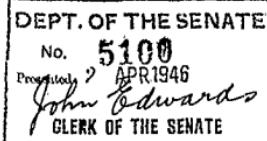


1946.



THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA.

PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS.

R E P O R T

Together with

MINUTES OF EVIDENCE

Relating to the Proposed

AUTOMATIC EXCHANGE AND POSTAL BUILDING, RUSSELL STREET,
MELBOURNE, AND RUSSELL AUTOMATIC TELEPHONE EXCHANGE.

FOR SENATOR LAMP

I bring up the Report of the Parliamentary Standing Committee on Public Works, together with Minutes of Evidence, relating to the following subject ;-

Proposed Automatic Exchange and Postal Building, Russell Street, Melbourne, and Russell Automatic Telephone Exchange.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA.

PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS.

REPORT

RELATING TO THE PROPOSED

AUTOMATIC EXCHANGE AND POSTAL BUILDING,
RUSSELL STREET, MELBOURNE, AND RUSSELL
AUTOMATIC TELEPHONE EXCHANGE.

Presented pursuant to Statute; ordered to be printed, 14th March, 1946.

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ERCTION OF AN AUTOMATIC TELEPHONE EXCHANGE AND POSTAL BUILDING IN RUSSELL STREET, MELBOURNE, AND THE ESTABLISHMENT OF THE RUSSELL AUTOMATIC TELEPHONE EXCHANGE.

REPORT.

The Parliamentary Standing Committee on Public Works to which the House of Representatives referred for investigation and report the question of the erection of an automatic telephone exchange and postal building in Russell-street, Melbourne, and the establishment of the Russell Automatic Telephone Exchange, has the honour to report as follows:—

INTRODUCTION.

ESTABLISHMENT OF PRESENT FACILITIES.

1. The Central Exchange manual switchboard, situated in the telephone exchange building in Lonsdale-street, serves most of the telephone subscribers in the Eastern portion and some in the western portion of the Melbourne city area. This switchboard was installed in 1911, and, as it is now badly worn and no longer capable of rendering good service, should be replaced by automatic switching equipment.

2. Originally, the manual switchboard served the whole of Melbourne city area proper, but when the switchboard capacity was fully absorbed, the City West automatic exchange was established in 1927 in a new building, in Little Bourke-street, at the rear of Lonsdale-street exchange. Most of the telephone services in the city area west of Elizabeth-street were diverted to City West automatic exchange, and the majority of the services which now remain connected to the manual switchboard are those east of Elizabeth-street.

3. The proposed new exchange in Russell-street is required to enable the services still connected to the manual switchboard to be transferred to automatic working and to meet development in the Russell area. In order to meet development in the city areas, pending the provision of the proposed new exchange, it has been necessary to connect some lines to adjoining exchanges, where space, provided for normal development of those exchanges, has been used to keep the city traffic operating. These lines are to be transferred to their correct exchanges as soon as the pressure is relieved by the provision of the Russell Exchange.

4. It is desired that the restrictions on the provision of telephone facilities may be lifted as soon as possible, but this cannot be done until buildings and equipment can be made available for the resulting increase in telephone traffic, arrears of which have been accumulating alarmingly during the war period.

SECTION I.

THE PRESENT PROPOSAL.

Postal and Exchange Building.

5. A site has been acquired at the corner of Russell and Little Collins-streets in a central part of the Russell area, and plans have been prepared for a new building to accommodate a post office as well as a new automatic telephone exchange. It would be uneconomical to install the proposed new exchange in Lonsdale-street exchange building or in the City West exchange building, even if that course were practicable, as these buildings are too far from the centre of the area to be served; but in any case the Lonsdale-street building and the City West building are fully occupied.

6. The building, covering an area of 12,900 square feet, will have a frontage to Russell-street of 63 ft. 6 in. and to Little Collins-street of 190 feet. The ground floor is designed for use as a Post Office; the basement, first, second and third floors for automatic telephone equipment; the fourth, fifth, sixth and seventh floors will be subdivided into departmental office space; and the eighth floor will be used for the provision of a cafeteria and other amenities for the staff.

The Automatic Exchange.

7. Provision is to be made in the Russell exchange for equipment for 10,000 subscribers' lines, and it is estimated that the needs of this locality will thus be met for approximately twenty years. This estimate is dependent, however, on the establishment of other exchanges in the city which are projected in connexion with the plan to develop services for the whole of the city area for the twenty year period extending to 1965.

The Post Office.

8. Postal facilities for the eastern portion of the city are at present provided by two post offices in rented premises situated in Russell-street and Bourke-street, and the new Russell Post Office will replace these two existing offices, where conditions have become too congested for efficient and economical working.

The Upper Floors.

9. As it would be uneconomical to build a three storey building on a high priced site it is proposed to go to the full height permitted by the building regulations and provide office space for Administrative Staff on the upper floors, enabling premises at present rented for departmental purposes to be vacated.

Estimated Cost.

10. The proposal, having been formulated during the war period, was prepared in two sections so that the initial stage, which provided for the post office and automatic exchange, could be proceeded with urgently, while the upper floors for office accommodation could be delayed until the demands of the war period had eased. The total cost of the whole project is as follows:—

11. Initial stage—	£
Building, including demolition of the existing property and also completion of the Postal Hall	94,915
Engineering services	31,070
	125,985
Final stage—	£
Building	83,375
Engineering services	56,940
	140,315
Grand Total, both stages	£
Equipment, &c.—	266,300
Total equipment	602,000
Site	51,813
Administration	51,000
Contingencies	59,187
	824,000
GRAND TOTAL	£
	1,090,300

It was stressed that both stages of the project are urgently required and that many advantages would be evident if the whole project were proceeded with immediately. A saving of £11,000 will be made if the building is constructed to the full height now instead of dividing it into two stages.

12. The amount proposed to be spent on this work would be spread over four financial years, each year bearing its portion of the expenditure in accordance with the progress of the work.

SECTION II.

COMMITTEE'S INVESTIGATIONS.

General.

13. The Committee visited the City West Automatic Telephone Exchange and the Central Manual Exchange at Lonsdale-street, Melbourne, and inspected the site for the proposed new building in Russell-street. Details of the building and services were outlined, in evidence, to the Committee by the Director of Architecture, Department of Works and Housing, and the main principles of the proposal, from the point of view of the Postmaster-General's Department, were explained by the Acting Director-General of Posts and Telegraphs. The Committee studied the plans of the building and also took evidence from various officials and technicians responsible for the provision and maintenance of the equipment and the building. A visit of inspection was paid to the departmental laboratories, where special apparatus is being made and tested in order to improve the telephone service and maintain it at maximum efficiency. Evidence was also taken from architects, municipal authorities and others who could assist the Committee in its investigation.

Site.

14. The building is to be situated on the north-east corner of Russell and Little Collins-streets, on a site purchased some years ago for £51,813, and the Committee is informed that it is near the telephonic centre of the district to be served by this automatic exchange. A great deal of importance is attached to this aspect of the matter as it is essential, for purposes of economy, to reduce the length of lines outside the building to a minimum. The fact that it is on high ground adds to its suitability for telephone purposes. It is also in the centre of a busy postal district, and the land is stated to be suitable for the foundations of a large building of this type.

The space for the building is almost an island site, having frontages of 104 feet to Melbourne-place and 86 feet to Coronation-place, in addition to the main frontages to Russell and Little Collins-streets, detailed in a previous paragraph. The existing buildings on the site are some of the oldest and most dilapidated in Melbourne and there is practically no economic loss in their demolition. The site is under the control of the Department and no dispossession of tenants is involved. The Committee agrees that the site is eminently suited to the requirements of the proposed building.

Necessity for Work.

15. *Replacement of Central Manual Exchange.* It was explained to the Committee that, in a network which is now operated on an automatic switching basis, manual exchanges are out of place and cause considerable additions to the number of operations necessary for each call. There are now 122,000 subscribers in the fifteen mile radius, of which 100,000 are connected to automatic exchanges. Any call from Central Exchange or from "JM" Exchange to any of these automatic exchange subscribers requires the services of at least two telephone operators to complete it, and such an arrangement is not acceptable to subscribers who are accustomed to dial direct, while the human element, where manual switching is used, introduces errors. The Central Exchange was erected 35 years ago and, even if it were a suitable type of exchange to include in the network, much of the equipment is now in such a condition that it should be replaced.

16. In cases where city lines have been taken to suburban exchanges for temporary service it is essential to make the space available again for the development which is awaiting removal of the restrictions. Such an instance is the Carlton Exchange where 1,800 of its 6,100 lines are actually in the Melbourne city area. Subscribers in this area, where development is great, will be deprived of normal satisfactory service if this space, which has been borrowed for city lines, is not made available to that suburban area at once.

17. It was pointed out to the Committee that it will take some three years from the date of the commencement of the building of the Russell Exchange before the automatic service is ready for operation, and, in the meantime, increasing difficulty is being met in providing lines because of the congested state of the cables which provide the service from the east end of Melbourne. The bottle-neck at the Main Distribution Frame at Central Exchange is so serious that the provision of additional cables and their termination is impracticable.

18. *General Plan for the City Area.* Evidence given in connexion with this proposed exchange emphasized that the whole of the provisions depended upon the main plan projected for the complete city area automatic service.

It was explained that a very careful survey had been made of the city, and in fact has been in operation for many years, and by this means it has been possible to forecast with peculiar accuracy the development of any given area in the city. Past experience had shown that this system had enabled telephone services to be installed with maximum efficiency and economy, and it is now estimated that by 1965, twenty years hence, there will be 31,000 lines in the city area. On this basis it has been necessary to provide for automatic telephone development and the subdivision of this number into suitable units. Experience over the past years, and especially during the war both in Australia and in London, has shown that 10,000 lines is the maximum to which an exchange should be permitted to grow. This takes into consideration not only the effectiveness of the equipment in the building, but also provision of cables, the building itself, risk of fire, and risk of damage by explosions and accidents where too great a concentration of cables is made in one locality.

19. The provision for telephone services for Melbourne for a period of twenty years ahead therefore requires the establishment of four exchanges, located in separate buildings, in suitable districts. One of these already exists in the City West Exchange, the second is now proposed in Russell-street, and two others are projected for early establishment at "Batman" and "Civic" exchanges. By continuing the system of borrowing space from existing exchanges, and by using all the space in the proposed Russell exchange, it will be possible to provide service for the city for a time until the other two exchanges in the main plan are put into operation.

20. *Impending Development.* When restrictions are lifted, as far as the immediate city area of Melbourne is concerned, the retardation of growth during the war period, to the extent of 3,215 lines, is certain to result in a flood of applications for telephone services, and these would quickly absorb all available space in the City West and Central manual exchanges. If the pre-war development figures only were reached the Department would be able to meet development at the most for two years. By continuing present restrictions the position may be met for about five years, and a considerable portion of that period will lapse before the Russell exchange is ready for use. It is essential, therefore, to prepare for relief of the present City West and Central exchanges by providing the proposed Russell exchange at the earliest possible moment. Each month that the project is delayed now will cause a corresponding delay in the lifting of restrictions on the connexion of new telephone services.

Country Exchanges.

21. The provision of this exchange is not to be made at the expense of other places in the suburbs and country. The Committee was informed of progress being made in the provision of facilities in other areas. In certain country localities it is possible to give satisfactory service with manual exchanges, while in others automatic exchanges have already been installed or are planned for the future. The needs of the smaller country exchanges have not been overlooked, and the Committee was interested in the development and testing of an Australian designed automatic unit to meet the needs of the very large number of small telephone exchanges with 6 to 10 subscribers. A large number of these units, giving full time automatic service, will be ordered as soon as the practical tests have been satisfactorily completed.

The Building.

22. *Architecture.* The perspective drawings of the building indicate that it is architecturally designed to present a modern and pleasing effect. One side of the lift tower, being at an angle to the street, will cause natural shadows to relieve the general straight lines of the structure. The projections worked into the window design, and the louvres fitted to the windows on the sunny side, add to the aesthetic appearance of the edifice and this section of the city will be considerably improved by the addition of the Russell exchange to its city structures. The building is to be carried to the maximum height allowed by the City Council regulations—132 feet—and a flat roof will provide space for recreational purposes if so desired.

23. *Accommodation.* The basement and eight floors will have a total area of 97,400 square feet, and preparation has been made for the installation of equipment and other technical requirements by placing the ceilings of the basement, ground, first and second floors at special heights suitable for the purposes for which those floors are to be used.

24. The upper floors are spaced in accordance with the usual practice for office accommodation, and they will provide for the transfer to this building of the various sections of the Department at present working under difficulties in various parts of the city. The Committee was informed, in evidence, that the engineers on the Central staff in Melbourne are stationed in five different buildings, for which a rental of approximately £5,000 per annum is paid, and continual difficulty is experienced because these buildings are from quarter to half a mile apart in addition to being unsuitable for departmental purposes.

25. The Committee's attention was directed to the fact that office accommodation in the city was so scarce that private business was being considerably hampered through lack of space, and that it is desirable to take action at the earliest possible moment to vacate office space used by Government departments. Consideration was given to this aspect of the matter, and it was regarded as an important factor to be weighed when deciding whether the whole building should be erected in one stage.

26. The building will be a steel-framed structure with reinforced concrete floors. The walls will be of concrete and the elevations to Russell-street, Little Collins-street and Melbourne-place will be faced with cream-tone brickwork and treated with pressed stone or architectural terra cotta at columns, doors and window sills. There will be a base of Trachyte stone to the Russell-street frontage with returns along the sides. Internal partitions will be of terra cotta lumber.

27. The flat roof will be waterproofed with asphalt or bitumen felt and covered with a cement tile wearing surface, and provision will be made below the roof grading for insulation.

The Automatic Equipment.

