

Electricity Supply Commission.

REPORT
of the
COMMISSION

covering the period

1st March to 31st December, 1923

with a

brief review of its activities
up to

9th August, 1924.

Johannesburg:

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Electricity Supply Commission.

Electricity House,

82, Marshall Street,

Johannesburg,

9th August, 1924.

To the Honourable

The Minister of Mines and Industries,
Capetown.

SIR.

In conformity with the provisions of Section 14 of the Electricity Act, 1922, the Commission has the honour to submit its first general report, covering the period 1st March to 31st December, 1923, together with a brief review of its activities up to the date of this report.

General.

In terms of the Act, the Commission's Annual Report should be submitted by 30th April, but, in view of the many important negotiations and investigations in hand and the preparations and preliminary work in progress in connection with undertakings about to be embarked upon, it has not been possible for the Commission until now to devote time to this, its first general report, without interfering with the various works which have been engaging its attention.

In the first few months of its existence the Commission was forced to decide upon many issues of the utmost importance as affecting its future policy and utility, and to consider probably some of the largest electrical problems that are likely to arise in South Africa for some time to come.

While it is regretted that stress of constructive work should have delayed the submission of this report, the delay has enabled the Commission to submit a more comprehensive review of the prac-

tical work accomplished in the short period of its existence, than would otherwise have been the case.

The establishment of the Commission and the appointment of members was publicly announced by Government Notice No. 408, dated 6th March, 1923, which appeared in the Government Gazette dated 9th idem. The Government Notice reads as follows:—

“ It is notified that His Royal Highness the Governor-General has been pleased, under the powers vested in him by Section 1 of the Electricity Act, No. 42 of 1922, to establish the Electricity Supply Commission referred to in that Section as from 1st March, 1923, and to appoint Dr. Hendrik Johannes van der Bijl, M.A., Ph.D., as Chairman and whole-time member, and James R. Fulton and Robert Niven as part-time members of the Commission.”*

Members of the Commission met for the first time at Capetown on 20th March, 1923, and discussed for several days the terms of the Electricity Act and the future policy and procedure of the Commission.

It was decided at the first meeting that Johannesburg should be the headquarters of the Commission, and temporary offices were opened there on 1st May, 1923. The Commission has since transferred its offices to “ Electricity House,” 82, Marshall Street.

Three days after the Commission had met for the first time, an important conference took place at Capetown with the Railways and Harbours Administration in regard to power development as affecting railway electrification, and on the same date the Commission received an invitation from the Durban Town Council to attend a con-

* Mr. Ezekiel Davidson was appointed as a part-time member of the Commission with effect from 15th May, 1924, during the absence of the Chairman in Europe and America.

ference there in connection with the erection of a new power station, to provide for the growing requirements of the Municipality and the Railways and Harbours Administration in the Durban area.

On 25th April, 1923, members of the Commission and the General Manager of Railways and Harbours and other railway officers travelled to Durban to attend this conference, as a result of which negotiations were opened between the Commission and the Municipality, to which further attention is directed on pages 10 and 11.

The Commission regards cheap power as an important factor in promoting industrial development, and has, therefore, devoted, and will continue to devote, the closest attention to this aspect of its duties and responsibilities under the Electricity Act.

Power a
factor in
industrial
development

It has had in view from the outset the possibility of assisting industries by means of cheap power, and towards that end the desirability—given the nucleus of a power load—of producing electric power on a large scale in the vicinity of the coalfields.

The principal coalfields in the Transvaal are in the Witbank area. That area, because of its situation in relation to the Transvaal coalfields and the volume of water available in the Great Oliphants River, had long been regarded as one suitable for the erection of a large power station, and as one in which, in view of its close proximity to the Witwatersrand, cheap power might lead to industrial development.

Witbank
electrical
undertaking.

One of the first steps taken by the Commission was to consider the prospects of a station in the Witbank area and to commence an examination of the power potentialities of that area.

