

1926.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA



PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS.

REPORT

TOGETHER WITH

MINUTES OF EVIDENCE

RELATING TO THE PROPOSED

TRANSFER OF POSTAL DEPARTMENT'S TELEGRAPH
LINES BETWEEN PERTH AND ADELAIDE TO
TRANSCONTINENTAL RAILWAY ROUTE.

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MEMBERS OF THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

(Fifth Committee.)

George Hugh Mackay, Esq., M.P., Chairman.

Senate.

Senator John Barnes.
Senator Patrick Joseph Lynch.
Senator Matthew Reid.

House of Representatives.

Robert Cook, Esquire, M.P.
The Honorable Henry Gregory, M.P.
Andrew William Lacey, Esquire, M.P.
David Charles McGrath, Esquire, M.P.
Alfred Charles Seabrook, Esquire, M.P.

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EXTRACT FROM THE VOTES AND PROCEEDINGS OF THE HOUSE OF REPRESENTATIVES.

No. 10, DATED 3RD FEBRUARY, 1926.

7. PUBLIC WORKS COMMITTEE—REFERENCE OF WORK—TELEGRAPH LINES BETWEEN PERTH AND ADELAIDE.—

Mr. Gibson (Postmaster-General) moved, pursuant to notice, That, in accordance with the provisions of the Commonwealth Public Works Committee Act 1913-21, the following work be referred to the Parliamentary Standing Committee on Public Works for their report, viz.:—Transfer of Postal Department's telegraph lines between Perth and Adelaide to the Transcontinental Railway route.

Debate ensued.

Mr. Gibson having laid on the Table plans, &c., in connexion with the proposed work—

Debate ensued.

Question—put and passed.

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS.

TRANSFER OF POSTAL DEPARTMENT'S TELEGRAPH LINES BETWEEN PERTH AND ADELAIDE TO TRANSCONTINENTAL RAILWAY ROUTE.

R E P O R T.

The Parliamentary Standing Committee on Public Works, to which the House of Representatives referred, for investigation and report, the question of the proposed transfer of the Postal Department's telegraph lines between Perth and Adelaide to the Transcontinental railway route, has the honour to report as follows :—

INTRODUCTORY.

1. Telegraphic communication between Adelaide and Perth is at present maintained by three lines as follow :—

(a) Adelaide—Fowler's Bay—Eucla—Albany—Perth.

This is referred to as the old coastal wire, is of galvanized iron 400-lb. to the mile, and has a length of 1,870 miles.

(b) Adelaide—Fowler's Bay—Eucla—Kalgoorlie—Perth (connected for through service at Kalgoorlie).

From Adelaide to Fowler's Bay, a distance of 586 miles, this line is of 300-lb. copper; from Fowler's Bay to Coolgardie, a distance of 825 miles, it is of 400-lb. galvanized iron wire; from Coolgardie to Kalgoorlie, a distance of 24 miles, and from Kalgoorlie to Perth, a distance of 365 miles, it is of 200 lb. copper.

(c) Adelaide—Fowler's Bay—Eucla—Coolgardie—Perth.

From Adelaide to Fowler's Bay, a distance of 586 miles, this line is of 400-lb. copper; from Fowler's Bay to Eucla, a distance of 240 miles, it is of 265-lb. copper; and from Eucla to Perth, a distance of 926 miles, it is of 200-lb. copper wire.

2. In 1921, it was proposed to replace the galvanized iron wire by a copper wire 300-lbs. to the mile, which would be carried from Perth to Kalgoorlie, 351 miles, on the Department's own telegraph lines along the road, and between Kalgoorlie and Forrest, a distance of 420 miles, on the telegraph lines of the Commonwealth Railways Department. From Forrest to Eucla, a distance of 67 miles, it was proposed to erect a new line. This proposal, involving an expenditure of approximately £42,030, was recommended by the Parliamentary Standing Committee on Public Works and approved by Parliament; but was held in abeyance by the Postmaster-General's Department pending consideration of the question of the possible provision of a telephone service between Perth and Adelaide.

3. In the meantime, the Commonwealth Railways had equipped its safe-working wire with a telephone, and when the question was re-opened some doubt was expressed as to the inductive interference likely to arise owing to the Postal Department's high speed work adversely affecting the Railway Department's safe-working wire. The matter was therefore again delayed until 1924, when it was decided that by metalclipping the Railway Department's single wire circuit it would be possible to overcome the difficulty. The present proposal was then brought forward.

PRESENT PROPOSAL.

4. The proposal at present before the Committee is :—

(a) *Port Augusta to Kalgoorlie.*

Run two new 300-lb. copper wires on railway poles for use in lieu of three existing wires via Eucla.

(b) *Adelaide to Perth.*

Utilize one existing 300-lb. copper wire Adelaide to Port Augusta, thence one existing 300-lb. copper wire taken in exchange from the Commonwealth Railways Department, Port Augusta to Kalgoorlie; thence run one new 200-lb. copper wire on existing postal poles Kalgoorlie to Perth; all to make up a through circuit Adelaide to Perth for the use of the Eastern Extension Cable Company.

(c) Dismantle certain portions of the existing coastal route which will be no longer required for interstate or local services.

ESTIMATED COST.

5. The estimated cost of the project as submitted to the Committee was set down at £167,010, made up as follows :—

New line construction	£143,123	
New buildings	3,500	
Transfer of apparatus from existing to new lines	793	
Dismantling and recovering old material	19,594	
		£167,010
From this amount should be deducted—		
Estimated value of old line material to be recovered	£22,824	
Payment already made to Railway Department on account of erection of poles along Transcontinental railway route	24,844	
		47,668
Leaving a net amount now to be incurred on the project of		£119,342

The time necessary to complete the work is stated to be about nine months.

COMMITTEE'S INVESTIGATIONS.

6. The Committee took evidence from the Chief Electrical Engineer, Postmaster-General's Department, the Chief Manager of Telegraphs and Wireless, the Divisional Manager of the Eastern Extension Australasia and China, Telegraph Company Limited, and from the Chief Engineer of Ways and Works, Commonwealth Railways; examined plans of the route, and generally informed itself in regard to all the aspects of the project submitted.

PRELIMINARY WORK.

7. It was explained in evidence that, with a view to meeting the future requirements of the Postmaster-General's Department, it was arranged during the construction of the Transcontinental Railway that instead of erecting 20 telegraph poles to the mile between Kalgoorlie and Tarcoola, and 22 telegraph poles to the mile between Tarcoola and Port Augusta, which would be sufficient for railway requirements, the number of poles put in should be 25 to the mile between Kalgoorlie and Tarcoola, and 27 to the mile between Tarcoola and Port Augusta, to permit of the extra wires for the Postal Department being carried. This involved an additional expense of £24,844, which was paid by the Postmaster-General's Department to the Commonwealth Railways.

POLES.

8. The poles along the Transcontinental Railway are of the Siemens tubular galvanized iron pattern, about 4 inches in diameter and 22 feet long. They carry cross-arms 45 inches long for the accommodation of the Railway Department's wires, and it is proposed to erect an additional cross-arm on each pole to carry the Postal Department's wires. Accommodation is being left on the arms of the poles to provide for two additional wires if required in the future.

REPEATERS.

9. On account of the length of the line between Kalgoorlie and Port Augusta, it is considered necessary to provide an additional repeater at Cook.

BUILDINGS.

10. The new building which will be necessary to house the repeaters and batteries at Cook is to be erected of brick, and the staff cottages will be of timber of the type now being erected for the accommodation of railway officials at Tarcoola and other places.