28. The largest item in the estimated cost of the project is for the provision and installation of the equipment. A total of £632,000 was shown as being necessary to equip the new exchange, provide cables and other outside plant, consequential alterations to other exchanges, and

subscribers' equipment, labour and material. The Committee sought evidence regarding this expenditure and inspected the equipment in existing exchanges in order to gauge the importance of this item of the project. A great deal of delicate and intricate apparatus was demonstrated to the Committee, and the members were impressed with the extent of the efforts being made to keep the service to subscribers up to maximum efficiency, and with the variety of scientific activities necessary in the telephone work in these days. From the evidence taken, and the inspections it has made, the Committee is convinced that, although the expenditure on equipment for the proposed Russell Exchange is great, due regard is being paid to economy commensurate with the necessity for maintaining efficient facilities.

Staff Throw Spare.

29. Inquiries by the Committee elicited the information that it is not usually necessary to dispense with the services of any of the staff when a manual exchange is cut over to automatic operation. Replacements to the staff in the metropolitan area average approximately 30 per month, and, in addition to this it is possible to make arrangements to partially hold over some of the recreation leave immediately prior to the date of the transfer. After the cut over stops are taken to increase the number of officers on leave, and, as the weeks go by, the monthly replacements absorb a large proportion of the spare staff. Opportunity is also taken to transfer some of the displaced officers into other branches of the service when they desire to make the change.

30. For some years the Department has had considerable difficulty in recruiting suitable girls for telephone exchange work, and every effort is therefore made to keep the staff after they have been trained for telephone work.

The Cafeteria.

31. Evidence was sought as to the necessity for providing considerable space on the top floor for a cafeteria, and the Committee was informed that provision was being made for 500 persons, on the understanding that the total number of persons estimated to use the building would be 900. An amount of £6,000 was being provided for equipment for the cafeteria and every effort would be made to provide an efficient service, with due regard to economy, for the benefit of the staff in the building.

32. It was generally agreed, in evidence, that a cafeteria is desirable in such a building in the city, both for the smooth and efficient working of staffing arrangements, and also to relieve congestion in the cafes in the vicinity. It was stressed, however, that while the provision of cafeterias for the comfort of workers is of great importance, and it is the duty of employers to make the employees' time at work as happy as possible, these facilities should not be used for the sale of commodities for consumption off the premises. Canteens are able to sell goods at cut rates which are unfair to retail traders.

33. The Committee therefore agrees that the inclusion of a cafeteria in the plans is justified, but restrictions should be made which will prevent the sale of goods for consumption off the premises.

Engineering Services.

34. *Air Conditioning.*—The Committee gave attention to the question of air conditioning in the building, with a view to ensuring that the most economical methods available were to be used.

It has been possible during past years to observe very closely the operation of different air-conditioning devices in Melbourne, and the Department has investigated the matter in regard to its effect on equipment and staff. It has been found that as a general rule full air-conditioning is not necessary for office and general staff, but it is essential for the automatic equipment and the staff working amongst the apparatus. Demonstrations were made to the Committee of various air-conditioning machinery in use, and information in considerable detail was brought forward indicating the conclusions arrived at after tests had been made.

35. The present proposal includes full air-conditioning for the equipment floors and the post office, while the office floors will be serviced by a hot water radiation system to maintain comfort during the cold weather. Exhaust ventilation and hot water service is also supplied at points in the building where it is necessary. The Committee recommends that these provisions be adopted.

36. *Lifts.*—There will be three main passenger lifts, one staff lift and one goods lift, all of which will serve all floors, though two of the passenger lifts will not serve the basement. The passenger and staff lifts will be of modern type with collective control, and will have a car speed of 400 feet per minute, while the goods lift, of three tons capacity, will travel at 150 feet per minute.

37. *Cleaning.*—A central vacuum cleaning system will be provided to serve the basement to third floors, while a chute will be provided through which waste materials may be passed to the incinerator in the basement.

38. *Fire prevention.*—It is considered that the risk of fire with the air-conditioning plant is negligible, and, as the telephone exchange is occupied day and night, chemical fire extinguishers only will be installed.

Financial Aspect of the Exchange.

39. Inquiries made regarding the revenue and expenditure in connexion with the proposed exchange revealed the following figures, based on results of actual revenue received from lines working in the proposed Russell Exchange area at 30th June, 1945:—

	<i>At opening.</i>	<i>At 5 years.</i>
	£	£
Capital cost	350,000	1,000,000
Capital cost, new and <i>in situ</i>	1,781,600	1,831,600
Working expenses	52,000	54,000
Total annual charges	174,000	178,000
Revenue	333,333	375,000

41. It was explained to the Committee that the assets thrown spare at the date of cut over to automatic operation would be mostly of little value, the manual exchange having been in operation for approximately 35 years, and the equipment being worn and no longer capable of good service. Only certain parts will be available for use in other exchanges. It is estimated that although the book value of the assets thrown spare is £183,353, the recoverable value will be only £8,000, and the cost of recovery will be £3,000.

The Post Office.

42. *City Development.*—The development of the City of Melbourne in its eastern section has resulted in heavy increase in demands on all post office facilities. The resulting business has been handled at the two existing post offices in Russell-street and in Bourke-street. Both these offices, conducted in premises leased at a total rental of £1,210 per annum, are inadequate and unsuitable, and the inclusion of the post office section in the Russell Exchange building, estimated to cost £6,000, is put forward as an essential and economical proposition.

The two post offices serving this area handle a great volume of business which has grown rapidly in the last ten years. The combined revenue has risen from £57,423 in 1934-35 to £101,461 in 1944-45.

43. *Present Accommodation.*—Neither of the present buildings is of a satisfactory standard, and the Russell-street accommodation is particularly poor in every respect. Provision of a high grade of service to the public is extremely difficult, and the staff work under substandard conditions both in regard to the office and general facilities.

44. *Telegram delivery service.*—In addition to the growing telegraph needs in this area it is desired to add a further section to the telegram delivery area administered from Russell-street, in order to obviate a considerable amount of travelling by messengers through the extremely congested traffic streets in the heart of the city.

45. *Relief for Elizabeth-street Post Office.*—The enormous volume of business offering at Elizabeth-street post office for some time past has been source of embarrassment to the Department, and some idea of the extent to which the public use the facilities there can be gained when it is realized that approximately 18,000 customers are attended to daily, while the financial turnover has grown from £3,552,607 to £3,389,572 in the last ten years. While preparations are being made for a building scheme to relieve the growing pressure at Elizabeth-street some early relief is essential, and this will be available in the proposed Russell-street building in which space has been provided for anticipated increase in that area for a number of years to come.

46. *Staff.*—When the new post office is opened all the staff at present employed at the Bourke-street and Russell-street post offices will be absorbed, while certain additional telegraph messengers will be required.

In addition to the urgent demand for better accommodation and facilities put forward by officials of the Department, the Committee was informed by representatives of other city interests that there is a large and growing demand for the best that can be provided in service by the Department. The Committee is convinced that there is ample necessity for the provision of the post office as provided in the proposed new exchange.

Cost of the Building and Equipment.

47. The Committee gave close attention to the question of the expenditure involved in this important undertaking, and took evidence from the officials concerned with the various technical sections of the building and equipment. Evidence was also sought from independent

architects and engineers, from whom information and suggestions of a general nature were received. Strong representations were made with a view to having future proposals for such large buildings thrown open for competition by other architects in Australia, instead of having the plans drawn within the Department of Works and Housing. The Committee in considering this suggestion, realized that in the past a number of the important buildings to be erected by the Commonwealth were made the subject of competition, and no doubt this practice will be followed in the future with buildings considered to be of a character to warrant it. However, the Committee is of opinion that a building such as the Russell Exchange, which is largely utilitarian in character and does not demand outstanding architectural treatment, is not of a type which calls for a special competition for its design.

48. It is evident that the detailed consideration which has been given to the numerous sections making up the estimated grand total of £1,090,300, has been made possible by careful preparation of the technical requirements, and by close co-ordination between the architects, telephone engineers and executives responsible for the project. After carefully studying the plans and details of the proposal, and taking evidence from those responsible for the estimate, the Committee is convinced that due regard has been paid to economy within the bounds possible in the present difficult times.

49. The proposal laid before the Committee was formulated during the war, when it was considered likely that the building would have to be built in two sections, and the estimate was prepared on this basis. However, the circumstances have now changed, and the project must be viewed in the light of post-war, rather than wartime, conditions. With this in mind, the Committee is of opinion that the necessity for the complete building is established; an amount estimated at £11,000 may be saved; and considerable risk of damage to the delicate equipment in the exchange may be avoided if the building is completed in one stage. It is recommended, therefore, that the complete work, at an estimated cost of £1,090,300 (including the amount already expended on the purchase of the site) less the estimated saving of £11,000, be approved.

Use of Manpower and Materials.

50. It is realized by the Committee, and by those responsible for the work, that the completion of the building depends upon the amount of material and manpower available for the purpose. It is also clear that certain parts of the work will affect the building of cottages to some extent, and the Committee made special inquiries with a view to ascertaining the extent to which work on this building would compete with the building of houses which is such an urgent problem at the present time.

51. The consensus of opinions expressed by witnesses is that, although certain items of material and labour will necessarily be in demand for both housing and city building construction, the main demand for the city buildings will not greatly affect the requirements for cottage work. Moreover, it is anticipated that, even if immediate approval is given for the work, it will be some months before the detailed plans will reach a stage when labour and materials will be required. By that time there will be many men discharged from the services and labour should be more plentiful, though it may take some time before supplies of some materials return to normal.

52. It is emphasized by the departmental officials, however, that while it is essential to build homes as quickly as possible, it is imperative at the same time to make available public services such as gas, electric light, sewerage and other facilities, all of which depend largely on increased postal and telephone services. Therefore it must be recognized that a reasonable amount of expenditure on public works must go hand in hand with the housing project.

53. With regard to the labour position, detailed figures produced in evidence show that, while there will be a demand for certain classes of labour in both city and cottage building, the principal claim made by the city building, on labour common to both spheres, will be for labourers and carpenters.

54. As the Russell building will be of steel and concrete construction a considerable amount of the material necessary for it would not be required for housing construction. Cement and reinforcing, used in the concrete, is used in comparatively small quantities for cottages. Bricks are used in both cases, but this building is only to be faced with bricks which will be of a special type not used largely in housing. Steel windows will be used in this building, and in some places steel doors may be included. Painting and plumbing fixtures and fittings are other items which will be needed in both classes of building.

Shortage of Cement.

55. The Committee was informed that construction programmes are being restricted owing to a serious shortage of cement in Victoria. As this material can be obtained in large

quantities in Tasmania the Committee is of opinion that immediate steps should be taken to ensure that adequate transport facilities are made available to bring in the supplies of cement required.

Urgency of the Proposal.

56. The Committee was impressed by the pleas for urgency made by the various witnesses, and it realizes that there is danger of serious break-down in telephone services if immediate steps are not taken to alleviate the present position which has been aggravated by the heavy demands of the war period, and the long delays forced upon the Department by war conditions. All the city exchanges are overloaded, and the old exchange is working with obsolete and badly worn equipment. It is therefore recommended that this matter be regarded as particularly urgent, and that it be given a high priority for labour and materials in order that some of the arrears which have accumulated over the past years, may be attended to, and an opportunity given to the Department to ensure efficient operation of its services in difficult times ahead.

Abolition of present exchanges and post offices.

57. Although the erection of the Russell exchange and post office will provide an opportunity to close the old exchanges and the present post offices in rented premises, the Committee is anxious that these facilities should not be abolished until it is certain that the projected development in the city has been adequately provided for. The Committee was informed that future development is certain, and that the provision of other new exchanges at Batman and Civics are to cover demands for the next twenty years, but it is considered desirable that all the present equipment and facilities should be made use of in order to provide the best possible service during the period which must elapse before any of these new exchanges are ready for use.

Revision of Estimate of Cost.

58. It is evident to the Committee that the estimate of cost of the building and equipment, drawn up partly in war-time and with the assumption of certain delays and special cost for imported equipment, must represent only an approximate figure. The total proposed expenditure is large and will be spread over several years, making it possible that reductions of costs or certain savings might be possible before the building is completed. The Committee is anxious, therefore, that special attention should be given to a periodical revision of the estimate with a view to ensuring that estimates, made in abnormal times, may be adjusted if necessary, and special care may be taken to keep the expenditure to a minimum. It is suggested that the Minister with this in view, should call for such special revisions as would enable him to follow closely the necessity for the expenditure being made.

SECTION III.

SUMMARY OF CONCLUSIONS.

59. The following is a list of the principal conclusions arrived at by the Committee as a result of its study of the proposal:—

- (1) The complete work, at an estimated cost of £1,090,300 (including the amount of £51,813 already expended on the purchase of the site), less the estimated saving of £11,000, should be approved. (Paragraph 49.)
- (2) The site is eminently suited to the requirements of the proposed building. (Paragraph 14.)
- (3) The work should be regarded as particularly urgent and should be given high priority, in order to ensure efficient service in the difficult times ahead. (Paragraphs 20 and 50.)
- (4) The inclusion of the cafeteria is justified, provided that restrictions are made to prevent the sale of goods for consumption off the premises. (Paragraph 33.)
- (5) The post office section of the proposal is also an urgent necessity and an economical proposition. (Paragraph 46.)
- (6) While competitions for architectural designs are regarded as desirable for important public buildings it is not considered necessary that such competitions should be held for buildings of a more utilitarian character, such as the one proposed. (Paragraph 47.)
- (7) A certain amount of material and manpower must be used on public works at the same time as they are being utilized for the housing programme. (Paragraph 52.)

- (8) Steps should be taken to bring in cement to expedite the building programmes. (Paragraph 55.)
- (9) The use of present facilities should be continued in order to give the best possible service during the period which must elapse before any of the proposed new exchanges are ready for use. (Paragraph 57.)
- (10) Owing to the difficulty in making accurate estimates, and the possibility of reduction in costs, it is suggested that the Minister should call for special revisions at intervals which would enable him to follow closely the necessity for expenditure before it is approved for payment. (Paragraph 58.)

R. JAMES, Chairman.

The Office of the Parliamentary Standing Committee on Public Works,

Parliament House,
Canberra, A.C.T.