In May, 1923, while the Commission's investigations were still in progress, The Victoria Falls and Transvaal Power Company, Limited, applied to the Electricity Control Board for an amend-

ference there in connection with the erection of a new power station, to provide for the growing requirements of the Municipality and the Railways and Harbours Administration in the Durban area.

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ment of its licence to enable it to erect a power station at Witbank to supplement its power supply for the gold mining industry on the Witwatersrand. The Commission opposed the application in the form in which it was presented, and, as a result of subsequent negotiations with the Company, arrangements were concluded and approved by the Control Board which not only made provision for meeting the additional power requirements of the gold mines and securing to the Witbank area the full advantage of the cheap power tariff that should be obtainable by consumers in close proximity to a large modern power station situated in an area where an abundant supply of cheap coal is available, but at the same time gained for the mines and other consumers on the Witwatersrand a guarantee of one half-share in any savings to the Falls Company and the Rand Mines Power Supply Company, Limited, resulting from the establishment and working of the Witbank station. This guarantee of certain definite benefits was of material assistance to the mining groups in enabling them to conclude fresh contracts with the Victoria Falls Company, under which a 15 per cent. discount on standard prices has been granted retrospectively from 1st January, 1923, and a 17½ per cent. discount from the date when the Witbank power station is in full commercial service, plus their pro rata share (according to the amount of energy consumed) of a rebate of 50 per cent. of any balance standing to the credit of the rebate account, in place of the 25 per cent. rebate provided for in Section 25 of the Electricity Act.

Under the Commission's final agreement with the Victoria Falls Company, dated 5th July, 1924, the power station at Witbank will be constructed by the Company for and on behalf of, and subject to the approval of the Commission; and the advantageous terms of supply accorded the mining industry under their revised contracts will be extended to other consumers within the Power Companies' areas of supply. This agreement was approved by the Control Board at the final hearing

of the Victoria Falls Company's application on 21st July, 1924, and the construction of a power station designed for a generating capacity of 60,000 kilowatts maximum continuous rating, in terms of the agreement, is now in progress.

A gratifying feature of the settlement reached in connection with the Witbank undertaking is that the interests most concerned have expressed themselves as satisfied.

A full report upon the Commission's activities and proposals in connection with the Witbank power undertaking is being submitted to you for approval and for presentation to Parliament.

In consultation with the Railway Administration, consideration was given by the Commission to the establishment of an electrical undertaking at Capetown to supply the power required for the electric working of the Cape suburban railways. This occasioned serious thought as to the best means of co-ordinating the future development of power supply in the Capetown area.

Capetown
electrical
undertaking.

Negotiations were eventually opened with the Capetown Corporation, and an agreement was signed on 22nd April, 1924, which the Commission considers will prove advantageous, not only to the Corporation but also to the Railways and Harbours Administration.

A special report on the Capetown undertaking, dated 9th July, 1924, was submitted to you for approval and for presentation to Parliament.

You have since approved of the Commission's proposals as contained in its report dated 9th July, and application is about to be made to the Electricity Control Board for a licence to establish and work an electrical undertaking at Capetown. Meanwhile, tenders have been accepted for the more important sections of the work, and active preparations on the site will be commenced at the earliest possible date, in order that the Commission's portion of the work may be ready by the

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time the Railway Administration requires power for electric traction on the Capetown suburban railways.

The power station to be erected at Capetown will, at the outset, have an installed capacity of 30,000 kilowatts.

Colenso
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The question of the Commission taking over the Colenso power undertaking in Natal, now being established by the Railway Administration, has been discussed and agreed upon; but it has been decided to wait until the whole of the electrification works between Glencoe Junction and Pietermaritzburg are completed and ready for commercial service before the Commission assumes control. It is expected that the work will be completed some time towards the end of next year. Meanwhile, a survey will be undertaken by the Commission for the purpose of ascertaining the electricity requirements for domestic and industrial purposes along the route of the electrified line, so that when it takes over the works it may be in a position to provide electricity to municipalities and other consumers requiring current for lighting and power purposes

The principle agreed upon by the Railway Administration is that the Commission should take over the power station, sub-stations and transmission system, and that the Administration should only be responsible for all work and equipment immediately connected with the railway track.

