation on 1st September, 1926. This provisional amount will be recalculated and adjusted when the remainder of the Natal Central Undertaking is in operation under the control of the Commission. Subject to this, we consider that due provision has been made for redemption of moneys borrowed.

- (d) The value of the assets of the Commission is correctly stated.
- (e) The reserve required under Clause 9 of the Electricity Act, 1922, has not yet been established, as, with the exception of a portion of the Natal Central local supplies, no permanent plant has been brought into full operation at 31st December, 1926.
- (f) All our requirements and recommendations as Auditors have been complied with and carried out.

ALEX. AIKEN & CARTER.

B. HALSEY.

# Electricity Supply Commission.

## BALANCE SHEET at 31st DECEMBER, 1926.

LIABILITIES.	ASSETS.
Advance Account ... ..	Expenditure on Capital Account ... ..
Treasury of the Union of South Africa. ...	Capetown Undertaking ... ..
Sundry Creditors ... ..	Colenso Undertaking ... ..
Interest Fund ... ..	Durban Undertaking ... ..
Redemption Fund ... ..	Sabie Undertaking ... ..
	Witbank Undertaking ... ..
	Expenditure for Allocation ... ..
135 2 6	19,621 8 6
	Cash at Bankers and in Hand ... ..
	Interest and Repayment Fund Bank Account ... ..
£2,117,608 3 6	135 2 6
	£2,117,608 3 6

NOTE.—In addition to the liabilities shown above, the Commission is liable to the extent of £1,017,296 7s. 5d. in respect of commitments on contracts not yet completed in connection with the Undertakings at Capetown, Durban, Sabie and Witbank and local supplies in Natal.

The Commission has entered into an agreement with the South African Railways and Harbours Administration under which the Colenso Generating Station (together with main transmission lines and sub-stations) is acquired by the Commission in 1927. The purchase consideration is the capital cost to the Administration at date of transfer, the amount of which has not yet been ascertained.

Johannesburg,  
30th June, 1927.

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

Referred to in our Report of 30th June, 1927.

Johannesburg,  
30th June, 1927.