20th January, 1946.

1946.

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA.

PARLIAMENTARY STANDING COMMITTEE
ON PUBLIC WORKS.

AUTOMATIC EXCHANGE AND POSTAL BUILDINGS, RUSSELL-STREET,^{MELBOURNE} AND RUSSELL AUTOMATIC TELEPHONE EXCHANGE.

MINUTES OF EVIDENCE.

ERCTION OF AUTOMATIC EXCHANGE AND POSTAL BUILDING IN RUSSELL-STREET, MELBOURNE.

(Taken at Melbourne.)

(SECTIONAL COMMITTEE.)

FRIDAY, 19TH OCTOBER, 1945.

Present:

Senator Lamp (in the chair).
Senator Aylett. | Mr. Rankin.
Senator Brand.

Laurence Bede Fanning, Acting Director General of Posts and Telegraphs, sworn and examined.

1. To Senator Lamp.—I am aware that the Committee is inquiring into the proposal to erect an automatic exchange and postal building in Russell-street, Melbourne.

The Central manual switchboard, situated in the telephone exchange building in Lonsdale-street, serves most of the telephone subscribers in the eastern portion and some in the western portion of the Melbourne city area. The switchboard which was installed in 1911, is now worn out and, being no longer capable of rendering good service, should be replaced by automatic switching equipment.

Originally, the manual switchboard served the whole of Melbourne city area proper, but when the switchboard capacity was fully absorbed, the City West automatic exchange was established in 1937 in a new building, in Little Bourke-street, at the rear of Lonsdale-street exchange. Most of the telephone services in the city area west of Elizabeth-street were diverted to City West automatic exchange, and the majority of the services which now remain connected to the manual switchboard are those east of Elizabeth-street.

The proposed new exchange at City East (Russell) is required to enable the services still connected to the manual switchboard to be transferred to automatic working and to meet development in the City East (Russell) area. In order to meet development in the city areas, pending the installation of the proposed new exchange, it has been necessary to connect some lines to adjoining exchanges. These lines are to be transferred to their correct exchanges and details will be given at a later stage under "Telephone Development Figures".

A site has been acquired at the corner of Russell and Little Collins streets in a central part of the City East (Russell) area, and plans have been prepared for a new postal building to accommodate a new automatic telephone exchange. It would be uneconomical to install the proposed exchange in Lonsdale-street exchange building or in the City West exchange building, even if that course were practicable, as these buildings are too far from the centre of the area to be served; in any event, the Lonsdale-street and City West buildings are fully occupied.

Although selected primarily for a new telephone exchange, the site is well situated for a post office which it is proposed to establish on the ground floor. Postal facilities for the eastern portion of the city area are now provided by two post offices in rented premises situated in Russell and Bourke streets respectively. The new post office at City East (Russell) will replace these two existing offices, saving a rental of £1,210 per annum. As the cost of providing a post office in the new building is estimated at £6,000, the proposal is attractive financially as well as for the improved

service which it will provide. The plans provide basement, ground, first and second floors for the post office and exchange, the upper floors being for office accommodation.

Replacement of the manual switchboard is long overdue. The work was deferred for some years owing to the limited amount of money available for new works and the proposal has been in abeyance during the war. Until the new exchange is available, difficulty in meeting telephone development in the city area will continue. Telephone subscribers expect automatic telephone service, especially in the city areas. The present manual service is obsolete and inefficient. High priority for the erection of the new building is necessary, as the subsequent installation of automatic switching equipment is already overdue.

A complete network of automatic exchanges is essential to meet telephone requirements in large cities in a satisfactory manner. The conversion of all exchanges in the capital cities of Australia to automatic working is well advanced and will be completed as soon as practicable. The proportion of automatic services is already so high that it is difficult to handle traffic between automatic exchanges and the remaining manual exchanges, hence early completion of the work of conversion is urgently required in the metropolitan areas. In Melbourne metropolitan area 81 per cent. of the telephones are automatic, compared with 58 per cent. average for all metropolitan areas. Thirty exchanges are now fully automatic. Portions of Hawthorn and Windsor areas have also been converted, but over 14,000 lines are still manual in these two areas, and cannot be converted until new exchanges are established to subdivide the original exchange areas. For this purpose exchanges have been planned for Camberwell, Kew, Kooyong, South Yarra, St. Kilda, and Toorak. Of the remaining manual exchanges Cheltenham and Williamstown are the only large ones. Most of the work of conversion will be completed within three years.

Country exchanges are also to be converted to automatic working, but the process will be much more gradual. The need is not quite so urgent, as in many cases the exchanges include trunk line switchboards for which manual switching must be retained. It is practicable to give a satisfactory manual service for local subscribers' services in conjunction with the manual trunk line switchboards, although automatic service is preferable and will be provided ultimately. Some of the larger country exchanges are already automatic, e.g., Newcastle, Geelong, Wagga, Tamworth and Rockhampton. Future plans give priority to large country exchanges, where complete replacement of the manual equipment is necessary. In almost all such cases, new buildings are required, involving extensive planning for all the various services concerned. In some cases new sites are necessary, and are being sought.

The needs of smaller country exchanges have not been overlooked and special provision has been made in the post-war plans for converting a number of these to automatic working as soon as building material and personnel can be provided. Rural automatic exchanges have already been given considerable attention and 151 such exchanges are now in operation giving continuous service to 7,223 country subscribers. The

LIST OF WITNESSES.

	Paragraph in Evidence.
Demaine, Robert Snowden, President of the Royal Victorian Institute of Architects, 53 Collins-place, Melbourne	27
Fanning, Laurence Bede, Acting Director-General of Posts and Telegraphs, Postmaster-General's Department, Melbourne	1
Fanning, James, Chief Mechanical Engineer, Department of Works and Housing, Melbourne	56
Hayes, Norman William Victor, Superintending Engineer for Victoria, Postmaster-General's Department, Melbourne	75
Hill, Vivian Rowland, Secretary, Melbourne Chamber of Commerce, 35 William-street, Melbourne	82
Kellock, Samuel James Frederick, Superintendent, Postal Services Branch, Postmaster-General's Department, Melbourne	67
McKay, Roy Vincent, Chief Engineer, Postmaster-General's Department, Melbourne	12
Reed, Harold John Stanley, Building Surveyor, City of Melbourne	88
Roland, Henry Maidland, Director of Architecture, Department of Works and Housing, Melbourne	7, 102
Strange, Norman William, Chief Inspector of Telephones, Postmaster-General's Department, Melbourne	40

department's plans provide for a steady increase in the number of these exchanges. The most urgent cases are (a) those where there is no official post office and it is difficult to provide satisfactory means of conducting the telephone exchange business; and (b) those cases where service is not continuous. Included in the latter group is a very large number of exchanges with 6 to 10 subscribers connected, and equipment to meet the need is being developed. Regarding the problems associated with lack of electric power and maintenance due to isolation and distance, the department is now testing an Australian-designed equipment. A large number of these units will be ordered as soon as practical tests have indicated the suitability of the equipment.

The estimated total cost involved in establishing Russell Exchange is £950,000 made up as follows:—

Site—	Already acquired	£ 61,813
Building—	Initial portion only of complete nine-story building, basement, ground, first and second floors ..	126,000

MATERIAL.

Exchange equipment—	£
At Russell exchange	400,000
At associated automatic exchanges in the metropolitan network for traffic to and from Russell exchange	60,000
Subscribers' equipment—	400,000
Cost of altering subscribers' common battery manual equipment for automatic working	36,000

LABOUR.

At Russell exchange	£ 50,000
At associated exchanges	39,000
Subscribers' equipment	10,000
Line construction—	
Cost of alterations to cables for subscribers' junction line reticulation, including cable tunnel extension—	90,000
Labour	28,000
Material	40,000
Administrative—	77,000
General administrative charges on material and labour	51,000
Contingencies	59,187
£50,000	

It is estimated that this expenditure will be distributed over four successive financial years, as follows:—

1945-46—	£	£
Russell exchange building	200,000	
Cable reticulation	7,000	
Contingencies	1,187	28,187
1946-47—		
Russell exchange building	80,000	
Cable reticulation	30,000	
Contingencies	4,000	
1947-48—		
Russell exchange building	26,000	
Russell exchange equipment	260,000	
Equipment in other exchanges for junctions	40,000	
Subscribers' equipment	20,000	
Installation costs of equipment	50,000	
Cable reticulation	40,000	
Contingencies	36,000	
1948-49—		
Russell exchange equipment	140,000	
Equipment in other exchanges for junctions	20,000	
Subscribers' equipment	15,000	
Installation costs of equipment	40,000	
Contingencies	18,000	
Total	233,000	
		847,187

These figures are exclusive of administrative charges (£261,000) and site (£51,813) already acquired. So far as the actual new exchange building is concerned, little more than demolition of existing premises and the preparation of necessary new foundations is likely to be carried out in the present financial year.

Tenders have been invited for the automatic switching equipment. Tenders close on the 6th November, 1945, and if satisfactory tenders are received, orders for the equipment should be placed early in 1946. Delivery of a substantial amount of equipment cannot be expected before the middle of 1947, based on past experience, but efforts will be made to time the deliveries to suit the progress of the building.

It is expected that automatic exchange equipment to the value of £100,000 out of a total estimated cost of £400,000 for the Russell Exchange will be produced in Australian factories. In addition, the whole of the new subscribers' equipment such as telephones, P.B.X. switchboards, &c., will be of Australian design and manufacture.

The question of reducing the proportion of equipment imported and increasing the local manufacturing effort is receiving special attention separately. The British manufacturers concerned commenced local manufacture in 1938, but their efforts were retarded by the war. Negotiations for further expansions are proceeding, but for certain items tooling cannot be commenced until next year. As those items have not yet been made in Australia, it may be impracticable to obtain substantial deliveries in time for this exchange. The figures furnished for local purchase, therefore, are for items already in production in Australia.

A plan of the site is attached. It has a frontage of 65 feet to Russell-street, and it almost an island site, bounded by 191 feet to Little Collins-street, 99 feet to Melbourne-place, with party wall to Coronation-place, where the frontage is 36 feet. The site is on high land, in a very good position, and close to the telephone centre of the area to be served. In order to conform with the Melbourne Widening of Streets Act of 1940, the building will be set back along the whole of Little Collins-street frontage by an average distance of 2 ft. 8 in.

It is proposed that the building shall be a steel-framed structure, with reinforced concrete floors. The elevations to Russell and Little Collins streets and Melbourne-place are to be attractively treated. Mechanical ventilation will be necessary for the apparatus floors, and central heating will be necessary throughout. The proposal was to erect the building in two stages. The first stage provides for basement, ground, first and second floors, the ground floor being for the post office and the others for the automatic exchange. The second stage is for the third floor (for apparatus), the fourth, fifth, sixth, seventh and eighth floors (for offices), and the ninth floor (for amenities). The building to be provided in the first stage will include some amenities, but they would be on a restricted scale pending provision of the second stage of the building. Although the lower floors are most urgently required, the upper floors are also badly needed, as indicated later under the heading, "Need for additional floors for office space".

The construction of the entire building in one stage would, of course, be preferable, but the department's plans were prepared during the war and efforts have been concentrated on the first stage of the building in order to conserve expenditure, materials and manpower consistent with the requirements of the war effort. For some years the central administration of this department has been working under unsatisfactory conditions with regard to accommodation, and this aspect is also referred to under "Need for Additional

Floors for Office Space", in order that a decision may be reached as to when the second stage of the building should be provided.

Telephone Development Figures.—The number of exchange lines in Melbourne city area proper as at the 30th September, 1945, was 16,115. As mentioned before some of these lines have been connected to adjoining exchanges, and the actual distribution of the Melbourne city area lines is as shown hereunder:—

Exchange.	City West Original Area.	City West Ultimate Area.	City West Total Area.	City East Area (Russell).	Other Exchanges Area.	Total.
Central ..	314	450	773	4,122	24	4,019
Carlton ..	65	128	211	1,677	40	1,738
Collingwood ..	7	NH	7	NH	NH	47
JM (temporary) Exchange in Office Building in Post Office - places giving relief to Central ..	3	17	20	302	13	305
City West ..	6,400	1,481	7,881	1,000	85	8,586
Totals ..	0,779	2,113	8,802	7,101	122	16,115

It will be seen from the figures quoted that, although the total lines now connected to the manual switchboard at Central exchange is 4,019, it is necessary to provide for the transfer of 7,101 lines to the new exchange at Russell. This will enable the various groups of lines to be transferred to their proper exchanges, thereby effecting substantial relief in outdoor cable plant, and particularly relieving Carlton exchange of a group of lines which is having the effect of overloading that exchange. The distribution shown in the figures based upon the Division of Melbourne city area into two automatic exchange areas in accordance with present plans, i.e., City West exchange and City East, the latter to be known as Russell exchange. Future plans, however, provide for further subdivision of the City area into four exchange areas to be served by City West and Russell exchanges, and also two new exchanges which are tentatively referred to as "Batman" and "Civie".

A preliminary survey and tentative plans are being prepared with these two new exchanges. Batman will serve the south-west and Civie the north-east area of the city. The proposed areas are shown on the attached plan, and the estimated development figures are shown hereunder:—

Exchange.	Present Subscribers' Lines.	Eight-Year Subscribers' Lines.	Twenty-Year Subscribers' Lines.
City West ..	5,016	6,512	8,772
Balmain ..	5,435	7,038	9,187
Russell ..	5,197	7,149	7,722
Civie ..	1,806	2,000	4,101
Totals ..	17,604	23,600	31,782

The line switch capacity of the City West automatic exchange is 9,000 with final selector capacity of 9,900. As the 8,800 lines connected are in excess of the practical line switch capacity of the exchange, development in the areas is being met on the Central common battery manual exchange. Equipment to increase the capacity of the line switch side of the City West exchange from 9,000 to 9,000 lines on order since the 6th January, 1941, is now arriving from the United Kingdom, and when the installation has been completed, all space available for automatic exchange purposes in the City West building will be fully occupied.