The Colenso power station will, at the outset, have an installed capacity of 60,000 kilowatts.

Durban
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The erection of a new power station at Durban has been in contemplation for many years. Work was postponed from time to time for various reasons, chief amongst which was that it was expected a Government power station sufficiently large to serve the railways and the Municipality would be erected there in connection with the electrification of the Durban-Pietermaritzburg section of the Natal main line. This was the

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section of the line proposed to be electrified first, and for which funds were originally voted by Parliament. In 1921 the Government decided to make a start with electrification on the section from Pietermaritzburg to Glencoe Junction, and, as this decision indefinitely postponed the erection of a Government station at Durban, the Municipality was forced to reconsider its position in order to provide for the increasing demand for electricity in the Durban area.

In November, 1922, the Durban Municipality applied to the Administrator for permission to erect a new power station of its own at Durban, and, as the Commission was not then in existence, the application was referred by the Administrator to the Electricity Control Board, which was carrying out the duties imposed upon the Commission under Section 38 of the Electricity Act.

The Control Board, in its report, while expressing the view that the proposals submitted were sound and that the consent of the Administrator should not be withheld, pointed out that it seemed reasonably certain that the electrification of the railways would be undertaken at an early date, that it would obviously be to the mutual advantage of the Municipality and the railways if electricity could be supplied from one large station, and that it appeared advisable before the Municipality committed itself to a new station of its own, a conference should take place between the Municipality, the Commission (which it was contemplated would be appointed at an early date) and the Railway Administration.

The Durban Municipality readily accepted the suggestion made by the Control Board, and in February, 1923, intimated that it was most anxious to come to a complete understanding with the South African Railway Administration on the question of electricity supply, with a view to the erection of a power station large enough to meet the needs of the area—railway, municipal and private.

On the appointment of the Commission, the Durban Municipality extended an invitation to it to attend a conference as suggested, and, in company with the General Manager of Railways and Harbours and other railway officers, the Commission met the Electricity Committee of the Corporation at Durban on 25th April, 1923, when the principle of the establishment of one power station for supplying the needs of the Durban area was unanimously agreed upon. The Commission undertook to consider and report upon certain points raised by the Durban Corporation.

A further meeting took place between the Commission and the Electricity Committee of the Durban Corporation on 16th July, 1923, for the purpose of discussing the proposals put forward by the Durban Corporation at the conference held on 25th April. At that meeting detailed negotiations were further postponed.

Messrs. Merz and McLellan are Consulting Engineers to the Commission and also to the Durban Corporation.

Mr. C. H. Merz, while in South Africa in September-October, 1923, had several conversations with the Commission with regard to the electrical situation at Durban, and while at Durban he discussed matters with the Electricity Committee of the Durban Corporation. On his return to England, Mr. Merz had further discussions with the Borough Electrical Engineer of Durban and the Chairman of the Commission—both of whom were in England at the time—following upon which he forwarded to the Corporation and the Commission draft heads of a possible arrangement which he recommended, under which it was proposed that the Commission should erect a new power station in the Durban area as soon as possible, for the purpose of giving a supply of power to the Corporation, the station to be extended immediately the Railway Administration decided to electrify the railway lines between Durban and Pietermaritzburg.

Further meetings took place at Johannesburg on 9th and 10th May, 1924, between the Commission and the Electricity Committee of the Durban Corporation, at which the proposals put forward by Messrs. Merz and McLellan were dealt with.

On 12th June, the Town Clerk communicated with the Commission to the effect that, upon due consideration of the Electricity Committee's report, the Council was prepared to enter into an agreement with the Commission for the supply of electricity for a period of thirty years on the lines of the agreement submitted to the Council by Mr. C. H. Merz, subject to certain specific conditions which now form the basis of negotiation.