AGREEMENT WITH COMMONWEALTH RAILWAYS.

11. Under agreement made with the Commonwealth Railways Department, the Postal Department undertakes to—

(a) Provide and run one 400-lb. galvanized iron wire from Port Augusta to Kalgoorlie to convert the Railways' safe-working and telephone wire to a metallic circuit, and to insert transpositions in the converted line to minimize inductive interference. This second 400-lb. galvanized iron wire will then become the property of the Commonwealth Railways.

(b) Provide and fit one 78-inch wooden crossarm throughout.

(c) Provide and run one 200-lb. copper wire, with insulators and spindles, &c., on the new arm. This wire is to be handed over for use as a railway telegraph line in exchange for their existing 300-lb. copper wire, which will then become postal property.

(d) Lower the existing 300-lb. copper wire mentioned in (c) to the new arm, and then use it as portion of the Adelaide-Perth circuit to be leased to the Eastern Extension Cable Company.

(e) Provide and run two 300-lb. copper wires, which will be used as portion of the through postal wires in lieu of the three existing wires on the coastal routes.

(f) Pay rental for the use of the railway poles at the rate of 10s. per mile of wire per annum for the three postal wires.

(g) Strengthen the railway pole route by providing and fitting two transverse stays at each half-mile, with two longitudinal stays alternating at the same intervals, thus giving eight single stays per mile.

For the rental payable under (f) above, the Railway Department undertakes to carry out patrol and ordinary maintenance work.

AGREEMENT WITH EASTERN EXTENSION COMPANY.

12. During the course of the inquiry, it was stated that the Eastern Extension Australasia and China Telegraph Company Limited had made a request to the Postmaster-General's Department for the provision of a telegraphic channel of communication between Perth and Adelaide, and that it was intended to give effect to this under the present project.

The Company has a submarine cable from Adelaide to Perth, thence to Cocos Island, from which there are branches running to Batavia and Singapore on the one hand, and to Mauritius and Cape Colony on the other. Owing to the heavy traffic on this line, and the consequent delays which arise, the Company decided to duplicate its cable from Cocos Island to Perth, and it is expected that this work will be completed by the end of March, 1926. To avoid the expense of also duplicating the cable from Perth to Adelaide, which is said to be subject to many interruptions on account of the frequent storms and rocky nature of the sea-bottom, the Company is desirous, if satisfactory arrangements can be made, of utilizing a land line from Perth to Adelaide.

13. After some negotiations, the Postal Department has offered to provide under this scheme one 300-lb. copper wire from Adelaide to Kalgoorlie and one 200-lb. copper wire between Kalgoorlie and Perth. Automatic repeaters will be provided at Port Augusta, Cook, and Kalgoorlie. These repeaters, as well as the line, will be maintained and attended to by the Postal Department. For providing this channel of communication, the Postal Department asks a rental of £15,000 per annum for a period of 10 years with option of renewal, and the Eastern Extension Company has agreed to these terms.

NECESSITY FOR RE-ARRANGEMENT.

14. In the course of the evidence taken by the Committee, it was stated that of the existing lines along the coastal route, one is wholly of 400-lb. galvanized iron wire, and another for 880 miles, or about half of its length, is composed of wire of the same type. These iron wires, on account of their proximity to the coast, are adversely affected by the salt-laden atmosphere, and even when new their high electrical resistance acts as a serious detriment to efficient telegraphic transmission over long sections. It was represented that the existing lines do not effectively carry the traffic offering, which amounts to approximately 3,857 messages daily, partly because of the comparatively large proportion of iron wire which is nearing the end of its useful life, and partly because of the frequent interruptions due to the age of the construction generally.

Owing to the absence of travelling facilities along the coastal route, the interruptions are said to be of excessive duration, and for the same reason the general maintenance of these lines is rendered more expensive.

It was further stated that reconstruction of long sections of the existing route is becoming more urgent each year, particularly in Western Australia, where it is held that an estimated expenditure of £34,200 will become an immediate necessity if the lines are not transferred to the Transcontinental route as suggested.

ADVANTAGES OF NEW PROPOSAL.

15. It is claimed that the transfer of the Departmental lines to the Transcontinental route will confer many advantages, as on account of the dry climate, equable temperature, and infrequency of storms there will be greater freedom from interruptions to the service and consequent improvement in efficiency and revenue production. On account of greater accessibility also, more rapid restoration can be effected in the event of a breakdown. In addition, there will be some economy, and on line and mechanical staff and repairing stations it is estimated that a saving of over £500 per year should be realized.

ESTIMATED REVENUE.

16. Figures obtained by the Committee showed that the revenue for the past five years was as follows:—

Year.	Interstate Traffic from Western Australia.	Interstate Traffic to Western Australia.
1920-21	£38,445	£33,864
1921-22	41,534	32,822
1922-23	40,720	31,661
1923-24	42,925	35,300
1924-25	41,711	31,439

and it was stated that, with the new lines eliminating delays and providing better circuits, it is possible that a substantial increase in revenue will result, apart from the £15,000 a year which would be received from the Eastern Extension Telegraph Company.

ADELAIDE TO PERTH TELEPHONE.

17. During the hearing of evidence, the opinion was elicited that the new route will provide sufficient accommodation when required for lines necessary to carry a telephone service between Adelaide and Perth, and arrangements are being made that the repeating stations to be put in will harmonize with those that will be ultimately required for the telephone service.

It was stated, however, that this facility is not suggested at present, and its date of installation will depend on the public demand for it.

LOCAL SERVICES.

18. In the course of the inquiry, it was ascertained that although the coastal lines are inadequate to cope with high-speed interstate traffic, several sections could still be satisfactorily used to deal with local requirements. For this reason, it is proposed to retain for the convenience of settlers in the vicinity the following telegraph services:—

- Perth-Coolgardie-Norseman;
- Perth-Albany-Esperance;
- Adelaide-Port Augusta-Smoky Bay-Fowler's Bay;
- Nundroo-Nullabor;

and also a telephone service between Fowler's Bay and Nundroo.

RECOVERY OF OLD MATERIAL.

19. Even allowing for the retention of certain local services, there will be considerable mileages of line thrown spare. The Committee was informed that where it is considered a payable proposition, an effort will be made to recover such material on the existing coastal route as can be used elsewhere; but that a considerable amount of material will not pay for its recovery. The Chief Electrical Engineer, in giving evidence, stated that, in endeavouring to recover as much material as possible, the Department would take into careful consideration the wisdom or otherwise of calling tenders for this work.

CONTRACT VERSUS DEPARTMENTAL LABOUR.

20. Some members, however, were of opinion that not only the recovery of old material, but the whole of the work involved in this project, might be more properly carried out by contract, and with this in mind,

Mr. Seabrook moved. That tenders be called for the whole of the work involved in the proposal.

Seconded by Mr. Gregory.

The Committee divided on the motion:—

Ayes (2).
Mr. Gregory
Mr. Seabrook

Noes (5).
Senator Barnes
Senator Reid
Mr. Lacey
Mr. Mackay
Mr. McGrath

and so it passed in the negative.

COMMITTEE'S RECOMMENDATION.

21. After giving the matter full consideration, the Committee recommends that the proposal as submitted for the transfer of the Postal Department's telegraph lines between Perth and Adelaide to the Transcontinental Railway route should be given effect to as early as possible.

G. H. Mackay
G. H. MACKAY, Chairman.

Office of the Parliamentary Standing Committee on Public Works,
Federal Parliament House,
Melbourne, 26th February, 1926.