The Central common battery manual exchange switchboard has 4,019 subscribers now connected. The effective capacity of the exchange is 6,000 lines, based on the effective reversal of traffic from positions which the present building will accommodate.

In effect, therefore, we can meet development to the extent of 1,050 subscribers' lines in the immediate city area on the Central common battery manual exchange and an additional 900 lines on the City West automatic exchange after equipment now being delivered is installed, i.e., a total of 1,950 lines.

It will be seen from the development of figures quoted that already the lines in the immediate city area of Melbourne exceeds capacity of the City West automatic (9,000) and the Central common battery manual (6,000) exchanges, the possible spares—1,950 lines—being due to 1,851 lines being connected outside the area to Carlton and Collingwood with 3S4 lines connected inside the area to the emergency "JM" exchange. The slight difference in the figures is due to the fact that disconnected numbers cannot be used again immediately owing to directory entries being still current, &c.

During the four years immediately prior to the war, development in the Melbourne city area totalled 3,055 lines, or an average of 916 lines per annum. Since the war, development has fallen to an average of 293 lines per annum (June, 1940 to June, 1945). For the five years of the war period, therefore, based on pre-war figures, the immediate Melbourne City area telephone growth has been retarded to the extent of 3,215 lines.

It is the desire of the Post Office that existing restrictions on the connexion of new telephone services be lifted, but this cannot be done until sufficient exchange equipment is made available. When restrictions are removed, as far as the immediate city area of Melbourne is concerned, the retardation of growth to the extent of 3,215 lines during the war period would no doubt result in a flood of applications for telephone services being received which would absorb quickly all available spare lines on the City West automatic and the Central common battery manual exchanges. On the other hand, if the pre-war development figures only were reached the Post Office would be able to meet development at the most for two years. By continuing present restrictions, the position may be met for about five years. In effect, therefore, steps must be taken immediately to prepare for the relief of the present City West and Central exchanges by providing the proposed new Russell exchange, and each month the project is delayed now will cause a corresponding delay in the lifting of restrictions on the connexion of new telephone services.

Carlton is the existing main exchange for the "F" group of automatic exchanges and approximately 1,800 subscribers' lines in the city area proper are connected to Carlton for reasons which have been covered fully in the previous discussion. The Carlton exchange building is full already and an extension of the building over an adjoining property purchased for the purpose is now in progress. The exchange employs a five figure numbering scheme which must be changed quickly to a six figure system in order to meet development and to provide levels necessary for the establishment of additional branch exchanges at Moreland, Macaulay, and Coburg.

The exchange is the pre-2,000 type and much of the equipment has been in service for almost twenty years. A major re-arrangement of equipment in the building is necessary and all floor spaces which will be made available when the building extension in progress is completed will be required in connexion with the installation of automatic equipment, including the change of Carlton exchange from a five figure to a six

figure, numbering scheme. The exchange now has a capacity for 6,400 lines with 6,093 lines connected. The practical capacity however, is 5,039 so that the exchange is allotted already in excess of capacity. It is of particular advantage, therefore, to free quickly some of the 1,804 lines of equipment now used to give service to city exchanges so as to avoid making economical additions of both building and equipment to Carlton exchange. The situation at Carlton, therefore, also indicates the need to proceed with plans for the early relief of the present City West and Central exchanges by the establishment of the proposed new Russell exchange.

Provision of Up-to-date Post Office.—There is an urgent need for an up-to-date post office with sufficient accommodation to provide facilities to handle all classes of business at the eastern side of the city. By the erection of an exchange building at the corner of Russell and Little Collins streets and the reservation of the ground floor of the building for use as a post office, public requirements in this important part of Melbourne could be satisfactorily met for many years to come.

At present post offices are established at Bourke-street East (upper end of Bourke-street) and at Russell-street (between Collins-street and Flinders-lane). Both of these offices are housed in leased premises at a total rental cost to the department of £1,210 per annum. The accommodation provided is unsatisfactory and totally inadequate, while the amenity provisions fall far short of what is necessary. It is impracticable to obtain suitable accommodation in the vicinity of either office except by acquiring property at a high cost, and then much expenditure would be necessary to erect suitable post office premises. The distances to be traversed by present clients of these offices to reach the proposed office at City East would not be unreasonable.

When accommodation is available at City East it would not be possible to enable the offices at Bourke-street East and Russell-street to be closed, but such action would relieve to some extent the immense traffic load which is now handled with ever-increasing difficulty at the Elizabeth-street Post Hall.

Considerable thought has been given to the problem of the most advantageous layout for the proposed new post office. The difficulty is not in securing a suitable layout to meet present day traffic, but to ensure that the accommodation to be provided will cater for the heavy increase which may be expected over a long term of years. After full consideration, it has been decided that requirements can best be met by providing accommodation for all purposes as indicated on the plan, leaving a clear public space of 16 feet over the whole length of the office between the front of the counter and the writing slopes arranged along the southern wall. The following further notes are furnished in respect of the various facilities which it is proposed to provide.

Experience indicates that there will be a considerable demand for stamps, particularly income tax instalment stamps, at this end of the city where many small manufacturing firms are located. It is anticipated that the provision of up-to-date stamp selling facilities at City East would relieve the congestion at the Elizabeth-street office to a considerable extent, and it is accordingly proposed to install five cubicles to meet the demand for stamps and postal notes, with two additional cubicles for the handling of money order business.

It is proposed that cash registers be used in connexion with the acceptance of telegrams from the public and the proposed cubicles would provide all the space required at these positions. As the telegrams would be carried by pneumatic tube to the Central Telegraph

Office, clerical work in connexion therewith would be negligible and would be provided in the telegraph despatch section. It is the intention that the acceptance of telegrams should not extend beyond the time of closing of the post office generally. One point of acceptance throughout the whole 24 hours should suffice for the city and this is provided at Elizabeth-street. A pneumatic tube service exists between the Central Telegraph Office and Russell-street Post Office, and this service would be routed to City East when that office is opened.

It is intended that, with the establishment of postal facilities at Russell-street, the telegram delivery area now covered from the present Russell-street Post Office shall be extended to cover the area, Swanston-street (excluded)—Victoria-street—River Yarra—Middle-street. Eleven telegraph messagestrans are now employed at the Russell-street Post Office, but the added area plus development in traffic are estimated to require an ultimate staff of 25 messengers. At the outset one despatching officer will suffice but as business develops a Junior Assistant will be required in addition. Sufficient space would be available to house the proposed staff.

Outdoor posting facilities are essential, and receivers would be provided in a position convenient to the front entrance and under cover. The separations would be arranged as follows:—

Suburban.
Interstate.
Overseas.
Air mail (first class matter only).

These separations, excepting air mail, would be duplicated to cover first class matter as well as packets and newspapers.

After careful consideration, the conclusion has been reached that it would not be economical to attempt postmarking or sorting of ordinary mail matter at City East, but that a good frequency of clearance to the General Post Office should be provided, where exchange facilities for treatment in bulk will be available.

Parcels and large articles, as well as registered articles, would be accepted at the open counter spaces. Parcels would be postmarked and despatched inserted to the Mail Branch, General Post Office; while lodgment of parcels would be restricted to private persons and those firms who do not post in large quantities. Little difficulty should arise from this source, as firms posting large numbers of parcels would no doubt prefer to deliver at the General Post Office, where handling facilities would be much simpler. In regard to bulk lodgements of ordinary postal articles, these would be restricted to quantities which we could not reasonably demand must be taken to the General Post Office.

The *poste restante* facility is discouraged at branch city post offices, apart from Elizabeth-street, and is practically non-existent. There is much to be said in favour of the policy followed in this respect, but some persons would no doubt prefer to have their correspondence addressed to such a large post office as that proposed for City East. It is not anticipated that the service would be so large that it could not be handled conveniently in conjunction with the registration and parcels counter.

As far as delivery of mail matter by postmen is concerned, the existing centre at Elizabeth-street is excellently situated and City East would be too close to confer any advantage. There would certainly be some loss of time and confusion in dividing articles for delivery from the respective delivery centres and it is intended to continue to deliver mail matter for the whole of the city from Elizabeth-street.

Social Service payments are now made at a hall in the locality on the due dates and a very large business is transacted. There are several undesirable features associated with payments away from the office, and the

arrangements at the hall cannot be better than a makeshift. The sums disbursed are of huge magnitude and it would be of great advantage to pay at the New Russell-street office. It does not appear that available space will permit of a special area being set aside for such payments, but it is felt they could be handled satisfactorily at the counter if several paying positions were provided. Four cubicles have been provided for and these should be sufficient to meet requirements.

Provision has been made in the plans to install a bank of nine public telephones cabinets, with four additional cubicles inside the office for trunk-line calls. It is probable that it will be necessary at a later date to install a telephone attended pay-station at City East and the postmaster's office is so designed that it can be utilized for that purpose when required. At that stage it is contemplated that additional stories will be added to the building with lunch and rest room accommodation, and that the room now marked common lunch room will be available for use as an office for the postmaster.

Pending the erection of the upper floors of the building with full welfare facilities, temporary provision has been made on the ground floor for luncheon room, cloak and locker rooms, &c.

Need for Additional Floors for Office Space.—The proposal was prepared during the war, and it was intended to erect the building in two stages. In order to conserve materials and man-power, the first stage was limited to those floors which are essential for the exchange, i.e., the basement, first and second floors, and the ground floor which is to be a post office.

The building is designed to make the best use of this valuable site by providing the maximum number of stories practicable within the limits of the permissible building height. The second stage is not so urgently required as the first stage, as it provides for the third, fourth, fifth, sixth, and seventh floors which are to be used as offices. Now that hostilities have ceased, however, the provision of this second stage can be considered as a post-war plan and there is justification for erecting the second stage concurrently with the first stage. The additional cost is estimated at £140,000.

The office space is required to relieve the unsatisfactory conditions under which officers in the central administration of this department are working. The staff must be increased from time to time to keep pace with the expansion of the service. For many years the central administration has been accommodated in the Commonwealth offices, except the research section of the Chief Engineer's Branch, which is housed in a separate building in Little Collins-street. In recent years the conditions have become so unsatisfactory that some relief has been provided by transferring sections of the Chief Engineer's Branch to rented premises and the transfer of some additional groups of this staff are under consideration.

The Chief Engineer's staff totals 349 officers, of whom 131 are in the research building. Of the 218 remaining, 146 have been transferred to five separate buildings, four of which are rented, and 72 remain in the Commonwealth offices. The accommodation occupied by other branches of this department in the Commonwealth Offices is quite inadequate for efficient working, and the complete removal of the Chief Engineer's Branch will be effected gradually with the object of improving the position in regard to the other branches.

The separation of various groups of the Chief Engineer's Branch can be regarded only as a temporary expedient. It has been tolerated because there was no other alternative but, as soon as possible, they should be brought together in one building.

The second stage of Russell will enable this to be done, the whole of the office accommodation being required for the purpose. Rental of £4,114 would be saved, together with the constant expense of making additions to rented premises.

The expenditure for the various financial years would be 1945-46, £20,000; 1946-47, £130,000; 1947-48, £116,300, if both stages of the building are provided concurrently, and this course is strongly recommended.

The automatic unit for country exchanges has been entirely designed and developed by the Post Office, and an experimental unit is being built in our own laboratory. When we are satisfied that it will provide the service for which it is designed, we shall place orders for its construction in quantity with the telephone manufacturing companies. Up to the present the installation of rural automatic exchanges has been confined to places where the number of subscribers under manual conditions justified a day and night service. Rural automatic exchanges are relatively expensive, and, although we have installed 151 in various parts of the Commonwealth, it has been done only where it could be economically justified. The new units can be placed in areas where there is a relatively small number of subscribers, and we hope that they can be used economically. If these units are successful, their installation will open up a new era for country subscribers.

For technical reasons, it was necessary that we should choose a site in the proposed location. In establishing a telephone exchange, the main costs are not those for the central switching equipment, but for the outdoor plant. If you put the exchange in a central position which allows of the shortest loop for each subscriber, you will be saving money. Therefore, although you may have to pay a high price for such a site, the post office will ultimately benefit economically. In the case of the present site, there were shop frontages to Little Collins-street, and they were costly to acquire.

I suggest that the Committee might consult with the Melbourne City Council regarding the possibility of proposals being put in hand for the widening of Little Collins-street. If we have to stand the building back any further, we do not want the site. We have consulted with the city authorities, and we believe that the proposed building conforms with the requirements in respect of street widening proposals, but it may be as well to have the position confirmed.

The third floor of the building has been designed as an equipment floor, but that is with a view to the future. It has been given a high ceiling so as to permit of the installation of equipment, but for the time being it will be used for office purposes.

To Senator Aylett.—The equipment to be provided in the exchange will cater for about 9,000 lines, and this will cope with development in this area for some time. We expect to open a number of other exchanges in the city area, and it is difficult, therefore, to say for what period the present proposed installation will provide. There are 11,000 outstanding applications for telephone services in the metropolitan area alone. No doubt, if it became known that the post office was in a position to supply telephone connections, the number of applications would be almost doubled.

To Senator Lamp.—I have not prepared figures indicating what will be the estimated revenue derived from the new exchange, but I can have a statement drawn up showing the estimated revenue both in respect of rentals and fees for local and trunk line calls. The statement would also show expenditure such as interest payments, depreciation and working expenses, &c.

There is a heavy demand for automatic telephone exchanges in the country, a fact which we have not overlooked. In the preparation of our post-war plans,

we have tried to preserve a balance between the needs of the metropolitan and country centres. We plan to install 400 rural automatic exchanges, and have accorded this work a very high priority. The installation of automatic exchanges in the country has sometimes been delayed because, once they came into operation, the effect would be to cut down the volume of business handled by non-official postmasters, thus reducing their income.