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

# Electricity Supply Commission.

## SCHEDULE OF EXPENDITURE ON CAPITAL ACCOUNT to 31st December, 1926.

Expenditure in connection with Electricity Undertakings.	Amount Expended to 31st Dec., 1925.	Amount Expended during 1926.	Total to 31st Dec., 1926.
<b>CAPETOWN UNDERTAKING:</b>			
Land ... ..	£16,030 8 10	£1,139 14 6	£17,170 3 4
Buildings and Other Structures ... ..	45,121 5 0	160,659 19 7	205,781 4 7
Machinery and Plant ... ..	1,015 8 3	275,658 2 1	276,673 10 4
General Expenditure ... ..	35,393 8 6	25,284 19 3	60,678 7 9
Interest during Construction and Cost of Raising Money ... ..	2,354 13 9	25,847 9 2	28,202 2 11
	<b>£99,915 4 4</b>	<b>£488,590 4 7</b>	<b>£588,505 8 11</b>
<b>COLENZO UNDERTAKING:</b>			
Local Supplies in Operation, Buildings, Equipment, Interest, Cost of Raising Money and General Expenditure ... ..	£1,872 18 6	£3,156 2 7	£5,029 1 1
General Expenditure ... ..	—	1,641 13 8	1,641 13 8
	<b>£1,872 18 6</b>	<b>£4,797 16 3</b>	<b>£6,670 14 9</b>
<b>DURBAN UNDERTAKING:</b>			
Land ... ..	—	£8,750 0 0	£8,750 0 0
Buildings and Other Structures ... ..	—	8,024 2 7	8,024 2 7
Machinery and Plant ... ..	—	420 3 2	420 3 2
General Expenditure ... ..	£8,539 0 3	11,463 0 10	20,002 1 1
Interest during Construction and Cost of Raising Money ... ..	277 15 4	1,830 2 0	2,107 17 4
	<b>£8,816 15 7</b>	<b>£30,487 8 7</b>	<b>£39,304 4 2</b>
<b>SABIE UNDERTAKING:</b>			
Land ... ..	£510 0 0	—	£510 0 0
Buildings and Other Structures ... ..	2,936 17 8	£36,050 19 5	38,987 17 1
Machinery and Plant ... ..	20,283 16 1	14,768 4 0	35,052 0 1
General Expenditure ... ..	6,100 16 8	4,071 17 2	10,172 13 10
Interest during Construction and Cost of Raising Money ... ..	313 10 3	3,908 14 9	4,222 5 0
	<b>£30,145 0 8</b>	<b>£58,799 15 4</b>	<b>£88,944 16 0</b>
<b>WITBANK UNDERTAKING:</b>			
Capital Cost of Power Station, including Land, Buildings, Machinery and Plant, etc., <i>Less</i> Revenue derived from Sales of Water and Electricity during Construction ... ..	£744,648 3 8	£444,966 17 2	£1,189,615 0 10
Local and Municipal Supplies—			
Land ... ..	—	79 15 0	79 15 0
Buildings and Other Structures ... ..	—	1,409 6 0	1,409 6 0
Machinery and Plant ... ..	—	18,869 1 11	18,869 1 11
General Expenditure ... ..	2,875 18 6	1,621 3 6	4,497 2 0
Interest during Construction and Cost of Raising Money ... ..	4,623 3 3	79,960 15 0	84,583 18 3
	<b>£752,147 5 5</b>	<b>£546,906 18 7</b>	<b>£1,299,054 4 0</b>
<b>EXPENDITURE FOR ALLOCATION:</b>			
Administration Expenses ... ..	£36,763 6 1	£14,363 0 3	£51,126 6 4
Auditors' Fees and Expenses ... ..	385 16 11	362 9 6	748 6 5
Consulting Engineers' Fees and Expenses: General	3,185 13 3	1,004 16 1	4,190 9 4
Furniture and Office Equipment (Head Office) ...	3,011 0 8	1,590 10 5	4,601 11 1
Legal Expenses: General ... ..	109 10 0	—	109 10 0
Insurance Premiums ... ..	25 3 3	62 2 4	87 5 7
Interest during Construction and Cost of Raising Money: General ... ..	3,015 1 3	4,094 18 3	7,109 19 6
	<b>£46,495 11 5</b>	<b>£21,477 16 10</b>	<b>£67,973 8 3</b>
<b>SUMMARY:</b>			
CAPETOWN UNDERTAKING ... ..	<b>£99,915 4 4</b>	<b>£488,590 4 7</b>	<b>£588,505 8 11</b>
COLENZO UNDERTAKING ... ..	<b>1,872 18 6</b>	<b>4,797 16 3</b>	<b>6,670 14 9</b>
DURBAN UNDERTAKING ... ..	<b>8,816 15 7</b>	<b>30,487 8 7</b>	<b>39,304 4 2</b>
SABIE UNDERTAKING ... ..	<b>30,145 0 8</b>	<b>58,799 15 4</b>	<b>88,944 16 0</b>
WITBANK UNDERTAKING ... ..	<b>752,147 5 5</b>	<b>546,906 18 7</b>	<b>1,299,054 4 0</b>
EXPENDITURE FOR ALLOCATION ... ..	<b>46,495 11 5</b>	<b>21,477 16 10</b>	<b>67,973 8 3</b>
	<b>£939,392 15 11</b>	<b>£1,151,060 0 2</b>	<b>£2,090,452 16 1</b>

# Electricity Supply Commission.

## COLENZO UNDERTAKING (LOCAL SUPPLIES).

Dr. Revenue and Expenditure Account for the Period 1st September, 1926, to 31st December, 1926. Cr.

Dr.		Cr.	
<p>To Power Purchased from South African Railways and Harbours ... .. £1,015 16 6</p> <p>„ Capital Charges ... .. 135 2 6</p> <p>„ Interest on Capital Cost <i>5.018</i> .. £97 9 10</p> <p>„ Redemption of Capital Cost <i>1.937</i> 37 12 8</p> <p>„ Administration Expenses ... .. 15 18 0</p> <p>„ Fire Insurance ... .. 1 14 7</p> <p style="text-align: right; border-top: 1px solid black;">£1,168 11 7</p>	<p style="text-align: right; margin-right: 20px;"><i>122 days</i></p> <p>By Sales of Electrical Energy (to Municipalities 371,529 units) ... .. £1,168 11 7</p> <p style="text-align: right; border-top: 1px solid black;">£1,168 11 7</p>		

Johannesburg,  
3rd May, 1927.

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

Referred to in our Report of 30th June, 1927.

Johannesburg,  
30th June, 1927.

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

# Electricity Supply Commission.

ANNEXURE "E."

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, 1926.