MINUTES OF EVIDENCE.

(Taken at Melbourne.)

MONDAY, 8th FEBRUARY, 1926.

Present:

Mr. MACKAY, Chairman;

Senator Lynch
Mr. Cook
Mr. Gregory

Mr. Lacey
Mr. McGrath.

John Murray Crawford, Chief Electrical Engineer, Postmaster-General's Department, sworn and examined.

1. *To the Chairman.*—I have prepared the following brief statement relating to the proposed transfer of the Postmaster-General's Department's telegraph lines between Perth and Adelaide from the coastal to the transcontinental railway route:—

In 1921 a proposal was dealt with by the Public Works Committee covering the provision of an additional telegraph line from Perth, via Kalgoorlie, Forrest, and thence 67 miles southward to Eucla. The estimated cost of this work was £42,030. The Public Works Committee recommended approval of the work to Parliament, which was given.

2. Before carrying out this work, however, further investigation was made with a view to further improving the telegraph service between Perth and Adelaide, and it is desired to amend the original scheme and carry out the work as detailed below—

Brief Description of Proposal.—The interstate telegraph lines between South Australia and Western Australia at present are carried by routes both along the coast and inland. The cost of maintaining these lines is very high owing to their isolated position, and, further, considerable reconstruction work is required in order to put the lines in a satisfactory condition.

At the time the transcontinental railway was being built, this Department arranged for additional poles to be provided per mile with a view to transferring the existing lines to that route when it was economical so to do. This time has now arrived, and it is proposed to carry out the work immediately.

Cost.—The estimated total cost of the work is £167,000.

Eastern Extension Company.—A request has been made by the Eastern Extension Company for the provision of a line between Perth and Adelaide for the company's exclusive use. It is proposed to provide this line at the same time as the departmental transfer is being carried out.

Advantages.—The advantages to be derived from transfer of the departmental lines are—

- (1) Greater freedom from interruptions to service with consequent improvement in efficiency and revenue production.
- (2) More rapid restoration of service in the event of breakdown.

- (3) Provide accommodation for a trunk telephone circuit between Perth and Adelaide.

- (4) Save an amount of £34,000 on repairs to the coastal route which, in any case, would not give a service of the same efficiency as the transcontinental route.

The Department has no record as to the cost of the erection of the existing lines and the date of their erection. They were probably constructed in the seventies. At the present time there are three wires connecting Perth with the eastern States. On the coastal route from Adelaide to Perth the line passes through Port Augusta, Port Lincoln, Fowler's Bay, Smoky Bay, Eucla, Esperance, and Albany. This is an iron wire throughout. It is of very little value now, because it has outlived its usefulness. The other two wires are partly copper and partly iron. They follow the same route between Adelaide and Eucla, but thence they run via Norseman to Coolgardie, when one goes direct to Perth and the other to Kalgoorlie. The proposed new wires will run in a direct line from Port Augusta to Kalgoorlie. The copper wire from the old lines will be recovered where it will pay to adopt that course. We propose to run two 300-lb. copper wires from Port Augusta to Kalgoorlie, and to utilize one 300-lb. copper wire that belongs to the Commonwealth Railway Department. This wire will be worked by the Eastern Extension Telegraph Company, and, in return, we propose to give the Commonwealth Railway Department a 200-lb. copper wire that will suffice for its purposes. It is also intended to metallize—that is, to duplicate by erecting another 400-lb. galvanized iron wire—the Railway Department's present safe working wire, which is also used as a telephone circuit. At any point along the transcontinental railway the guard can cut in with a portable telephone. Therefore, we shall run one 200-lb. copper wire and a new 400-lb. galvanized iron wire, and take in return the existing 300-lb. copper wire. The details of the estimated cost are as follow:—

New line construction ...	£143,123
New buildings ...	5,500
Transfer of apparatus from existing to new lines ...	793
Dismantling and recovering ..	19,594
	£167,010

I have given the gross cost. The actual net cost will be £144,186, because material and plant will be recovered to the value of £22,824. Effect can be given to this proposal in a very short time, because the poles are already erected along the transcontinental railway line. All it will be necessary to do is to add an additional wooden arm, 78 inches long, and that I think could be done in, at the outside, nine months. When the construction of the transcontinental railway was being undertaken, the Commonwealth Railway Department told the Postal Department that it was going to build a telegraph line along the route, and it was revived at that time that at a future date, a telephone

line of communication between the eastern and western States could probably be required. We asked the Railway Department whether it would add additional poles. Its proposal at that time was to use 20 poles a mile but that would cause a very long span, and would not be satisfactory for telephonic communication. As a result of negotiations then entered into, the Postal Department paid about £24,000 to have five additional poles erected in every mile. These are Siemens's tubular iron poles, about 22 feet long. Between Port Augusta and Tarcoola there are actually 27 poles to the mile, because the Commonwealth Railway Department proposed to erect 22, as it had extra wires between those two points. The position now is that between Port Augusta and Tarcoola there will be 27 poles to the mile, and between Tarcoola and Kalbarrie 25 of which five poles a mile throughout the whole length have been paid for by the Postal Department. The book entries between the two Departments were made when the work was completed. The coastal line is the longest of the three existing wires, and the proposed line will be about 200 miles shorter. The coastal route lies through very difficult country. Camel teams have to be employed for transport over a large portion of it. Another serious disadvantage is the fact that the heavy sea fogs corrode the iron wire. At particular seasons of the year, both morning and evening, the wires are practically unworkable, or they can be operated only at a very low speed. The proposed inland route will completely overcome that very grave difficulty. Moreover, the patrol work will be far less costly. On line and mechanical staff and repairing stations an estimated saving of over £500 a year should be realized. The Eastern Extension Company should be realized. The Eastern Extension Company is now laying an additional cable between Coos Island and Cofferslee, and when the work is completed it will have much heavier traffic between Perth and Adelaide than it now has. A submarine cable is used at the present time between Perth and Adelaide, but the company desires to supplement that by a land line. It has asked for a 300-lb. copper line. The existing lines would not meet its requirements, and it would not pay this Department to put up a line wholly for the company, but we have taken advantage of the opportunity to meet the company's request and our own requirements at the same time. We have occasionally assisted the company, and it has at times assisted us, but there is no transfer of traffic between us, except when interruptions to lines take place or the business is particularly heavy. An agreement has been entered into between the Department and the company, by which we undertake to provide it with a 300-lb. copper wire line between Adelaide and Perth. The rental paid will be £15,000 per annum for a minimum of ten years. We regard the agreement as quite satisfactory from our point of view. All our expenses in connexion with the provision of this wire will be covered. The proposed new line is required to cope with the business of the Commonwealth. One of the poles in the line is entirely of iron. The other line for about 880 miles, or about half its length, has 400-lb. iron wire in it. The third is a composite copper line, varying from 400 to 200 lb so that the new line ought to be better than any of the existing lines, because the distance will be shorter and the gauge uniform. We are providing at the same time for extension at a future date, when a transcontinental telephonic service may be justified between Perth and Adelaide. Before that work is undertaken it will be necessary to put in additional repeating stations. This facility is not justified at the moment, but I have no doubt that in the comparatively near future it will be necessary to establish a trunk line telephone connecting Western Australia with the eastern States. The provision proposed on this route will enable that work to be carried out at a minimum of expense. The necessary apparatus is expensive. How soon this telephonic service will be