The locality of the proposed new exchange has really been determined for us. It has been the policy of the Post Office for many years to proceed with the conversion of all metropolitan exchanges to automatic working. Statistics have been prepared showing the number of country and city exchanges, and this information will be supplied to the Committee. At the present time, the public demand in the way of telephone business is greater than the department can supply. The likely increase in the demand for telephone services in a given area is usually estimated on the basis of past development figures.

We maintain a continuous telephone survey. In each capital city there is an officer, called the telephone survey officer, who is on the administrative staff of the engineering branch. He actually walks every city block and prepares a plan showing likely development. The plan indicates the number of lines at present in use, and the estimated number in five years' time, eight years' time and twenty years' time. The man who was doing this work for us in Sydney, and who died only recently, had been on the job for 35 years, and in all that time I never knew him to be substantially out in his estimate. Our experience has been that, in the city proper in Melbourne, development doubles itself in twenty years; in the country areas it is doubled in fifteen years; while in suburban areas it is trebled in fifteen years.

It is unprofitable to lay underground cable unless a very careful calculation has been made as to the potential growth of business. In the present instance, we have made a very complete check. Indeed, we are installing the exchange to meet already existing needs. The building is designed to meet requirements for the next twenty years, but the equipment will meet the needs of the next few years only.

I cannot say off-hand what is the average cost of installing a telephone line in Melbourne, but, if the Committee desires, I shall have the figures taken out for both city and country districts.

Air conditioning in automatic telephone exchanges was found to be indispensable in humid areas such as Sydney and Brisbane, and plant was installed consisting of artificial ventilation with refrigeration. This equipment was also installed in some of the earlier exchanges in Melbourne, but about ten years ago experiments were conducted in order to find out how we would get on if we dispensed with the refrigerator and used only the forced draught and air washer. This was found to work, but it was not quite so satisfactory as the system it is proposed to employ in the new exchange, which is to force the air in through ordinary oil filters. In the proposed exchange there will be dust filters, but no refrigeration or air washing. The provision of air-conditioning equipment in Melbourne has been kept down to a minimum.

All post office equipment is bought in the open market by tender, and this system was followed even during the war. We buy Australian-made equipment if it is available, but all automatic switching equipment is manufactured abroad and must be imported. It is reasonable to assume, however, that the five main British manufacturers will begin production in Australia before long.

When the exchange is completed and in operation, some material and a number of employees will be

displaced, but they will be absorbed elsewhere. The turnover in staff is so high that there will be no difficulty in employing the girls who will be displaced. At present, the manual exchange is housed in a building in Lonsdale-street, next to the City West automatic exchange. Ultimately, the floor level may be altered, and the building incorporated into the present automatic exchange. The rent charged subscribers for telephone services will not be increased. We do not propose to rent any of the office space to outside tenants. The post office can use all the space available.

I know something of telephone exchange systems overseas, and I am convinced that our automatic systems here compare favorably with them. Our equipment is of the very latest design available. There have been technical improvements overseas during the war, and we are advised of them regularly by air mail. I do not believe that any revolutionary change in the nature of automatic equipment will come about so as to render our present equipment obsolete. In the post office laboratory in Little Collins-street, experimental work is carried on to develop and improve telephone equipment.

The establishment of this exchange will necessitate certain additions to other exchanges. The Postal Works Committee is inquiring into the proposal to erect a building in which to house an automatic telephone exchange and post office in Russell-street, Melbourne. I have seen the plans of the building, and I have prepared the following notes on the proposal:

MONDAY, 22nd OCTOBER, 1945.

Present:

Senator Lamp (in the chair).

Senator Aylett. Mr. Rankin.

Senator Brund.

Henry Maidland Rolland, Director of Architecture, Head Office, Department of Works and Housing, sworn and examined.

7. To Senator Lamp.—I am aware that the Public Works Committee is inquiring into the proposal to erect a building in which to house an automatic telephone exchange and post office in Russell-street, Melbourne. I have seen the plans of the building, and I have prepared the following notes on the proposal:

The following is a brief description of the proposed building:

Site.

Position—North-east corner of Russell and Little Collins streets.

Frontage—To Russell-street, 63 ft. 6 in.; to Little Collins-street, 108 ft.; to Melbourne-place, 104 ft.; to Coronation-place, 88 ft. 6 in.

Area—12,000 square feet.

PROVISIONS FOR BUILDING.

The building is required permanently as an automatic exchange, for which three floors are required, the first and second being for immediate use and the third for future extension.

As the erection of a three-story building on a high-priced site would not be economic, it is proposed to go to the full height permitted by the building regulations and provide office space for administrative offices on the upper floors and a Post Office with pittie telephones, &c., on the ground floor.

CONSTRUCTION IN STAGES.

It is proposed to proceed with the work in two stages, the initial stage providing for a basement and three floors. At a later date the final stage will be carried out and will comprise the addition of five further floors.

ACCOMMODATION.

The basement and eight floors will have a total area of 97,000 square feet and will be sub-divided as follows:

Basement—This will extend over the whole of the site and will accommodate exchange equipment and general services, such as air-conditioning plant, boiler, &c.

Ground Floor—Post office, public telephone, &c.

First and Second Floors—Automatic exchange equipment. This floor may be temporarily sub-divided as office space.

Third, Fourth, Fifth, Sixth and Seventh and Eighth Floors—Sub-divided into departmental office space, with provision for a cafeteria on the eighth floor. The cafeteria has been allowed for at the request of the Postmaster-General's Department, Amalgamated Society of Office Clerks, who provide meals for employees on shift work and the staff generally.

Flat Roof.—This may be used for recreational purposes, should it be so desired.

CONSTRUCTION.

The building will be a steel-framed structure with reinforced concrete floors.

The walls will be of concrete and the elevations of Russell and Little Collins streets and Melbourne-place will be faced with cream tan brickwork and treated with pressed stone or architectural terra cotta in columns, doors and window sills, &c.

This will also be a base of freestone stone to the Russell-street frontage with returns along the sides.

Internal partitions will be of form core lumber.

The flat roof surface will be waterproofed with asphalt or bituminous felt and covered with a cement tile wearing surface. Provision will be made below the roof grating for insulation.

The floor surfaces will be as follows:

Basement—Granolithic.

Ground Floor—

Loggia and lobbies, terrazzo.

Working space, timber.

Working space, woodblock.

Lofting area, garage, granolithic.

F.6702.—2

First to Third floors, and Fourth to Seventh floors—Corridors, bathrooms; offices, wood.

Eighth floor—Cafeteria, woodblock; kitchen, tiles.

Main lift lobbies—Terrazzo throughout.

ENGINEERING SERVICES.

Air-conditioning will be installed in the post office and exchange.

Fire Precaution.—Provision has been made for standard fire hydrants in office floors and Chemical extinguishers, only on external floors.

Other Services—Hot water, garbage disposal and vacuum cleaning are also provided for.

The following is a summary of the estimated cost of the two stages:

	£	£	£
Initial Stage—			
Building (including demolition of the existing property—£47,015 and also £25,000 for construction of Postal Hall),	94,915		
Engineering Services—			
Sewerage drainage ..	350		
Water service ..	350		
Stormwater drainage ..	300		
Fire services (hydrants and extinguishers) ..	650		
Air-conditioning ..	14,500		
Basement ventilation ..	2,000		
Battery exhaust ventilation ..	270		
Lavatory exhaust ventilation ..	500		
Vacuum cleaning system ..	1,000		
Heating plant ..	2,700		
Hot water supply system ..	1,120		
Sump pumps and filter cleaning ..	320		
Electrical work on mechanical services ..	800		
Three tons electric hoist ..	400		
Electrical services ..	5,000		
		31,070	
Total cost of initial stage			123,985

Final stage—

Building ..	83,375	
Engineering Services—		
Fire services (hydrants and extinguishers) ..	700	
Air-conditioning ..	2,000	
Lavatory exhaust ventilation ..	450	
Vacuum cleaning system ..	300	
Radiation system Fourth to Eighth floors ..	1,000	
Heating plant ..	2,500	
Hot water supply system ..	320	
Incinerator ..	250	
Cafeteria equipment ..	6,000	
Electric lifts ..	36,200	
Electrical services ..	7,000	
	50,440	
Total cost of final stage		140,315
Grand total, both stages ..		266,300

Provision has actually been made for the erection of the building in two stages, but I think it would be preferable to complete it at once, as this would be cheaper and more convenient. For the construction of the first part, the contractor would have to assemble the plant and staff, and then take them off the site when that part was finished. When the second stage of the building was begun, this process would have to be gone through again, and this would make for additional expense. Moreover, once the building was occupied, much inconvenience would be caused to the occupants when the building operations began on the upper stories. Another consideration is that the dust so caused might damage the delicate equipment in the telephone exchange. The proposal to erect the building in two stages was put forward when it was thought that the work would have to be done while the war was in progress, but now that the war is over, I believe it would be better to finish the building all at once. A strong argument in favour of this is the fact that the Commonwealth is very short of office accommodation

in Melbourne, and for years has been paying out large sums in rent. The present Commonwealth Offices in Treasury Gardens will eventually revert to the State, and the Postal Department offices there will be transferred to this new building.

We have given very careful consideration to the effect which the construction of this building will have on the housing programme, and we do not think that it will compete very seriously with that programme.

The building will consist of a steel frame work, enclosed in concrete, and covered with a veneer of brickwork. Actually, only the bricks used in the veneer would be suitable in any circumstances for cottage construction. It will be more than twelve months before the building could be sufficiently far advanced for the brick work to be done, and it is to be hoped that, by that time, the situation will have improved, and that more material will be available. As for labour, only carpenters, plumbers and bricklayers are likely to be diverted from cottage construction. The shortage of materials for cottage construction relates not so much to bricks, timber, &c., as to fittings, such as baths, stoves and so on. With the exception of sanitary fittings, the equipment of the proposed new building will not be such as would be used in cottages.

The site of the proposed building is owned by the Commonwealth, and at present it carries a number of buildings of poor quality. Some are about ready to be condemned. Tests have been made regarding the foundations, and it has been found that they are suitable for the kind of building planned.

It has been our experience that building costs are somewhat lower in Melbourne than in Sydney and Brisbane. As for machinery in the building, our department would be responsible only for the lifts and the plant for air-conditioning and vacuum cleaning, all of which is locally made. The number of employees who will work in the building has been estimated by the Postal Department, and we have planned the accommodation in accordance with their figures. The floors which are to carry equipment have been provided with a specially high ceiling—19 feet, and provision has been made for the ventilation of the space above the equipment. The spacing of the piers has been arranged so as to permit the installation of equipment. We consulted with the Postal Department regarding the layout of the building and equipment, so as to design a building which would be as economical as possible, having regard to the technical requirements of the Department. I believe that the contract system is the best for the construction of a building of this kind. A considerable amount of equipment would be needed for construction purposes, and only a well-established contractor would be likely to possess it. It is unlikely that we shall be in a position to invite tenders before the middle of next year, by which time the situation should have improved in regard to the supply of materials, labour and equipment. It will probably take between eighteen months and two years to complete the building from the date of calling tenders.

The alternatives to the proposed facing of brick are stone veneer and rendering. I think it would be a pity to put up a rendered building for the Commonwealth in the heart of the city. Brickwork is permanent, like stone, whereas the maintenance costs for a rendered building would be heavy. Terracotta is another alternative, but it is not made in Melbourne at the present time. It would be necessary to bring the tiles from Sydney, and I think it is preferable to use local material. I had not previously heard it suggested that concrete ceilings tended to emit cracking noises with changes of temperature. We have used millions of square feet of this material, and have found it to be one of the most effective insulating materials available.

An alternative would be the material which is called "acoustical plaster", but this is used in cottage construction, besides which concrete ceilings require less labour to fit it. I do not think that there is any likelihood of noise travelling from one door to another. The floors in the lower part of the building will be of reinforced concrete, and will be ceiled underneath with concrete. The upper floors will be covered with lino and felt, which will deaden the noise. Provision has been made for the installation of sun louvres along the west wall, which we believe to be necessary even in such a climate as that of Melbourne. On the northern wall, the architrave has been projected so that, during the heat of the day, the sunlight does not strike directly on to the glass of the window.

The estimated cost of the building and equipment is about £300,000, but our department is responsible only for the building itself, for which the estimated cost is £260,000. This covers the cost of erection, plus engineering services, apart from the postal services. The figure was taken out five months ago, and provided that there is no serious upheaval in the building industry, I believe that it will prove to be a fair estimate. Of course, if the 40-hour week is introduced in the building trade, costs will go up. The estimate was not based on quantities, but was arrived at after the consideration of a great amount of detail. It is not based merely on cubic measurement. I do not think that the erection of a building of this kind would aggravate parking problems in the adjacent street. Apart from the post office on the ground floor, there will be few occupants of the first four floors. Only the fourth to the seventh floors will be used for office accommodation, and Russell-street is quite a wide thoroughfare.

To Senator Brand.—We believe that there will be sufficient carpenters, plumbers and bricklayers for the erection of this building, and also for the housing programme when the time comes. We base this belief on the fact that there will be many releases of tradesmen from the Services, and consequently the production of materials will be speeded up. In the same way, the number of actual building tradesmen will be considerably increased. Even if the work were immediately approved, the first undertaking would be the demolition of the existing buildings, followed by the excavation of foundations, for none of which work skilled tradesmen would be necessary. It might be getting on towards the end of next year before we start the actual building operations. We are at present busy on a master plan for the reconstruction of the Elizabeth-street Post Office, and the first part of the new building would be erected on the site of the existing tin shed at the corner of Little Bourke-street and Elizabeth-street. Mr. Lewis is director of engineering in our department, but he has not yet gone closely into these plans. That will be done when the working drawings are made. The total number of persons using the building is estimated at 900 and approximately half of these are likely to require meals. The canteena has been designed to provide service for 500 people.