Area.			Farm.	District.	Title.	Purchase Price or Rental.	Acquired From.	Purpose For Which Required.	
Morgen.	Sq. Roods.	Sq. Feet.							
<b>CAPETOWN UNDERTAKING.</b>									
9	210	—		Lot P.12, Paarden Island, C.P.	Freehold	£15,567 3 2	Capetown Corporation	Power Station Site.	
2	540	—		Lot Super Power Station, Salt River Mouth, C.P.	Government Grant	100 0 0	Govt. of Union of S.A.		
—	477	52		Lot A, Huguenot, C.P.	Freehold	350 0 0	P. Goldberg		Sub-station Site.
—	274	37		Diep River, C.P.	Freehold	250 0 0	C. D. B. Stiles		Sub-station Site.
—	76	128		Three Anchor Bay, C.P.	Leasehold	1 0 0	Capetown Corporation		Sub-station Site.
—	8	79		Lot 3B, Bellville, C.P.	Freehold	180 0 0	E. C. Edwards		Sub-station and Depôt Site.
—	561	140		Lot C, Ronde Vlei, C.P.	Freehold	60 0 0	J. L. Berkeley		Sub-station and Depôt Site.
—	95	108		Bellville, C.P. Glencairn, C.P.	Government Grant Government Grant	75 0 0 25 0 0	Govt. of Union of S.A. Govt. of Union of S.A.		Sub-station Site. Sub-station Site.
<b>SABIE UNDERTAKING.</b>									
			Bergvliet No. 397	Pilgrims Rest, Transvaal	Water Right (Sabie River)		Water Court, District No. 22, Transvaal S. H. Coetzee	Hydro-electric Power Station.	
			Bergvliet No. 397	Pilgrims Rest, Transvaal	Servitudes of Abutment, Acque- duct, Storage, Right-of-Way, etc.	500 0 0		Dam, Water Race, Pipeline, Power Station and Auxiliary Works.	
			Grootfontein No. 29	Pilgrims Rest, Transvaal	Surface Right Permit		Dept. of Mines	Overhead Power Line and Sub- station.	
			Rietfontein No. 84	Pilgrims Rest, Transvaal	Surface Right Permit		Dept. of Mines	Overhead Power Line and Road- way.	
			Rietfontein No. 84	Pilgrims Rest, Transvaal	Surface Right Permit		Dept. of Mines	Roadway.	
<b>WITBANK UNDERTAKING.</b>									
67	26	—	Witbank No. 141, Portion R	Middelburg, Transvaal	Freehold, excluding all Rights to Coal	271 10 0	Witbank Colliery, Ltd.	Power Station Site.	
44	269	—	Joubertsrust No. 554, Portions J and M	Middelburg, Transvaal	Freehold, excluding all Rights to Coal		Witbank Colliery, Ltd.	Railway Sidings and Loops, Open Drains, Power Conductors, Reservoir Site, and Access.	
			Joubertsrust No. 554 and Witbank No. 141	Middelburg, Transvaal	Servitudes and Rights-of-Way			Dam and Works.	
11	248	—	Doornpoort No. 196, Portion S.2	Middelburg, Transvaal	Servitude in Perpetuity			Submerged Ground.	
259	—	—	Doornpoort No. 196, Portion S.1	Middelburg, Transvaal	Servitude of Storage in Perpetuity	2,750 0 0	Transvaal and Delagoa Bay Investment Co., Ltd.	Gauging Weir.	
—	42	—	Doornpoort No. 196, Portion S.3	Middelburg, Transvaal	Servitude in Perpetuity			Access.	
7	505	—	Doornpoort No. 196, Zeekoewater No. 520, Portion S.1 of Portion A	Middelburg, Transvaal Middelburg, Transvaal	Right-of-Way. Servitude of Storage in Perpetuity	150 0 0	J. P. Reyneke	Submerged Ground.	
			Zeekoewater No. 520, Portion A	Middelburg, Transvaal	Right-of-Way in Perpetuity.			Access for Transvaal and Delagoa Bay Investment Co., Ltd.	
			Zeekoewater No. 520, Portion A	Middelburg, Transvaal	Servitude of Right-of-Way in Perpetuity	50 0 0	J. P. Reyneke	Roadway giving Access to Dam, including Joint Use of Portion of Roadway with Transvaal and Delagoa Bay Investment Co., Ltd.	
			Zeekoewater No. 520, Portion A	Middelburg, Transvaal	Servitude of Right-of-Way in Perpetuity	250 0 0	J. P. Reyneke	Power Conductors, Water Pipe- line and Access.	
			Zeekoewater No. 520, Portion B	Middelburg, Transvaal	Servitude of Right-of-Way in Perpetuity	600 0 0	P. J. D. Steenkamp	Power Conductors, Water Pipe- line and Access.	
			Klipfontein No. 60, Portion E +	Witbank, Transvaal	Servitude of Right-of-Way in Perpetuity		S.A. Coal Estates (Witbank), Ltd.	Railway Siding and Loop.	
			Blesboklaagte No. 29	Witbank, Transvaal	Servitude in Perpetuity	60 0 0	M. C. Pretorius	Underground Cables.	