provided will depend on the public demand for it. The wire used for the proposed new line will probably be in accordance with the policy of the Department, but of Australian manufacture. We usually call for tenders for material. The last price received in Australia for hard-drawn copper wire was £101 a ton for 200-lb. wire, and £102 a ton for 100-lb. wire, as against the English prices of £80 and £82 respectively. The duty on the imported article represents approximately £23 a ton. No competition is experienced in tendering for wire manufactured in Australia. The Australian-made wire is quite a satisfactory article. All the other material required is obtainable in Australia, and we get Australian competition. The present proposal will lead to economy in staff. I regard it as a necessary work that should be proceeded with as soon as possible. I understand that the Eastern Extension Telegraph Company will have completed the laying of the additional cable between Coos Island and Perth by about the end of next month. I am not afraid of any possibility of the advance made in wireless telegraphy rendering the proposed new line useless within the next ten years. The traffic between the eastern and western States in a typical week averages 3,850 messages daily. Accommodation has been left on the arm of the poles for two additional wires. It will not be necessary to touch the existing line between Port Augusta and Adelaide. We have three wires there already, and they will meet requirements. Our policy, broadly, where there is settlement along the route, is to leave sufficient communication facilities to meet local needs. We do not propose to recover the material where the service is required. There will be telegraph services, for instance, between Perth, Coolgardie, and Norseman; between Perth, Albany, and Esperance; between Port Augusta, Smoky Bay, and Fowler's Bay; between Fowler's Bay and Nundroo (telephone only); and between Nundroo and Mul-labor. It would not pay us to recover the whole of the material along the coastal route, and if there are any settlers who wish the line to be kept going I do not think that they would be prevented from doing so. Only in the settled parts, however, will patrol work be necessary.

2. To Mr. McGrath.—I cannot separate the cost to the Eastern Extension Company and to the Department respectively. The wire we shall give to the railway is the 400-lb. galvanized iron wire, which it will metallize for its safe working. It is a perfectly satisfactory financial proposal, which should result in a considerable saving to the Department. There will be no further payment to make to the Commonwealth Railway Department.

3. To Mr. Lacey.—The proposal will not improve the telegraphic facilities of people between Tarcoola and Port Augusta, because the new line will be reserved for interstate work. The existing services will be retained and added to as required. The new line will be purely a trunk line worked at high speed. The iron poles should have a life of at least 50 years.

4. To Senator Lynch.—If the proposal is not carried out, it will be necessary to renew the existing coastal line between Albany and Bremer Bay section is practically falling down. Its renewal has been postponed from year to year. Subsequently it will be necessary, as the alternative to the present undertaking, to renew the line from Bremer Bay to Eucla. We set down the cost of renewing the Albany-Bremer Bay section as an offset to the cost of the proposed new line instead of setting it down to repairs, because it is since reconstruction work might be said to be wholly dependent on the construction of the new line. In addition to the saving in mechanical staff, there will be fewer repeating stations, and the patrol charges will be considerably reduced. You ask me why the Department did not take action before now to make this saving. I wish to point out that when we got the approval of Parliament to go on with this work towards the end of 1921,

a question was raised by the then Secretary of the Postal Department (Mr. Oxenham) regarding the possible provision of a telephonic service. The then Chief Electrical Engineer, who had just returned from abroad, had investigated the matter, and found that the time was not ripe to provide telephonic communication. That caused a delay of nearly a year. The Commonwealth Railway Department meanwhile had equipped its safe working wire with a telephone. When everything was ready for us to go on with the work, that Department was afraid that the inductive interference likely to arise owing to our high speed work would adversely affect its safe-working wire. No doubt it would. The matter, therefore, was more or less in abeyance for a short time. It was re-opened eighteen months or so ago, and it was decided that by metallizing the Railway Department's single wire circuit it would be possible to overcome the difficulty. I think that the present proposal would improve the telegraphic service, and provide facilities for installing a telephonic service in minimum time and at a minimum of expense. Before providing telephonic communication between Perth and the eastern States, however, it will be necessary to undertake a study of that line with regard to the additional repeating stations needed. This would mean fairly heavy additional cost. We are even arranging that the repeating stations to be put in will harmonize with those that will ultimately be required for the telephonic service. The coastal route has almost ceased to be dependable, because of the constant interruptions caused by coastal mist. The delay averages much over 30 minutes daily between the two capitals, but the difficulty will be entirely overcome on the new inland route, which is a most reliable one. It is never affected by coastal fogs, and rarely by anything in the nature of cyclones. This route seems to lie between the two disturbing factors. It will be a first class medium high speed line. The life of the copper wire through the desert should be almost indefinite. It should be one of the most reliable lines in the Commonwealth.

5. To Mr. Gregory.—I do not know that it would pay the Department to take up the line between Esperance and Fowler's Bay, but if any settlers wish to keep it going they may do so. Once they let the line fall, there will be no communication between Esperance and Eucla. The new proposal provides for one 300-lb. copper wire and one 200-lb. copper wire, and we shall also have one 300-lb. copper wire from the Commonwealth Railway Department. The distance from Port Augusta to Kalgoorlie is so great that a repeating station will be required at Cook. For telephonic communication between Adelaide and Perth we shall probably require two extra wires, but we have not yet gone into that matter. The work of erecting the new line will be carried out by our own Department. We do not usually prepare specifications unless the work is to be done by a contractor. If the poles were not already in position we should certainly do the work by contract, unless the contractor's price was much higher than our own. The quantity of copper wire required is about 350 tons. I undertake to supply the committee with a copy of the agreement entered into between the Department and the Eastern Extension Telegraph Company.

6. To the Chairman.—The following is a supplementary statement which I have prepared for the information of the committee:—

ADELAIDE-PERTH TELEGRAPH LINE—PROPOSED RE-ARRANGEMENT, ETC.

Brief Outline of Proposal.

(a) Port Augusta to Kalgoorlie.—Run two new 300-lb. copper wires on railway poles for use in lieu of three existing wires via Eucla.

- (b) Adelaide to Perth.—Utilize one existing 300-lb. copper wire (Line No. 45), Adelaide to Port Augusta, thence use existing 300-lb. copper wire taken in exchange from the Commonwealth Railway Department, Port Augusta to Kalgoorlie, thence run one new 200-lb. copper wire on existing poles Kalgoorlie to Perth, all to make up a through circuit Adelaide to Perth for the use of the Eastern Extension Cable Company.
- (c) Dismantle certain portions of the existing coastal route which will be no longer required for interstate or local service.

Existing Facilities.

There are now three telegraph lines in use between Adelaide and Perth, viz.:

	Class of Wire	Approximate Wire Mileage.
No. 12 (old coastal wire), Adelaide-Fowler's Bay Eucla Albany Perth ..	G.I., 400 lb.	1,870
No. 45/10, Adelaide-Fowler's Bay-Eucla-Kalgoorlie-Perth (converted for through service at Kalgoorlie)-Adelaide to Fowler's Bay ..	C., 300 lb.	380
Fowler's Bay to Coolgardie ..	G.I., 400 lb.	825
Coolgardie to Kalgoorlie ..	C., 200 lb.	24
Kalgoorlie to Perth ..	C., 200 lb.	305
		1,800
No. 47, Adelaide-Fowler's Bay Eucla Coolgardie-Perth ..	C., 400 lb.	580
Adelaide to Fowler's Bay ..	C., 200 lb.	240
Fowler's Bay to Eucla ..	C., 200 lb.	926
		1,762

Necessity for Re-arrangement

The existing lines do not effectively carry the traffic offering, partly because of the comparatively large proportion of iron wire which is nearing the end of its useful life, and partly because of the frequent interruptions due to age of the construction generally.