To Mr. Rankin.—The amount of concrete in the construction of an ordinary cottage is not very great. The prefabricated concrete homes have walls only 3 inches thick. I do not believe that the use of concrete in the construction of this proposed building will interfere with the housing programme even if it were intended to use concrete for the construction of any considerable number of houses. It is impossible to make an effective comparison between the cost per square foot for building cottages and the cost per square foot of a building such as this. The two kinds of construction are entirely different. I agree that the construction of this building must have some effect on

the housing programme, unless construction is so long delayed that the general situation is greatly improved. The training of ex-servicemen as tradesmen should greatly assist in providing labour for the building trade, but plumbers, for instance, would have to be licensed before they would be allowed to practise.

To Senator Aylett.—Even if we were to proceed first with only the lower floors as originally intended, the lift shafts would be provided, but it is not likely that they could be used by the builder while working on the second part of the building, because they would be situated in the public lobbies. Work on the second part of the building, once the first part was occupied, would tend to inconvenience the occupants, particularly those on the third floor. The building line has been set back 2 ft. 7 in. at the Russell-street corner, and 2 ft. 10 in. at the Coronation-place corner, in order to comply with the law regarding the widening of narrow streets. The department is working on other proposals for the erection of Commonwealth buildings, and other exchanges are planned, in various parts of the country.

To Senator Lamp.—The Postal Department will be able to install its equipment on the lower floors of the building while we are still working on the upper floors.

The witness withdrew.

(Taken at Melbourne.)

MONDAY, 29TH OCTOBER, 1945.

Present:

Senator Lamp (in the chair).

Senator Aylett. Mr. Harrison.
Senator Brand. Sir Frederick Sewart.
Mr. Conchon.

Rev. Vincent McKay, Chief Engineer, Postmaster-General's Department, sworn and examined.

To Senator Lamp.—I am aware that this Committee is inquiring into the proposal to erect a building to house an automatic telephone exchange and post office in Russell-street, Melbourne, and I have seen the plans of the building. While Mr. Fanning, Acting Treasurer-General, was giving evidence before the sub-committee, the Chairman (Senator Lamp), on behalf of the members of the sub-committee, asked for certain details. These details are set out hereunder:

Q. 1.—How many telephone exchanges are there in Melbourne?

A. 1.—Melbourne metropolitan exchange network covers the area within 15 miles radius of the General Post Office, Spencer Street. There are 63 exchanges, 31 manual and 32 automatic. List attached. Appendix 1—Hawthorn and Windsor exchanges are included in both the manual and automatic lists, because in each case there are two separate exchanges. (Mr. Fanning's statement explained that the lines which still remain manual at Hawthorn and Windsor manual exchanges cannot be converted to automatic working until certain new exchanges are established.)

Q. 2.—What is the average cost and revenue for a telephone line in the city and country respectively?

A. 2.—The average costs for Victoria are as follows:

	Cost.	Revenue.	Profit.
Metropolitan Country	£ 82.72 69.61	£ 14.89 7.08	£ 4.86 -1.11

Q. 3.—What is the basis of the estimate of development, and is the estimate likely to be conservative in view of the prevailing conditions in spending by the public?

A. 3.—The estimate is based on a development study, past experience and analysis of figures showing the rate at which lines have been added each year, also on a detailed survey of the area concerned. Modern telephone survey work is a well established and highly specialized practice, and the methods followed by this department in this work are in accordance with methods followed by the large telephone administrations. The results over many years have shown that the estimates of development allow for favorable as well as adverse business conditions and the forecasts have been remarkably accurate.

Q. 4.—How many country exchanges are there in Victoria, automatic and manual?

A. 4.—There are 1917 country exchanges in Victoria, automatic and manual, and there are two metropolitan and 13 automatic, including 44 rural automatic exchanges. The number of country lines may be seen from the following summary and the total may be compared with the Commonwealth total:

	City.	Country.	Total.
Victoria Commonwealth	122,499 360,712	59,189 217,065	181,085 577,777

Q. 5.—In regard to air-conditioning, some years ago, were not experiments carried out in certain Melbourne exchanges to ascertain whether refrigerators could be omitted from such systems in Melbourne?

A. 5.—In certain automatic exchanges in Melbourne metropolitan area, air-conditioning plants have been installed, providing mechanical ventilation with air washing and refrigeration. The refrigerators and air washers were withdrawn and the plants were altered to provide mechanical ventilation with an oil filter system. This experience has shown that equipment can be eliminated and that the system will be dehumidified at the same time. Although the conditions in Melbourne are rarely humid, the withdrawal of cooling equipment has caused discomfort to staff during hot weather.

In the City West exchange which was installed in 1937, the air-conditioning plant consists of mechanical ventilation with oil filters. Smoke particles and fine dust find their way through the filters and the problem is a very complicated one, involving the filters and the plant. The Department of Labour and National Service, Industrial Hygiene Section, two years ago examined the conditions at City West. As a result of their Report No. 3 was issued, copy attached, under my signature. The report shows that additional equipment is required to control temperature and humidity for the benefit of the staff working in the building. The department's engineers agreed with these views, and action has been taken on the lines suggested to improve the conditions, but refrigeration will not be added to the system until the building is extended.

Q. 6.—What air-conditioning plant is proposed for the Russell-street building?

A. 6.—The details have not been worked out yet. The responsibility for designing and installing the plant to meet this department's requirements rests with the Department of Works and Housing. The general scheme, however, is that air-conditioning will take care of staff comfort throughout the building, including the post office, but on the apparatus floor, full air-conditioning will not be provided. Air conditioning cannot be efficiently maintained if the outside air is directly admitted, as would happen, for example, if the windows were opened. The proposals may be summarized as follows:

Basement.—Most of the air-conditioning equipment will be installed in the basement in the large hall. Oil-fired boilers will serve radiation and hot water systems. Plant control sump pumps will guard against flooding. Plenum and exhaust systems will be provided for power room, plant room and for electrical substation. Air will be supplied to the plant room which must be kept at a positive pressure and to the battery room which will have an independent exhaust.

Ground Floor.—The post office will have full air-conditioning. It is necessary to guard against the public experiencing too great a change from the outside conditions to those inside, whether the regulation of temperature and humidity must be separate from the regulation for the apparatus floors.

The automatic switching equipment must be protected from dust and from moisture and high temperatures. At 50 degrees Fahrenheit there is a risk of insulation being critical for the apparatus. Full air-conditioning with separate regulation is necessary for these floors and refrigeration will be included so that both the staff and equipment will have the best conditions.

Office Floors, Fourth to Eighth Floors.—Air-conditioning is not to be provided. Hot-water radiation system is included to maintain staff comfort during the cold weather.

Exhaust Ventilation.—Exhaust is necessary for the battery room, basement and telephone booths. Provision for exhaust is also necessary for the kitchen, shower rooms on the Sixth and Eighth floors, from shower cubicles and from all lavatories except those on the Eighth floor and the two northern ones on the Eighth floor, which have natural ventilation.

Hot Water Service.—As well as the hot water radiation system, provision is to be made to supply heated water in all wash-hand basins, for showers, soap dispensers, sinks and to kitchen equipment such as for dish water, urns, &c.

Q. 7.—What are the figures for revenue and annual charges?

7.—Revenue.—The average number of lines working in the area of the proposed Russell Exchange during the year ended 30th June, 1946, was 7,101, and actual revenue from these lines for that period was £205,375. The corresponding figures estimated at the date of opening, assumed at November, 1948, are £8,000 and £335,333, and five years later, 9,000 lines, £10,000 and £395,333. The annual charges for the plant rental of £12.35 per line plus £0.02 for local and £12.74 for trunk and phonogram calls, totalling £41.71 per line per annum.

ANNUAL CHARGES: ESTIMATED.

	At Opening	At Five Years.
Capital cost	£ 650,000	£ 1,000,000
Capital cost, new and in situ	1,781,000	1,831,000
Working expenses	53,000	54,000
Total annual charges	174,000	178,000
(Revenue set out above)	333,333	375,000

Assets thrown Spare.—The book value is £183,333, the recoverable value £8,000, and the cost of recovery £3,000.

APPENDIX I. MANUAL EXCHANGES—METROPOLITAN AREA, MELBOURNE, VICTORIA.

Exchange.	Lines connected
Altona	30,645
Broadmeadows	39
Bulla	13
Central	4,003
Cheltenham	1,237
Craigieburn	30
Derrimut	5
Diamond Creek	37
Eltham North	82
Eltham South	3
Frankston	220
Greenvale	27
Hawthorn Manual	5,677
Kew	8
Lecton	17
Melksham	7
Morang South	7
Mordialloc	403
Reservoir	7
Ringwood	349
South Yarra	19
Sydenham	17
Tottenham	6
Tullamarine	7
Warrandyte	72
Williamstown	956
Willesden Manual	5,697
Wolert	17
Yarrambat	5
J.M. Emergency	385

AUTOMATIC EXCHANGES—METROPOLITAN AREA, MELBOURNE, VICTORIA.

Exchange.	Lines connected
Ascot	4,681
Bendigo	1,354
Box Hill	2,633
Brighton	5,601
Brunswick	5,410
Canterbury	6,482
Caulfield	4,716

APPENDIX I.—continued.

Exchange.	Lines connected
City West	30,645
Gillingwood	4,000
Dore Park	101
East Keilor	7,518
Elsternwick	2,409
Footscray	3,441
Hartwell	2,011
Hawthorn Automatic	299
Hawthorn	1,839
Ivanhoe	9,043
Malvern	305
Mitcham	2,023
Newport	3,044
Northcote	2,907
North Essendon	1,671
Oakleigh	2,900
Preston	2,907
Sandringham	4,618
South Melbourne	6,082
Carlton	303
Springvale	141
Tullamarine	21
Windsor Automatic	3,293

APPENDIX II.

DEPARTMENT OF LABOUR AND NATIONAL SERVICE INDUSTRIAL WELFARE DIVISION.

Ventilation Conditions in the City West Exchange— Postmaster-General's Department, Melbourne.

(Industrial Hygiene Section, Report No. 3, November, 1943.)

REASON FOR INVESTIGATION.

The Postmaster-General's Department requested that the Industrial Hygiene Section of the Department of Labour and National Service determine if the ventilation in the City West Exchange provides comfortable working conditions for the staff. It was noted that the A.R.P. equipment impaired the efficiency of the ventilation system.

After a preliminary inspection by members of the section, it was decided that the investigation should cover floors one to five inclusive.

PRELIMINARY INQUIRIES.

The nature of the apparatus imposes certain limits on the physical conditions of the atmosphere in the City West Exchange. Besides the insulating qualities of the electrical equipment, it is affected by moisture and relative humidity inside the building must not exceed 70 per cent.

It is necessary to keep the apparatus free from dust and so the opening of windows to the outside is impossible.

Certain of the electrical equipment produces heat and this increases the general temperature of the building.

The air piping, heating, ventilation system which distributes dust-free air through the building.

To estimate the comfort conditions it was necessary to collect data of air movement, humidity and temperature and to make air supply determinations.

METHOD OF INVESTIGATION.

The apparatus used in obtaining the data consist of Kata thermometers for air movement and sling psychrometers for temperature and humidity.

Replications of Kata thermometer observations were taken at different times during a two month period to give reliable data for air movement. With a demand ventilation plant the air movement conditions in the City West Exchange can be assumed as fairly constant throughout the year.

The air supply to the building was determined by estimating the amount of carbon dioxide present at different points. These results were checked by velocity determinations at inlet and outlet grilles.

PRESENTATION OF DATA.

Air Movement.—The results of air movement observations have been tabulated (Table I.) and from these observations frequency curves have been drawn for each floor.

From the frequency curves it will be seen that 80 per cent of the recorded movements are below 30 f.p.m. even with the greatest frequency. Such conditions are liable to give rise to a feeling of monotony and lethargy in winter with air temperatures at or above 70 degrees Fahrenheit or of excessive warmth in summer with air temperatures between 77 degrees Fahrenheit (relative humidity 70 per cent).

It will be noticed that the conditions of air movement are relatively better on the fifth floor. There only 60 per cent of the observations were below 30 f.p.m. and air movements of the order of 30 f.p.m. occurred with the greatest frequency.

Humidity.—The range of humidities met in the investigation was 50-65 per cent. The wet bulb of the sling psychrometer and stationary hygrometer were compared over a number of readings. The results are set out in Table II.

Table II.

Stationary Hygrometer.		Sling Psychrometer.		
W.B.	R.H.	W.B.	R.H.	R.H.
Degrees F.	%	Degrees F.	%	Diff.
62	64	61	63	-1
64.5	62	61.5	60	-12
65	60	59	45	-20
50	48	46	40	-8
61.5	53	59	45	-8
62.6	55	58	48	-17

These conditions may be improved by two methods—
(1) The control of inside temperature and humidity by the addition of a refrigeration unit to the existing plant to maintain temperatures not above 77 degrees in summer or 70 degrees in winter—in other words—complete air-conditioning.

(2) By providing higher air movement to compensate for temperature rise.

From a comparison of the inside and outside temperatures in the summer months of previous years it has been possible to estimate the insulating effect of the building, and the inside temperatures expected during summer.

In the first two columns of Table V, are set out a range of temperatures and humidities which are known from meteorological records to occur in Melbourne on an average of 30 days during any summer period December to March.

The wet-bulb reading of the stationary hygrometer is generally higher than that of the sling psychrometer. This is probably caused by the poor general ventilation of the stationary instrument which is not reliable under such conditions.

Temperatures.—When air movements are low, persons in winter clothing performing sedentary work are likely to feel disengaged and lethargic if temperatures rise above 70 degrees Fahrenheit in summer.

Examination of meteorological records and a comparison with the exchange show that there is a gradient in the difference between indoor and outdoor temperatures. This gradient is shown in Table III. It will be noticed that the indoor temperatures may be expected to be 10 degrees Fahrenheit less than outdoor when the outside is at 55 degrees Fahrenheit and 18 degrees less when the outside is 100 degrees Fahrenheit.

Table III.

Outside Maximum.	Expected Difference.	Expected Inside.
100 ..	10	82
95 ..	15	80
90 ..	15	75
85 ..	10	75

Air Supply.—Sixteen air samples were taken throughout the building and two on the roof for outside air. It is required that 30 cubic feet of fresh air per person per minute be supplied. The data is tabulated in Table IV.