The problem of how to augment the power supply for gold mining purposes in the Sabie district has been under consideration for some years, and in 1920 formed the subject of enquiry by a Government Departmental Committee. Since then further representations have been made to the Government from time to time to provide a Government power station to meet the growing needs of the numerous small mines in the district.

Supply of electric power for mining purposes in Sabie District.

Shortly after the appointment of the Commission the whole question was referred to it as one of urgency, and on 7th August, 1923, members of the Commission visited the Sabie district, investigated the different proposals which had been made from time to time, and heard the views of the local community on the power situation. As a result, survey work for a hydro-electric station was commenced forthwith in the Sabie valley and data collected as to the probable load.

Power users subsequently found that their requirements were likely to be considerably less than they had at first estimated, and, when the scheme—the result of the Commission's investigations—was ready to be embarked upon, the whole position had to be reconsidered from that point of view.

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The Sabie valley is a suitable one in which to establish a hydro-electric scheme of limited dimensions; but, to get a sufficient head of water for a scheme such as was originally estimated would be required to meet the needs of the district in the near future and provide for reasonable expansion, necessitated going a considerable distance downstream from the Sabie Township for a power station site. The capital cost made it impossible to supply the comparatively small quantity of power which the revised and reduced estimates provided for at a price acceptable to consumers without incurring a substantial loss to the Commission in the first few years while business was developing, and, as the mining industry could give no guarantee of the probable future load, the Commission was forced to abandon the larger and more distant scheme, and to concentrate upon one more in keeping with immediate needs but with much less scope for development. To cheapen the cost of the transmission system, a site had to be found for a smaller station nearer to Sabie, and a fresh survey was commenced in June, 1924, on the Farm Bergvliet 692, about eight miles from Sabie. The field work of the survey is practically completed, and designs and estimates are in course of preparation.

Two large companies, several small private companies, and many claimholders working in a small way, are operating in this district. Not only are their normal mining operations seriously restricted in the dry season, but further development cannot be proceeded with with any degree of confidence owing to the shortage of power. One of the large companies owns a small hydro-electric station situated at the foot of the Sabie Falls, from which power is supplied to its own mine and others according to a priority allocation laid down by the Department of Mines and Industries. This plant has been supplemented from time to time by various small steam and water power plants, and some of the mines are hoisting with animal power; but the total power available is inadequate to meet the requirements of the mines in the district. In the dry season the

flow of water at the falls is insufficient to generate to the full capacity of the plant available, so that the situation cannot be met by installing additional plant. The fear of not being able to get adequate power to keep the mines dry has stopped development work on some properties, while on others the shortage of power in the dry season is a yearly dread, and leads to a feeling of uncertainty which has a detrimental effect upon development work.

Additional power is, therefore, urgently needed to meet immediate requirements, and to afford holders of mining titles reasonable scope and confidence to proceed with further development.

The Commission was much impressed with the work that is being accomplished in this district, by the energy and resource of the small mine-owners who work their own properties, and whose confidence in the value of their mines has led them to stake their all upon the future of the district. These small properties cannot afford to provide their own power, and, in any case, power production to be economical must be concentrated.

In the Commission's view, the mining industry in this district is deserving of encouragement, and it will do its utmost to provide a hydro-electric power scheme which will, at a reasonable tariff, remove the one anxiety of the industry to-day, i.e., the shortage of power.

Before a municipality establishes a new electricity undertaking or enlarges an existing undertaking to an extent exceeding, within any period of twelve months, 10 per cent. of its existing rated generating capacity, it has to submit for the approval of the Administrator of the Province in which the municipality is situated, a full report by its consulting engineers on the general and technical proposals. The Administrator, before finally approving of the scheme, calls upon the Commission for a report thereon. This procedure is laid down in Section 38 of the Electricity Act.

Municipal schemes.

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Municipal schemes.