Owing to the absence of travelling facilities along the coastal route, the interruptions are of excessive duration, and for the same reason the general maintenance of these lines is rendered more expensive.

Reconstruction of long sections of the existing route is becoming more urgent each year, particularly in Western Australia, where an estimated expenditure of £34,260 will become an immediate necessity if the lines are not transferred to the East-West railway. The greater portion of this expenditure has been deferred from year to year owing to the prospect of saving it by transferring the lines.

Preliminary Work.

When the Commonwealth Railway Department was constructing its telegraph line along the Port Augusta-Kalgoorlie railway, the Postal Department arranged for the strengthening of the construction by the erection of from five to seven additional poles per mile, with a view to providing the strength necessary to carry postal wires also at a later date.

The cost of the additional poles, &c., amounted to £24,844, and was adjusted by journal entries as between the two Departments concerned.

Telephone Trunk Line Proposal.

Consideration has been given to the provision of a telephone trunk line between Adelaide and Perth (railway route), but inquiries indicated that such a course is not at present justified.

Cost.

The new building to house the repeaters and batteries at Cook is to be of brick and the staff cottages of wood of the type now being erected for the accommodation of railway officials at Tarcoola and other places.

The approximate costs of the complete proposal are estimated at :—

New line construction ...	£143,123
New buildings ...	3,600
Transfer of apparatus ...	793
Dismantling and recovering ...	19,594

				£167,010
Less value recovered material and plant	22,824

	£144,186
Less payment already made for additional railway poles ...	24,844

£119,342

7. To Mr. Gregory.—I shall give the committee such revenue figures as are to be obtained, as well as detailed estimates of cost. It is estimated that £20,000 worth of copper wire will be recovered.

8. To Mr. Cook.—I should say that the actual cost of the work will be within 10 per cent. of the estimate I have given.

9 *To Senator Lynch.*—I would not like to comm

myself at this stage as to when it will pay to establish telephonic communication between Perth and the eastern States. In addition to the £34,000 which

would be necessary immediately for the renewing of the coastal line as far as Bremer Bay, probably another \$50,000 would have to be spent in subsequent years if the present proposal were not carried out. Therefore, later, the Earle-Fowler's Bay link would have to be renewed. That is the sort of expenditure that would have to be incurred to keep the existing facilities in satisfactory condition. The proposed new route would be of benefit to the public, but it will mean an extension of the line between Portland and Adelaide. Even if large sums were spent in improving the existing coastal line and keeping it in order, the service would not be equal to that obtainable on the proposed new route.

(Taken at Melbourne.)

TUESDAY, 9TH FEBRUARY, 1926.

I present:

Mr. MACKAY, Chairman;
 Senator Lynch Mr. Lacey
 Mr. Cook Mr. McGrath.
 Mr. Gregory

Edward George Brooke, Divisional Manager, the
 Eastern Extension Australasia and China Telegraph
 Company, Limited, sworn and examined.

It was only recently I

10. To the Chairman.—It was heard that the proposal to transfer the Postal Department's telegraph line from the coastal route to the inland route of the railway between Perth and Adelaide had been referred to this committee. My company is seeking to utilize the channel of communication along the route of the railway. I tender a map showing the company's cable system with land line connections, so that the actual position of cable communications may be readily seen. The whole of the lines marked in red on the map belong to the associated companies; those beyond India being controlled by my company.

[illegible]

west coast of Western Australia is steep and rocky, and the seas stormy, interruptions are most frequent there than on any part of the company's system. As the cable-repairing ship is stationed at Singapore, our central office, it is lost in getting the vessel down, and, as it cannot work during bad weather or in a heavy swell, weeks often pass without any work being possible; and, during all this time, traffic is almost entirely suspended, causing serious public and Commonwealth inconvenience, as well as threatening serious loss on the land lines. The new cable route to Adelaide would have to go over the Leeuwin, and it would be to avoid the fact that the company is desirous of substituting a land line by way of the transcontinental railway. The company has no desire for a line via the coast, as that route is subject to interruption from storms, loss of insulation through dampness, and remote from facilities for repair. It is a route which is a burden at times on the overloaded congested cable. Only in December did we had to carry over 6,000 local messages for the department. The land lines were interrupted, and the business in Western Australia seriously congested. The route via the transcontinental railway is a singularly fortunate one for a telegraph land line. There are no mountains, no rivers to cross, storms are rare, and the temperature is fairly uniform. Communication can be looked for along the route. I have been told that traffic on the land line has never been interrupted. Facilities for repair are also available along the entire route. The chief bases for my company's application are, therefore, economy and important public utility. The original cost of the Cocos Island to Adelaide was laid from Perth at a cost of £250,000, from Cocos Island to Perth and another £250,000, from Perth to Adelaide. The company originally decided to lay a cable only to Perth. It asked me to obtain some particulars of the working of the land line via Eucla. I learned that that line could not be depended upon as a channel of communication. Despite its costliness, we therefore decided to continue the cable to Adelaide. The company controls a cable line in parallel circumstances to Cape Colony. Permission to lay a cable along the coast. In the difficulties of laying a cable along the coast. In the present case, the company specified that 300 lb. copper wire should be used. It is most important to have heavy copper conductor in order to ensure a quick service. Nearly the whole of the work now is maintenance, and any variation caused by the use of small work, and any variation caused by the use of small work would throw the principle out. The company would then, in the proposal to use the coast line, the fact that it occasions are so serious, in the competition which we have to meet from the Pacific Cable Board and wireless companies. The cable from Perth to Adelaide will have to be taken up and renewed throughout in another 15 years. The maintenance expense is a very heavy one. There is considerable chafing on the coastal sections. We shall have to send a ship down before the end of the year to repair both the Cocos-Perth and Perth-Adelaide sections. They are very much worn and weakened, making us liable to frequent interruptions. A land line between Perth and Adelaide would enable us to give more satisfaction to the public. We do not know of a better channel of communication. I cannot promise that our charges will be reduced. The department is asking a rental of £15,000 per annum for the use of the cable. We would naturally hesitate to undertake the expenditure of a new cable, as a matter of international obligation. The Commonwealth Government is bound to maintain a land wire for international communications. We submitted our proposals to the department eight or nine months ago. We have entered into a 10 years' contract, with the right of renewal at the expiration of that term. As the duplication of the cable between Cocos Island and Perth will be

completed by the end of this month, we should like the land line to be available as early as possible. Delay will be obtained by having two channels of communication instead of one. The use of the land line will enable the companies to reduce their rates in the long run, because they will be able to send a much larger number of words over the line. The congestion at present is caused by the incapacity of the cable to carry the work that is required of it. My company has two cables from Wellington to Sydney, they are the original cables. It was decided to duplicate the cable between Cocos Island and Perth, because it was found necessary to provide a greater number of cables to handle the traffic. Even with a land line, it is necessary to have a cable from Adelaide to Perth. The company has, on different occasions, carried local messages for the Postal Department, which has frequently asked it to take on a batch of delayed work when its lines are not too busy.

11. *To Mr. McIntosh.*—In estimating the rental of £15,000 per annum, provision has to be made by the department to repair work. We shall simply work the line. I assume that the department estimated the original cost and made provision for interest and working expenses that are likely to be incurred. The department's engineers were working on the matter for some time.