Table IV.

Sample Position.	Per cent CO ₂ per 10,000.	CO ₂ Excess Over Outside per Person.	Fresh Air Supply per Person.	Cu. ft. per min.
Ground Floor— 1 ..	5.3	+1.0	108	108
2 ..	6.4	+2.1	54	54
Fifth Floor— 3 ..	5.8	+1.5	72	72
4 ..	4.0	-0.3	..	..
Second Floor— 5 ..	5.9	+1.0	108	108
6 ..	4.9	+0.6	108	108
Third Floor— 7 ..	4.8	+0.5	108	108
8 ..	5.2	+0.9	108	108
Fourth Floor— 9 ..	4.6	+0.3	108	108
10 ..	3.4	+0.1	108	108
Fifth Floor— 11 ..	5.0	+1.6	70	70
12 ..	5.8	+1.5	72	72
13 ..	5.0	+1.2	60	60
14 ..	5.4	+1.1	68	68
15 ..	4.0	+0.6	108	108
16 ..	6.2	+1.9	67	67
Outside— 17 ..	4.0	-4.3	..	..
18 ..	4.0	-4.3	..	..

It will be seen from the table that the limiting air movement requirement is 118 feet per minute. If this air movement is applied to the conditions of heating and air change in the building, it will assist in improving the comfort of operatives both in summer and in winter. It would not provide excessively cool feelings in winter and would prevent excessive warmth in summer.

The practical effect of using a poorly ventilated stationary hygrometer is that heating is used to reduce the relative humidity in the building while it is still well below the set temperature per cent. This leads to unnecessarily increased temperatures. Therefore sling psychrometers are suggested as more accurate and reliable instruments. The present air supply is adequate.

RECOMMENDATIONS.

The investigation has shown that the conditions can often be such that employees will feel disengaged for work. High temperatures and monotonously low air movement conditions contribute very largely to these effects.

It is recommended that either a refrigeration unit be added to the existing plant to control temperature and humidity, or that the air movement be increased to 100-150 f.p.m. throughout the exchange.

It is not considered within the province of this investigation to suggest the methods by which these ends may be attained but fans, or ducting with a greater number of registers well distributed in the work area may be a suitable means of effecting the desired change.

Discussion of Data.—With the limit of 70 per cent relative humidity imposed by the apparatus, and an air movement of 15-25 f.p.m. imposed by the ventilation plant, employees will be very uncomfortable and efficiency will fall away at temperatures above 77 degrees. If the humidity is as low as 50 per cent, the same degree of discomfort will occur at 63 degrees Fahrenheit.

TABLE 1.
AIR MOVEMENTS—CITY WEST EXCHANGE.
(Feet per minute.)

Stat No	Ground Floor.				First Floor.				Second Floor.				Third Floor.				Fourth Floor.				Fifth Floor.					
	2nd	24th	20th	1st	17th	24th	25th	6th	20th	23rd	24th	1st	23rd	24th	1st	23rd	24th	25th	1st	23rd	24th	1st	23rd	24th	25th	
	10th	14th	19th	10th	10th	14th	19th	19th	10th	13th	19th	10th	10th	13th	19th	10th	13th	19th	10th	10th	13th	19th	10th	13th	19th	
1	70	17	27	9	23	16	19	19	69	14	27	10	49	64	47	26	35	30	32	9	34	28	30	30	32	
2	23	29	18	12	17	11	15	17	83	20	23	40	21	29	18	44	20	28	60	14	30	20	27	28	28	
3	23	22	33	10	25	17	13	23	73	16	25	20	19	14	10	39	14	9	10	21	35	20	24	24	24	
4	37	27	20	11	26	11	11	15	44	11	10	16	18	14	43	28	15	11	12	31	23	28	23	23	23	
5	39	25	20	11	24	12	11	15	52	11	10	16	18	25	40	21	12	15	39	45	32	32	32	32	32	
6	21	21	21	14	16	11	11	11	50	10	12	20	19	24	15	32	15	15	20	15	20	15	15	15	15	
7	21	21	24	9	16	10	12	10	46	27	23	21	21	13	13	63	13	13	13	18	48	31	35	30	30	
8	24	26	24	9	19	9	15	21	24	18	22	35	13	18	14	63	14	9	12	23	56	22	26	23	23	
9	32	14	18	5	15	38	60	23	31	31	28	32	22	20	37	69	10	13	32	11	11	11	11	11	11	
10	45	17	20	12	57	23	20	25	9	12	9	14	10	16	21	11	10	10	21	25	11	11	11	11	11	
11	62	22	14	14	22	35	26	39	17	11	15	12	13	11	45	15	10	10	29	11	11	11	11	11	11	
12	62	22	14	14	22	35	26	39	17	11	15	12	13	11	45	15	10	10	29	11	11	11	11	11	11	
13	44	13	10	37	9	12	18	27	19	..	27	20	22	10	39
14	42	12	10	20	28	22	50	14	11	11	20
15 .. .. ..	..	..	..	..	..	18	17	..	23	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16 .. .. ..	..	..	..	..	..	14	11	5	13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17 .. .. ..	..	..	..	..	..	11	..	12	19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18 .. .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19 .. .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20 .. .. ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Means ..	43	21	21	12	27	17	17	24	37	18	18	27	21	24	21	67	18	17	10	22	40	26	30	28		

13. *To Mr. Conelan.*—The costs referred to in the answer to question No. 2 include interest on capital, maintenance, depreciation, line works and mechanical costs.

14. *To Sir Frederick Stewart.*—The capital expenditure per subscriber is greater in the city than in the country. An exchange of great magnitude involves very high costs which do not occur in the country, for instance, extensive building and air-conditioning costs. The disparity between city and country costs is largely due to the fact that there are more automatic exchanges in the city. However, if all the country exchanges were automatic, the capital expenditure per subscriber would still be very much heavier in the city than in the country, because you would not have anything in the country to compare with installations in such places as Myer's and other large establishments which practically have small exchanges of their own.

15. *To Senator Lamp.*—The figures given in the answer to question No. 4 are actual lines connected as distinct from telephones. There are more telephones than lines. Whereas the total number of lines in the Commonwealth is 577,777, the total number of telephones in the Commonwealth is 827,862. Myer's, for instance, may have 1,000 telephones but only from 50 to 100 lines; and many subscribers have two telephones on 50 lines.

16. *To Mr. Conelan.*—With respect to new buildings, we know our own requirements, but we are not architects, and we work in close contact with the Department of Works and Housing in the construction of new buildings. The Department of Works and Housing comes in on every scheme from the time the site is required. After that we send them a general outline showing the sort of building we require. We send only a plan of our requirement, not an elevation. We tell them, for instance, what ceiling height we require and what load the equipment will be, and where we would like the lifts installed. All of the working drawings come to us. Generally in such matters we act as owners of the building and the Department of Works and Housing acts as our architects. With regard to air-conditioning we regard them as the experts. However, if they offered us full air-conditioning for a floor where we did not think we wanted it we would not accept that without question. In our dealings with the Department of Works and Housing in relation to

the construction of new buildings we regard ourselves as clients, and that department as the architects.

17. *To Sir Frederick Stewart.*—The expression used in the answer to question No. 6, "air-conditioning will take care of staff comfort throughout the building", means that whatever is necessary for the staff according to the nature of their duties has to be taken care of. For instance, the office staff do not need a ventilation scheme like the mechanics, because the conditions in the respective quarters will be different. In the exchange, the equipment almost fills up the room. In the post office and office staff quarters conditions will be quite different. In the post office itself there will be provision for cooling, but it will be separately regulated so that the people coming in and out of the building will not experience great changes of temperature. The provision in respect of air-conditioning will vary in respect of the basement, the post office, the exchange floors and the staff floors. Perhaps, it would be better to say that there will be mechanical ventilation throughout the lower floors including the post office, basement and exchange. On the exchange floor it will be full air-conditioning with refrigeration; and on the upper floor it will not be even mechanical ventilation, because there the windows may be open. However, there will be heating on the upper floor. When you visit the City West exchange to-morrow you will see at the inlet how the dust comes in. That part of Melbourne is affected by smoke from the trains rather badly, and the particles of smoke get in through the dust filters. That is one trouble at the City West exchange, where the oil filter system is not successful. Secondly, the Industrial Hygiene Section found that we were not looking after the staff sufficiently. They said that there was not sufficient air movement. On page 5 of their report, a copy of which I attach to my evidence, they recommend either a refrigeration unit be added to the ventilation plant or the air movement be increased. During the war it was impossible to obtain refrigerators for a building of that kind. Therefore, we installed big fans. In so far as we have been able, we have corrected the conditions mentioned in that report.

18. *To Senator Lamp.*—The site of the proposed building is very close to the practical centre. The practical centre wants to be as close as possible to the main cable run. In this case, the main cable run is

in Little Bourke-street. We could not get a site right on the cable run, so we have come as near to it as we could. It is about a block away. Further, you do not want low ground. In addition, the proposed site is convenient for a post office.

Our present known facts and conditions, we estimate that £100,000 worth of the required equipment will be made locally and that we shall have to import about £300,000 worth from England. I am responsible for the purchase of that equipment. The equipment which we now propose to purchase will not be sufficient for very many years to come. We are starting off with 7,000 lines and we do not want to put in more than 9,000 lines in this building. We propose to take care of the growth of Melbourne by the provision of other exchanges. Unfortunately, we have only one other automatic exchange in Melbourne, whereas we need four or five. I think that as a result of your expectation to-morrow you will come to the conclusion that when an exchange like this has about that number of lines it has a lot of plant in it, and that when you have more equipment than that in a building, you get too great a concentration of labour and plant, and the whole thing becomes too big. There is also the security aspect to be considered. Should there be a serious accident affecting a building of that kind it would be almost catastrophic.

I should point out that our system is a decimal system. We run each unit in our plant in decimals. That is, we call this a 10,000-line exchange and we could increase it to ten units of 10,000 lines each. But that would be enormous. The biggest exchange in Australia is City North in Sydney, at Castlereagh-street, where we have about 12,000 lines; and that is getting out of hand now. Leading into City North there are 60 cables and ducts coming in from Pitt-street. One bomb would have cut that right off. In England before the war they adopted the practice of putting two exchanges of 10,000 lines each in the one building; but they will not do that again. We do not need to put two units into the one building, because our cable distribution and the distribution of subscribers lend themselves to division into areas. Mr. Fanning, in his statement, gave a plan showing how Melbourne should be subdivided into four exchanges. This exchange will last for the lifetime of the equipment, which will be at least twenty years after its establishment; but we would not put any more subscribers on it after about five years. There are 7,000 lines in this area and we propose to let that number grow to about 9,000; and we expect to reach that stage five years after the exchange is started. After that we will put new exchanges, and all the future extension will be in other places.

The Russell exchange and the City East exchange which was projected some years ago in this area are synonymous. Any delay in the establishment of the exchange will depend to some degree upon the recommendation of this Committee. After approval is given to the project we shall time delivery of the equipment in order to have it installed when the building is completed. The installation work is large and will take about eighteen months, if we get that building within twelve months. We shall have the tenders in on the 6th November next, and we will place the orders for the equipment, which must come from England, at the beginning of the new year. We expect to receive delivery of most of the equipment within twelve months. We may have more trouble with respect to equipment which is produced locally, because local manufacture of this equipment is only in its initial stage.

You ask how long does it take to make the average telephone connexion on the manual exchange and how does that compare with the automatic connexion. On the automatic we allow one second for

each digit on the dial and when the last digit has been dialled the connexion is instantaneous. It is estimated that on the average the manual connexion should be effected within sixteen seconds.

It is estimated that a staff of 80 men will be required for the new exchange after the installation has been completed. We shall also have about half a dozen girls on the complaints desk. Very few persons and very little material will be thrown spare when this exchange is established. I believe that the staff rooms shown on the plans are satisfactory, provided the whole of the building is finished in one operation. If the building were constructed only to the initial stage, many of the amenities which will be situated on the roof in the finish building will not be provided. We would have to substitute temporary facilities as best we could.

19. *To Mr. Conelan.*—You ask me what was the initial stage. We made our plans during the war and limited construction to the smallest possible degree that would enable us to install the necessary equipment. Now that the war is over we recommend that the whole of the building should be proceeded with.

20. *To Senator Lamp.*—The pillars supporting the ceilings are designed for the size of the units of equipment to be used. The strength of the floors is calculated to carry the weight of the equipment which we know to within ounces. The equipment is very heavy. The ceilings could not be supported without pillars, as you suggest, in order to avoid obstructions to the automatic equipment. At the City West exchange you will see an unusual kind of construction. I refer to the mushroom ceiling. That method of construction avoids projections coming down from the ceiling. Sometimes the beams in exchanges are 2 feet deep, with the result that where you want a clearance of 13 ft. 6 in., ceiling height must be 15 ft. 6 in. At the City West exchange, the ceiling is 12 feet high, but it has no projections. There is not much room between the top of the automatic switchboard and the ceiling. There is hardly enough room to allow the workers to move when installing the equipment and not much space above. So the ceiling height we provide for the same kind of general equipment is much greater.