In the Cape Province, the Commission, in addition to reporting upon the general and technical aspects of municipal electrical schemes, also deals with the reports of municipal consulting engineers upon tenders for plant for the establishment or extension of municipal electrical undertakings. The Electricity Act imposes no obligation upon the Commission in this respect, but it had been the custom of the Cape Provincial Administration to obtain reports upon tenders from the Government Electrical Engineer, and this work was subsequently taken over by the Electricity Control Board while reporting upon municipal schemes pending the appointment of the Commission. In the circumstances, the Commission, on its appointment, agreed to continue the work which had been undertaken by the Control Board.

Up to the date of this report, thirty-five municipal schemes have been reported upon, and twelve supplementary reports have been submitted upon the tenders.

From 1st May to 31st December, 1923, the following schemes were reported upon:—

CAPE:	TRANSVAAL:
Alice.	Johannesburg.
Capetown.	Pietersburg.
Cathcart.	Potchefstroom.
Cradock.	Witbank.
Ceres.	
Graaff Reinet.	
Humansdorp.	ORANGE FREE
Kingwilliamstown.	STATE:
Kokstad.*	Ficksburg.
Mafeking.	Winburg.
Middelburg†	
Molteno.*	
Uitenhage.†	NATAL:
Walmer.	Utrecht.
Worcester.*	

* Reports on tenders only.

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The Commission was able in several cases to suggest alterations in the schemes with a view to improving their efficiency and lessening operating expenses, and in others to suggest modifications which would enable the municipalities to reduce the capital outlay involved.

The Commission succeeded in inducing one municipality to take power from a larger adjoining municipality instead of erecting a small station of its own, an arrangement which should prove mutually advantageous to both municipalities.

Messrs. Merz and McLellan, Consulting Engineers, have been appointed Consulting Engineers to the Commission in connection with (a) the Colenso, Capetown, Witbank and Durban undertakings and similar large electricity supply schemes; (b) any other works undertaken by the Commission in connection with railway electrification.

Appointment
of Consulting
Engineers.

The Commission started out with a small skeleton organisation, and, as its work is growing and new schemes developing, its staff is gradually being increased in order to cope efficiently with the work.

Staff.

On the Commission's appointment, arrangements were made for its accounting work to be performed temporarily by the Department of Mines and Industries, but an Accountant has since been appointed as from 8th May, 1924.

Accounting
work.

The Commission wishes to take this opportunity of expressing its appreciation of the ready and valuable help and assistance rendered to it by the Accounting Branch of the Department of Mines and Industries.

In terms of Section 13 of the Electricity Act, Messrs. Alex. Aiken & Carter (of Johannesburg) and Mr. B. Halsey (of Durban) were appointed by the Governor-General to examine the accounts of the Commission.

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The Commission succeeded in inducing one municipality to take power from a larger adjoining municipality instead of erecting a small station of its own, an arrangement which should prove mutually advantageous to both municipalities.

Messrs. Merz and McLellan, Consulting Engineers, have been appointed Consulting Engineers to the Commission in connection with (a) the Colenso, Capetown, Witbank and Durban undertakings and similar large electricity supply schemes; (b) any other works undertaken by the Commission in connection with railway electrification.

Appointment
of Consulting
Engineers.

The Commission started out with a small skeleton organisation, and, as its work is growing and new schemes developing, its staff is gradually being increased in order to cope efficiently with the work.

Staff.

On the Commission's appointment, arrangements were made for its accounting work to be performed temporarily by the Department of Mines and Industries, but an Accountant has since been appointed as from 8th May, 1924.

Accounting
work.

The Commission wishes to take this opportunity of expressing its appreciation of the ready and valuable help and assistance rendered to it by the Accounting Branch of the Department of Mines and Industries.

In terms of Section 13 of the Electricity Act, Messrs. Alex. Aiken & Carter (of Johannesburg) and Mr. B. Halsey (of Durban) were appointed by the Governor-General to examine the accounts of the Commission.

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Appointment
of Auditors.

Accounts.