12. *To Mr. Lacey.*—We must keep open as many lines as possible. We shall have to use both cables in order to keep up an even flow of news. The great thing is not to lunk up at any point, but to keep the work running smoothly. Both sections will be worked during the whole of the day. We hope that, as time goes on, when we have a land line and our new cable carried through to its destination, greater speed will be attained in the dispatch of messages. At present, we are compelled to work the fastest cable at the rate that is set by the slowest. The delays to which I have referred have not been occasioned by congestion on route. The Melbourne office, at about 5 o'clock in the afternoon, pours messages into Adelaide. The Tasmanian and Victoria offices, at the same time, with a separate line, pours messages in from Queensland, New South Wales, and New Zealand. There is only one cable to carry the work of those two wires. It gets behind, and there is a gradual collection of messages until 10 o'clock at night. As the land lines become idle the cables gradually work down the collection until, at about midnight, they are practically clear. If the company cannot obtain the use of this land line, it will have to lay another cable from Perth to Adelaide. That would not prove anything like so satisfactory.

13. *To Senator Lynch.*—There is no obligation on the part of the Commonwealth Government to grant my company this concession, but there is the obligation which was imposed by an international convention to provide lines that will carry the traffic offering and it would obtain the revenue prescribed by the convention. Approximately one half of the news that is sent from Australia travels over my company's line. The newspapers watch the matter very closely and utilize the line that is best congested. If we fail to secure the use of this land line we shall have to lay another cable between Adelaide and Perth, at a cost of £250,000. I do not think that the fact of our not having to incur that expenditure can be used as an argument in favour of our reducing rates. The competition that at present exists is an effective check against high rates. If one company reduces rates the other must follow suit, even though it loses by so doing. Coming from Perth to Adelaide we have to go right around the Leeuwin, which is a very rough part of the coast. That is what we wish to avoid. If the congestion is relieved at Adelaide by the use of this land line it will not necessarily be shifted to Perth, as we shall then have two lines going right through. At the end of the month there will be two lines available

from Perth, and if we get this concession we shall have two lines from Adelaide to Perth. They will be able to cope with the work that is sent to Adelaide by Sydney and Melbourne, and there will be a nice even flow of traffic. We are able even now to overtake the work at Adelaide, but it is a slow process. There will be no congestion anywhere when this line has been built, because the duplication of these two sections will mean the provision of a double section throughout. From the public viewpoint that will be an improvement, because there will be an even flow of news, without any delay. There will be the added advantage that if one line fails the other will be able to carry the traffic without any serious delay. At the present time an interruption causes a delay of from 24 to 36 hours. The charges are very low now. The last reduction was made by my company, so the next must be made by the Pacific Cable Company. I think that the land line will not be quite as easily as would a cable from Adelaide to Perth. With the application of modern discoveries the land line may, in a few years' time, be used also by the department, so that the benefit will be mutual. The agreement provides for our being given a "channel of communication," not a wire. The wire will still belong to the Postal Department, and it may be applied to a wireless system at different frequencies. The Commonwealth will always have that to fall back upon if the existing provision is not sufficient to cope with an increased pressure of work. We sometimes help the department out of difficulties, and it also helps us. Our capacity is not very great with only one cable.

13a. *To Mr. Gregory.*—The new cable from Cocos Island to Perth has probably the highest capacity of any in the world. It is loaded cable, which gives a greater capacity for traffic. As time goes on it will be possible to cope with additional traffic without extra cost, thus making possible a reduction in the rates. All cable systems will have to follow the practice of putting in loaded cables, which are capable of carrying a much greater amount of traffic at the same operating cost. A very great advantage will be the time saved. A line from Kalgoorlie to Port Augusta will infinitely more serviceable than the one along the coast. At the present time birds cause a considerable amount of trouble on the lines between Sydney and Adelaide. They perch in hundreds, and fly off at the same moment, shaking the line to pieces, just at the busy period of the day. That will not be the case along the transcontinental railway, on which route there are neither birds nor storms. It is a singularly good line. The department does not propose to allow us to have the sole use of this line, although, I believe, the rental has been based upon the total cost. The heavier copper wire works more quickly and more satisfactorily than the lighter. The weight of 300 lb. is used practically throughout the world. I do not favour the use of 200-lb. wire on a line of this size; the sections are too long for the weight. I have not been connected with the electrical side of the work for a long time, and I have not had much experience of land lines, but from what I know of big lengths of land wires it is advisable to use 300 lb. copper wire because of its strength. It is proposed that my company shall pay a rental of £15,000 annually for a period of ten years, with the right of renewal, the Government to undertake the upkeep of the line and the company to bear the expense of sending the messages. That will give us the first right over a single line from Perth to Adelaide.

13b. *To Mr. Cook.*—Our charge is about 4d. a word, which is equal to that of the Government. We take cables of every category for all parts of the world at special, deferred, and ordinary rates. The company undertakes its own repair work. We have ships stationed at different points between here and England. One depot is at Singapore, and I think the next is at Zanzibar.

All our cables are really Empire cables, they all converge on London. We work in very close touch with the Imperial Navy. At the beginning of the war we had a secret cable to Archangel. It was worked by us and nobody knew it existed. We also laid secret cables for the Imperial Navy at strategic points. The line via the Cape was laid after consultation with the Naval authorities as the route would probably be free from interruption and most under the protection of the Navy. At times of war they place Imperial officers in all the cable stations. I have not said that I at all times prefer a land line to a cable, I prefer it in this case because a railway runs alongside the route, making repair work more easy and less costly, and because it is not subject to storms. Even if the line breaks by some mischance, it can be repaired in the course of a few hours. If a break occurred around the Leeuwin the repairs might take a couple of months to effect. Our cable from Adelaide goes right round the Leeuwin to Cottesloe. From Cottesloe we have land lines into Perth. There is another cable from Cottesloe to Cocos Island. That is our main channel of communication. The saving in time with this line will amount to two hours a day for ordinary traffic. As Australia's commercial traffic is in competition with that of other nations the saving of two hours a day is important. My company is associated with other cable companies. The associated companies are mostly controlled by the same board. The work is carried out much better when there is interchangeability.

The witness withdrew.

James Malone, Chief Manager, Telegraphs and Wireless, Postmaster-General's Department, Melbourne, sworn and examined.

14. *To the Chairman.*—I have been instructed to make a statement regarding the traffic aspect of this proposal. At the outset I should like to subscribe to the view which, I understand, has already been expressed to the committee, that the existing lines are unsuitable and inadequate for the interstate telegraph service. The chief disability arises from two causes—(1) the nature and condition of the existing circuits, and (2) their proximity to the sea, and the insulinity of the country traversed. There is considerable mileage of iron wire in the circuits, the high electrical resistance of which acts with serious detriment to efficient telegraph transmission over such long lines. Even if the iron wire were up to its original gauge it would have a resistance per mile of 12.32 ohms as compared with 2.928 ohms per mile for the copper wire it is proposed to use in the new line. It will be seen, therefore, that the difference in conductance in favour of the new wire is 450 per cent. This improved characteristic would be reflected in the working speeds which could be attainable. Whereas on the existing route, under good conditions, the total present capacity of the wires approximates 250 words per minute, the capacity of the proposed wires would amount to 350 words per minute, which equals an increased traffic accommodation of 40 per cent. In actual fact, the iron wire has seriously deteriorated from erosion, due to the salt-laden atmosphere, and the conditions are worse than I have indicated. This loss of gauge has a further serious aspect due to increased liability to breakage, particularly during the stress of frequent high winds on this exposed coast. The failure arises because of the frequent heavy mists over long stretches of the route which render the insulators partially conductive and permit

the leakage of current to earth at each one of the poles on which the lines are supported. As a result only a fraction of the current which leaves the transmitting office reaches its destination, and its magnitude is insufficient to operate the receiving apparatus at a useful speed. The insulation of the lines necessarily stands difficult maintenance and abnormal delays in the restoration of communication where breakage or interruption occurs owing to the absence of any rapid means of transport. From the traffic standpoint these weaknesses in the existing system make me strongly support the diversion of the route. At present the Department is in the unhappy position that it cannot render the service that the community is justified in expecting, and traffic is constantly subjected to unexpected delay to the serious detriment of business transactions. The proposed method of constructing the new line would permit of additional telegraph channels, being made available by utilizing terminal apparatus without having recourse to the erection of additional wires. I also understand that telephonic needs have been carefully reviewed, and the disposition of the wires to be erected is such as to permit of the establishment of telephonic communication between Adelaide and Perth at a later date without encroaching on the necessary facilities to meet all telegraph requirements. It is understood that the committee is anxious to have some information concerning the annual revenue derived from traffic dispatched over this route, and I take leave to submit the following statement:—

ADELAIDE-PERTH TELEGRAPH CIRCUITS.
Particulars of Revenue.—Years 1920-21 to 1924-25.

Year	Interstate Traffic from W.A. Value	Interstate Traffic to W.A. Value
1920-21	£38,445	£33,861
1921-22	£41,534	£32,822
1922-23	£40,720	£31,651
1923-24	£42,925	£35,309
1924-25	£41,711	£31,139

It may be of interest to mention that, although the revenue has shown a slight decrease in the year 1924-25 over the preceding year, the cause is not to be attributed to the falling off in the volume of traffic. It is consequent principally on concessions which were granted in regard to lettergram traffic, which resulted in a greater proportion of the business being transacted on the lower tariff of lettergrams as compared with ordinary and urgent messages. The traffic section is the only one that I am in a position to discuss with any degree of certainty. So far as I know, the Department has not prepared any figures to show the annual charges on the proposed line. I was asked to bring revenue figures only. The revenue for the current year should be a little in excess of that of last year, for last Christmas traffic was extraordinarily heavy. On Christmas eve it represented about five times the business of an ordinary day. The figures I have given take no account whatever of the business of the Eastern Extension Company. They represent the payments for ordinary telegrams handled by the Department. I understand that in the event of this new line being constructed, most of the present coast-line will be dismantled. Probably Smoky Bay and Fowler's Bay would need a service. I am told that there have been developments in the Smoky Bay district which are likely to lead to a considerable increase in the telegraphic business. The same is true of the Norcismar district in Western Australia. I believe the line to Fowler's Bay is in sufficiently good order to cope with the amount of local business that would need to be dispatched over it, but it is not sufficiently efficient to properly cope with the business between the capital cities. I do not anticipate any difficulty or serious delays when the proposed line is in operation. At present, even when conditions are good, a delay of over 30 minutes may be counted on, always between Adelaide and Perth. I confidently anticipate

line from Cook to Kalgoolie. Subsequently the Postal Department requested us to put the wires on the poles for the whole distance, and that was agreed to. It necessarily took some time to complete the negotiations. I believe that at that time the Postal Department was not ready to begin the installation of the wires. There was no undue delay occasioned so far as the Railway Department was concerned. We erected the poles, and the Postal Department paid us the sum of £21,800 for the erection of extra poles. We practically own the line, and the Postal Department pay us for the ordinary maintenance of its wires. We have practically agreed on the payment by the Postal Department of a rent of 10s. a mile per annum for each single wire run on our poles. That rental will cover (a) the ordinary maintenance of the postal wires, exclusive of the repair of any extensive damage brought about by an act of God, such as a cyclone or a thunderstorm, and a renewal of a wire should it become useless through corrosion or other defects; (b) the restoration of communication in the event of interruptions to the portion of the postal circuit on the railway poles. While every reasonable effort will be made to promptly remove any fault, no responsibility can be accepted for any inconvenience which may be occasioned during the temporary interruption of the line. I am quite satisfied that that arrangement will not interfere with the railway business so long as the conditions are carried out by the Postal Department in erecting its wires. I understand that the Postal Department will carry out its own work. We undertake to maintain the line with certain exceptions, such as damage to the line by storm or the wearing away of the wires. They sometimes chafe at the insulators. Any undue wear and tear to the line will have to be repaired at the expense of the Postal Department, apart from the rental that it will pay for ordinary maintenance and patrol. No formal agreement has been drafted, but the conditions are contained in memoranda between the departments. A formal agreement will probably be prepared before the work is begun. We will own the line and our wires, and the Postal Department will own its wires. If this line were later discarded, the additional poles for which the Postal Department has been charged £21,800 would have to be handed back to it. Under the conditions provided, I think that the line will be worked satisfactorily. There are two other matters to which I wish to refer. The Commonwealth Railways Commissioner is quite agreeable to make available at Cook a portion of the railway land for the Postal Department's buildings, and the housing accommodation required for the staff of that Department, and will be prepared to undertake the erection of those premises. The Postal Department is quite agreeable to current being supplied for the Railway Department's telegraph circuit from the accumulators to be installed at Cook, subject to a certain rental charge, particulars of which have not yet been definitely decided. The Postal Department's suggestion is that such rental will be based on the annual charges of the number of circuits served by the accumulators, while the Railway Department's suggestion for this charge is based on the number of cells used. Those two items will be finalized when the agreement is completed. They are really small matters.

21. *To Senator Lynch.* Any delays that have occurred in setting this matter so far as the Railway Department is concerned were in regard to matters affecting the Postal Department. We have attended at all times to this. We had, of course, to do with a metallic circuit for our telephones because of the fact of induction. We made inquiries, and satisfied ourselves that the metallic circuit was necessary. The postal officers agreed with us. These negotiations would take a certain time to complete, and so far as I know there was no delay on the part of the Railway Department. In such cases as this it is usual to have a formal agreement drawn up by the Crown Solicitor.

I take it that in this case the Commissioner will require a formal agreement. According to the specifications for the erection of telegraph lines, there is a certain spacing provided for poles—twenty poles to the mile. The Postal Department specifies from 25 to 27 poles to the mile, spaced equally apart. The extra poles are necessary because they carry a greater number of wires. In this case the poles will be 3 chains apart instead of four as under our specification. When the arrangement is completed, there will be four lines running, one for the use of the Railways Department, one for the Eastern Extension, and two for the Postmaster-General's Department. The line when completed would probably carry two or three extra wires. In that event it might be necessary to strut more of the poles. We are, under this arrangement, only strutting eight poles to the mile. Poles are strutted generally with tie wire or twisted cable, strutted on both sides of the pole at right angles to the line. The wires themselves virtually form a strut for longitudinal strain. I believe that the system will work satisfactorily for our purposes.

25. *To Mr. Gregory.*—We have to be very careful with this line because it operates our electric staff work. Its utilization by two departments would be a considerably cheaper proposition than the erection of two separate lines. The proposal is certainly an economical arrangement, and I am quite satisfied that it will not detrimentally affect the railway telephone service. The approximate cost of erecting our telegraph line will be from £120 to £130 a mile. We have two wires, one of copper and one of galvanized iron. I will supply the extra cost later. Copper wire is the better conductor of electric current. The resistance is greater in the galvanized iron wire. It was not considered necessary to go to the extra expense of providing a copper wire, the galvanized-iron wire being just as good and quite as satisfactory for our purpose.