A statement of receipts and payments by the Commission for the period 1st March, 1923, to 31st December, 1923, is attached, duly certified by the Auditors.

Conclusion.

The Commission has had a strenuous year, not only as regards the nature, but also the number of schemes investigated. As will be seen from this report, it has dealt with electric lighting and power schemes in most parts of the Union, and, while the greater proportion of the work accomplished has been preliminary and negotiation work, it will be realised by those experienced in starting up and developing any new business that the difficulties encountered in the initial stages, the working out of new schemes on sound lines, technically and commercially, and the negotiations entailed in securing their acceptance, take time, and involve nearly as much administrative work, and often a great deal more anxiety, than the actual carrying out of the schemes.

By Order of the Commission,

I have the honour to be,

Sir,

Your obedient servant,

A. C. McColm,

SECRETARY.

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Electricity Supply Commission.

Statement of Receipts and Payments for the period from 1st March, 1923, to 31st December, 1923.

<p>To Government of the Union of South Africa—Cash advances on account of amount of £60,000 voted by Parliament for the year ending 31st March, 1924 £15,009 5 4</p> <p>„ Receipts from Municipalities for Reports by Commission 181 0 0</p> <p>„ Bank Discount on Remittances to London 34 7 6</p>	<p>By Salaries—</p> <p>Commissioners £2,958 6 8</p> <p>Secretarial and Office Staff 1,917 16 11</p> <p>Engineers 1,381 7 9</p> <hr style="width: 100%;"/> <p>„ South African Railways, for Services of Engineers 150 6 5</p> <p>„ Fee and Expenses of Engineer <i>re</i> Sabie Survey 241 1 9</p> <p>„ Travelling Expenses and Subsistence Allowance to Commissioners and Staff 747 18 5</p> <p>„ Advances in connection with Visit to England <i>re</i> Witbank Scheme 1,730 12 0</p> <p>„ Advances to Consulting Engineers on account of Fees and Expenses 2,750 0 0</p> <p>„ Deposit in connection with Boring at Congella 100 0 0</p> <p>„ Office Furniture, Typewriters and Equipment 488 4 1</p> <p>„ Office Rent 446 0 0</p> <p>„ Printing and Stationery 92 15 2</p> <p>„ Telegrams, Cables and Stamps 58 3 0</p> <p>„ Engineers' Prints, etc. 66 0 0</p> <p>„ Sundry General Charges 84 10 0</p> <p>„ Legal Expenses 1,725 8 10</p> <p>„ Accountancy Expenses 42 0 0</p> <hr style="width: 100%;"/> <p>„ Cash—</p> <p style="padding-left: 20px;">In Bank 63 1 10</p> <p style="padding-left: 20px;">On Deposit with Department of Mines and Industries 181 0 0</p> <hr style="width: 100%;"/> <p style="text-align: right;">£15,224 12 10</p>
<hr style="width: 100%;"/> <p>£15,224 12 10</p>	<hr style="width: 100%;"/> <p>£6,257 11 4</p> <hr style="width: 100%;"/> <p>14,980 11 0</p> <hr style="width: 100%;"/> <p>244 1 10</p> <hr style="width: 100%;"/> <p>£15,224 12 10</p>

We report that we have examined the above Statement of Receipts and Payments of the Electricity Supply Commission for the period from 1st March, 1923, to 31st December, 1923, with the relative vouchers. The Statement only deals with expenditure actually made during the period, and does not include the liabilities of the Commission at the 31st December, 1923, some of which could not be definitely ascertained at that date, the work carried out by the Commission during the period being in the nature of preliminary investigations. It has not been possible, therefore, from the information available to prepare a Balance Sheet as required under the Act.

Subject to the above, we certify that the foregoing Statement of Receipts and Payments for the period to 31st December, 1923, is in order, and that all our requirements and recommendations as Auditors have been complied with and carried out.

Johannesburg,
15th April, 1924.

(Sgd.) B. HALSEY,
(Sgd.) ALEX. AIKEN & CARTER,
Auditors.