26. *To Mr. Cook.*—In the first instance we contemplated erecting two wires on a line of twenty poles to the mile. This would be quite sufficient for our work, because we would not require later more than two extra wires at the most; but to conform with the specifications of the Postal Department, and in order to carry a larger number of wires, if necessary, we erected 27 poles to the mile. We have at present a staff of men who patrol and maintain our lines. They are called district line-men. These men will keep the extra wires, as well as our own, in repair. It would not be possible, without incurring great expense, to have two separate staffs patrolling and repairing the line, and for that reason we charge the Postal Department an annual rental covering the work carried out by our district line-men.

27. *To Mr. Seabrook.*—The poles taper, and are hollow. I cannot, from memory, give their exact diameter. There will be one short cross-arm of about 3 ft. 9 in. to carry the railway wires. The 7-in. cross-arm will carry the wires of the Postal Department. The line will be strong enough to carry any extra wires which may be required later by the Postal Department. The total length of the line is 1,051 miles. The erection of the extra wires is a matter for the Postal Department. The poles are erected and the extra wires have to be installed on them. The Postal Department employs skilled workmen for this class of work, and they will no doubt be employed in this case.

28. *To Mr. McGrath.*—There are few interruptions on our telephone work on this line. I understand, from reading the evidence, that the Eastern Extension is to have the use of one of the lines to be erected by the Postal Department. The Railway Department has not been consulted upon this matter so far as I know. I do not know the conditions under which the arrangement with the Eastern Extension has been made. I presume that the Postal Department will lease one of its wires to that company. My opinion that this line will permit of safe working even if used by two departments is based on consultation with the experts of the different States,

with our own telegraph people, and with the Postal Department. Extra poles were provided on this line to meet the request of the Postal Department to run several wires along the transcontinental route. I believe that its idea was that if the coastal line were discarded at some future date extra wires could be placed on the transcontinental line, and thus save the cost of expensive renewals on the coastal line. I believe it is about twelve or eighteen months ago that the coastal line was wearing out to a great extent, and that the cost of repairs was heavy. For this reason the Postal Department wished to run its wires on the Commonwealth poles along the transcontinental line. If this line were at any time dismantled the extra poles would be handed over to the Postal Department. The full cost of the erection of poles and their maintenance has been charged to the Postal Department. If necessary the line could carry additional wires.

29. *To Senator Lynch.*—When new railways are projected we do sometimes, but not always, confer with the Postal Department. We build a telegraph line to suit our own purposes unless the Postal Department has made a request for its use. It is not necessary for us to consult the Postal Department regarding railway telegraph lines, although we are greatly guided by its specifications and designs, so that if at any time we wish to sell surplus material the Postal Department may purchase them, or we may purchase material from the Postal Department. If any mutual advantage were to be gained we would consult the Postal Department respecting the erection of a telegraph line. We have not entered into any negotiations with the Postal Department regarding the construction of the broad-gauge line from Port Augusta to Red Hill. Of course, we may do so before the line is begun. It would be advisable for public departments and the public interests to consult one another when new railways are being built. There is no doubt that if the Postal Department wishes to consult us it will do so, but up to the present no negotiations have been entered into respecting the proposed line from Port Augusta to Red Hill.

(Taken at Melbourne.)

FRIDAY, 12TH FEBRUARY, 1926.

Present:

Mr. MACKAY, Chairman;
Senator Lynch Mr. Lacey
Mr. Cook Mr. McGrath
Mr. Gregory Mr. Seabrook
James George Kilpatrick, Supervising Engineer,
Lines Construction Branch, Postmaster-General's
Department, sworn and examined.

30. *To the Chairman.*—I prepared the estimate of the cost of the proposed conversion of the Perth to Adelaide telegraph route. As Mr. Crawford told the committee, the total gross cost is estimated to be £167,010, and I have prepared the following statement showing a dissection of the figures he submitted.

Total gross cost to Department.—£167,010.		
Material—		
(a) Copper Wire—		£
3300 lb. for 1,051 miles (Port Augusta-Kalgoolie, for Postmaster-General's Department), equal to 282 tons (approximate), cost, at £15.5 per single mile (approximate)	32,844	
(b) 1200 lb. for Commonwealth Railways (1,051 miles), equal to 94 tons. Cost, at £10.25 per mile	10,773	
(c) 1200 lb. for Eastern Extension Company (Kalgoolie-Perth), 385 miles, equal to 33 tons. Cost, at £10.25 per mile	3,741	
		47,358

Iron Wire—		
1000 lb. G.I. wire (Port Augusta-Kalgoolie) 1,051 miles, for Commonwealth Railways, equal to 188 tons (approximate)		5,015
Stays—		
Eight per mile on existing poles to strengthen them for added load. Cost, at £4 per mile for 1,051 miles, equal to £4 x 1,051	4,204	
Arms, Wood—		
78-in. 2 in. x 3 in. 26 per mile (average), cost, at £4.5 per mile, equal to £4.5 x 1,051	4,749	
Other Material—		
Wiring stores for copper wire, i.e., spindles, in solutors, bolts, tapers, binders, sleeves, &c.	2,340	
Wiring stores for galvanized iron wire	1,784	
Material for transpositions, i.e., hands, transposition bolts, &c.	180	
Total material		68,641
Labour—		
Erecting additional cross-arm, running wires, staying poles, transposing wires, &c., 180,000 man hours at 2s. 6d. per hour	22,575	
Allowances to Labour—		
Child endowment, camping, travelling	3,500	
Incidentals	11,998	
Cartage, freight		
Administration—		
Material	£3,201	
Labour	6,614	
Allowances	1,030	
		11,845
Erection of New Building (Cook) —		
For staff and repeaters	3,000	
Additions to Existing Buildings—		
Port Augusta	100	
Transfer of Apparatus—		
Ench-Cook	£540	
Port Augusta	253	
		793
Total cost of new work now to be undertaken		122,572
Add cost of work done by Commonwealth Railways and already paid for by Postal Department, i.e., five additional poles per mile on Commonwealth Railways route (1,051 miles)		24,844
Cost of dismantling and recovering old line material		19,594
		167,010
Less value of old line material to be recovered	£22,824	
Payment already made (see above)	24,844	
		47,668
Net cost now to be incurred		119,342

It is impossible to prepare a firm estimate of the cost of copper wire because the market is always fluctuating. The prices of 200-lb. and 300-lb. wire are approximately the same per mile. The smaller quantity of material in the latter being almost counter-balanced by the greater work entailed in drawing it. Iron wire costs approximately £26 5s. per ton. Contracts for all material are obtained by public tender. The wire will be delivered at Perth, Kalgoolie, and Port Augusta, and being valuable material, it cannot be left along the route but must be handed over to a gang or placed in store. We have some 300-lb. wire in stock; the department does not use great quantities of it. The 400-lb. wire is sent direct from the factory to the job. The stay consists of a wooden block in the ground, and a screw bolt from which an iron wire runs to a ring on the pole. By screwing up the bolt the stay can be tightened and the pole kept rigid. The wooden arms cost about 1s. 3d. each, un-bored, they will be bored in the departmental workshops in Perth or Adelaide. It is more economical to do that than to buy the arms ready for use. We invite public tenders in the various States for the supply of these arms which may be of jarrah, stringy bark, blue gum, karri, or any other suitable wood. We take into consideration the cost of freight from the mills to the job, and if the quality of the timber is satisfactory, the lowest tender is accepted. Western Australian arms will probably be the cheapest for this job because of the saving of freight. In regard to the "other material," we require different wiring stores for copper wire and galvanized iron wire. The reason is that the galvanized iron wire is heavier,