The development of plastic materials for machines, insulation or apparatus is not a fundamental change. The equipment to be put into the new exchange must fit into the rest of the network in Melbourne. In this project we are providing 9,000 lines which will have to be switched in to a plant which already has over 100,000 lines working. There are only two or three main kinds of telephone systems in the world. The systems in Great Britain, Australia, Germany and many parts of the United States is known as the step by step system. That is the system which you will see to-morrow, where you dial a number and the switch steps up under the power of the dial. This system is used in Great Britain and Ireland, and we have used it in Australia since we installed our first automatic exchanges at Geelong and Ballarat-Glebe-Newtown, in Sydney. Although the method of construction has been altered the general principle remains the same; you still must send impulses from the dial and make the switch climb up. Just before the war the British Post Office did not buy equipment outside England. In England there are five big manufacturers and each of them made the same general sort of equipment, but it was not exactly the same. Say, for instance, an exchange was installed by Siemens Brothers; you could not easily put in an extension of that exchange with equipment bought from Standard Telephones because the equipment did not match. All of the parts were different. There were five firms manufacturing this equipment, and they changed their models from year to year, and

gradually there was quite a mixture. We had that mixture in Sydney supplemented by American equipment. There are now six companies in the world which make this equipment. The British Post Office entered into a five-year agreement with the five British firms. Under this the British Post Office agreed not to buy from anybody else. That agreement was extended during the war and it has now been going for about ten years. Under that agreement the British Post Office obtained all the improvements evolved by those companies. The equipment was not standardized at the beginning, but it is highly standardized now. The move for standardization started about five or six years ago when we were about to install equipment at City West. We were about to install the old equipment when we got news that the British Post Office was moving towards standardization. Thus, some of our equipment at City West is well standardized. You can take a switch from, say, Rockhampton, and in-tail it at Perth. The British Post Office was a little later than we were in this respect, but we are using the same kind of equipment now and our standards are the same as theirs, such as racks, banks and kinds of wire and plastics for insulation. That equipment is interchangeable. Also, we have the latest methods in the switch itself, but we keep the same switch. We are familiar with the systems in use for automatic telephones in other countries. We have an officer stationed in Washington who keeps us informed of all developments. We are also advised of all British Post Office developments. The system used in Australia is regarded as the most efficient.

Our laboratories in Little Collins-street are engaged in experiments to improve telephone equipment. We have two laboratories. The one in Little Collins-street is a research laboratory which carries out fundamental research, which might be called long-term research. We have a small telephone equipment laboratory which deals with immediate tests of new models. The research laboratory work included radar equipment. During the war, that laboratory manufactured that equipment. That laboratory employs industrial chemists, physicists, and scientists. It is not a big place. It employs a staff of about 120. The telephone equipment laboratory undertakes immediate tests. Say, for instance, we set up a system of dialling between Sydney and Melbourne, which we could do if we had enough lines; and we found that we were getting distortion of impulses. The telephone equipment laboratory would find out the fault and perhaps suggest a new kind of switch. However, it would not go all the way, whereas the research laboratory would go all the way.

You ask whether it is necessary in the Melbourne climate to provide sun louvres. At City West you will see what we call Drysalt blinds. They let in the light, but keep out the heat.

All the cables we use except power cables are paper insulated. It is a copper wire insulated with paper or pulp. The wires are twisted in pairs and grouped in pairs of 100 which are clothed in a lead sheath. The essential thing is to keep the wire dry. Those cables, if armoured, can be put in the ground without any covering at all. In the city they are put in ducts; or if the quantity of cables warrants it, tunnels are provided. Sydney has ten miles of these tunnels, but Melbourne has a much less mileage of tunnels. The tunnels are 6 feet by 4 feet. They are of the arch type of construction with a curved roof. The provision of sufficient cables to the new exchange does not present any special difficulty.

21. *To Senator Brand.*—You say that the Committee was informed that there is a waiting list of 11,000 applications for telephones in Melbourne alone, and you ask the boy, long will it take to meet those applications. That is difficult to forecast. In this

respect, we would be allotted our proportion of the new telephones for Victoria as they become available. In Melbourne and Sydney we are living from hand to mouth, as it were. If we do not get the new exchange at Russell-street, we might as well put up the shutters. This exchange, by the time we get it, will be fifteen years overdue.

22. *To Mr. Conelan.*—The new exchange should reach its peak in about three years. The engineers in the department have had hard luck in connexion with this project. We have had the general plans prepared for some time, and the kind of cable we want is being made at Port Kembla. We have made some part of the equipment ourselves in our own workshops, and local manufacture was started in two shops in Sydney. They are making some automatic equipment, and we intend to press for the full range.

23. *To Senator Brand.*—I am anxious that the whole building be completed in one operation. After all, the project is only a small proportion of our total scheme for the City of Melbourne. My own branch apart from the research section has long been in need of a new building, but we have not even started to think about that, because we have more urgent requirements. My engineers on the Central staff in Melbourne are situated in five different buildings, for which we pay rental at the rate of about £5,000 a year. I have to work chiefly by telephone, because those buildings are from a quarter to half a mile apart, and they are unsuitable for our purposes.

24. *To Mr. Harrison.*—The proposed building is comparable with the best buildings of its type overseas. Recently we had a visit from Sir Stanley Augwin, and his comment on the City West exchange was that they did not have anything like it in England. My assistant, Mr. Witt, is now overseas carrying out investigations, and he reports favourably on the proposed exchange compared with overseas exchanges. In addition, we have had our investigation officer stationed at Washington throughout the war. When the American Army forces were stationed in Australia I worked in close association with many of their men at general headquarters, and their expert communication engineers stated that they had no adverse criticism to make of our system in Australia. The step by step system started in Chicago. The automatic system was invented by an American (Stronger) 54 years ago. The Automatic Electric Company of Chicago grew to very big proportions and is one of the biggest organizations of any kind in the world. That company supplied the first trial 100-line unit to Australia when Mr. Fisher was Prime Minister. This unit was imported from the Automatic Electric Company, Chicago, by a local company acting as the agents. That company also supplied the first automatic exchanges at Geelong and Balmain-Glebe-Newtown, Sydney. Until 1926 all our exchanges in Australia were supplied from Chicago.

In England, the Automatic Electric Company of Liverpool, a sister company of the Chicago organization, worked in close collaboration with the Chicago company, and the present type of British switch was developed in Chicago. There are six companies in the world that make this equipment. Of those six, five have combined their interests in Sydney in a place called R. O. Whitford (1939) Limited. It is now changed to Telephone and Electrical Industries. It is a company in which the shares are held equally by four of the five British companies and one American company, the odd company out being Standard Telephones, Sydney, a branch of International Standard Electric Corp., United States of America. Thus, in Sydney we have a local manufacturing industry started by Standard Telephones on their own, although controlled by the American company, and the other five

companies—the four British companies and the one Chicago company—which have combined their interests in a second factory in Sydney. In those two factories, therefore, we have the technique of all these larger companies. During the war they have not been able to make very great progress. We are importing a great deal of the equipment, mainly because of the time factor, but are also continuing the local effort.

25. *To Mr. Conelan.*—It will take about two years to have the exchange ready for use, that is, to do the job completely. If the building is ready in twelve months we would have a good deal of the equipment ready in two years. The equipment could not be manufactured in Australia in that time because it takes about a year to tool up. The Australian firms have not been doing much since 1939. Until last December not one automatic switch had been made in Australia.

26. *To Mr. Harrison.*—If it were possible to have all equipment manufactured here we would do so. We have found that by going to Russell-street we can go up to 132 feet, whereas had we stayed on the duct run in Little Bourke-street we could have gone up to only 99 feet. The equipment itself is exactly the same as that in use just prior to the war. Since the war there have been a few changes, but no protection against bombing has been evolved. The only protection against bombing is to have so many stories, or slabs, over the equipment, keeping the equipment on the lower floors. We have been in communication with the best authorities, who say that the only insurance against bombing which they can suggest is dispersion, that is, not to put all our eggs in one basket. That is why we propose to stop at 9,000 lines in the new exchange. The basement in the proposed building will not be subject to seepage. The site is on a rise and although the basement goes down a fair way we shall use sump pumps.

In recent years charge meters of a new type have been installed. The Mitchell meter for the automatic registration of calls, to which you refer as a Queensland invention, is practically useless, because so many things can be done to it. The inventor told me that he had put the invention forward not to check accounts by the department but to enable firms to check calls made by their staffs. We have not tried to adapt that meter. In all our party lines we have the charge meter installed in the subscriber's home. We do not get very many complaints about meter faults. The percentage of complaints to the total number of calls made is infinitesimal. Speaking from an experience of 37 years and I do not believe that the customer is always wrong—the number of cases where the meter really goes wrong, although the system is most complicated, is remarkably small. Of the meter complaints which have come to my notice, only in very few cases could it be said that the meter was at fault. Tapping by a linesman registers on a meter, but when the linesman follows the proper procedure a rebate is allowed in such cases.

I shall check up the lift accommodation proposed in the new building to see whether it is sufficient. I have not yet looked at those details. As you say, New Zealand has a flat rental charge for telephones, as against a cell charge. We have explored the possibilities of adopting that system; but I think that you will find that New Zealand will finish up with meters. Most of the American companies do not use meters but have a high ground rental that the subscriber who does not use the telephone very often really pays for the subscriber who makes the greatest use of the telephone. The meter is one of the items made in Sydney factories. The department would be glad to do without the meter if it could afford to do so.

The witness withdrew.

Robert Snowden Domaine, President of the Royal Victorian Institute of Architects, in attendance with John F. D. Scarborough, immediate Past-president of the Royal Victorian Institute of Architects, sworn and examined.

27. *To Senator Lamp.*—*Mr. Domaine.*—We are aware that this Committee is inquiring into the proposal to erect a building to house an automatic telephone exchange and post office in Russell-street, Melbourne. Upon being advised of this inquiry, we had the opportunity to call a meeting of members of our institute who would be best able to advise me with respect to what evidence I should give to the Committee. Mr. Blackman was present at the meeting at which he produced plans and documents relating to the proposed building. To summarize proceedings at that meeting, I wish to state that the architectural profession could not give a considered opinion without first having details which were submitted to this Committee, and, therefore, we are not prepared to criticize in detail the plans of the building as submitted. Furthermore, it would require considerable time and discussion with the architects who submitted the proposals to you before we could give evidence of value. It has been the policy of the Royal Victorian Institute of Architects to suggest that in order to obtain the best results in respect of works of any magnitude such as the one now under consideration, competitive plans should be called for, and both the departmental architects and architects in private practice should be asked to submit designs. That is the sum total of the discussion which took place at our meeting.

28. *To Mr. Conelan.*—*Mr. Domaine.*—You ask how long would it take to such a competition to be held. In respect of a building of practically similar size, we are now holding a competition and we estimate that the competition will be concluded in approximately twelve months.

29. *To Senator Lamp.*—*Mr. Domaine.*—You emphasize the urgency for the completion of this building. We do not propose that a competition should be held in respect of the building for which the plans are already completed. That was not our thought. The point we make is that in respect of all future works of this magnitude, the best results would be obtained if the profession as a whole were consulted in the way we suggest, namely, by holding of competitions for designs. It is very difficult to assess costs even within the one State, because very few buildings of this class have been erected during the war. We know, generally, the percentage increase in average building costs in Victoria. I could not make any statement as to costs in other States. We are unanimously of opinion that the contract system will produce the best results in the construction of a building of this kind.

30. *Mr. Scarborough.*—You ask whether we know of any important developments during the war in materials, or equipment, which could be used with advantage in this building. There are many materials which should not be used in this building, having regard to existing circumstances. For instance, the shortage of bricks for housing is most acute, and the brick companies cannot cope with the demands, insofar as low cost housing is concerned. The proposed building will require hundreds of thousands of bricks if orthodox methods of construction are adopted, and our institute is of opinion that this demand will seriously affect supplies for low cost housing. You say that the proposed building will be of concrete and steel faced with cream bricks. Presumably, the cream bricks would come from kilns which normally produce ordinary bricks, or a special kiln will have to be opened for the production of cream bricks.

31. *Mr. Domaine.*—The principal methods of minimizing noise from one floor to another include the thickening of concrete floors, certain types of construction such as hollow block floors, the addition of false

ceilings, the insulation of partitions and structures from the main structure, the addition of timber flooring with floor coverings made independently of the concrete structure. There are many other methods as well. The main thing is insulation from the main structure.

32. *Mr. Scarborough*.—Delays have been experienced even in the carrying out of "A" priority jobs. Recently I was visiting America, England and Sweden on behalf of the Housing Commission, and while I was away my office was carrying out a job started before I left. That was the construction of a penicillin laboratory at the University, and the delay in that building has been most marked. I believe that delays have been fairly common in respect of all works regardless of their priority. One factor has been the general go-slow policy adopted in the building trade.

33. *Mr. Demaine*.—There have been delays on "B" priority works of which I have been in charge. I have had experience in the use of non-actinic glass, but I have no idea whether it is now obtainable. I should think that it would have to be imported. It is suitable for use in the proposed building. A steel and concrete building of this type would compete to some degree with the housing programme for materials and manpower. Competition would not arise in respect of the materials. However, it would compete in respect of the fittings generally, and labour such as carpenters, plasterers and painters.

34. *Mr. Scarborough*.—Many classes of labour and materials are common to both types of buildings. This building would compete most seriously with the housing programme in respect of non-skilled labour, that is, general builders' labourers.

35. *To Mr. Conelan*.—*Mr. Scarborough*.—Apart from machine operations, considerable unskilled labour would be required for the shovelling of metal, sand and cement into the concrete mixer.

36. *To Senator Lamp*.—*Mr. Scarborough*.—You ask what percentage of error could be expected in an estimate for a building of this kind. I do not know if any architect would be prepared to make a close estimate under existing conditions. For instance, it is impossible to estimate the amount of labour that can be carried out within a given time. Only to-day I was informed that the cost of building a four-bedroom house had risen by £90 a room as the result of the increase recently agreed to under the award for building labour. On that basis one can see the margin of error that is likely to creep into any estimate in respect of a building of this size, and the estimate given to the Committee was prepared before those increased wages were agreed to, to refer to the increase agreed to in the industry as a result of the slowdown on the go-slow policy adopted by employees.

37. *Mr. Demaine*.—If this building is erected, in Melbourne, with the usual standard of the City of structure. Considerable additional cost would be involved in constructing the building in two stages. Building to a certain height requires water-proofing, insulation and finish. Also, all services are terminated at a certain height. When the second stage of construction is undertaken, part of the existing portion of the building has to be evacuated during extension work. There is also the possibility of damage. Generally, extension construction is difficult and expensive.

38. *To Senator Brand*.—*Mr. Demaine*.—It would be cheaper to complete the building in one operation.

39. *To Senator Lamp*.—*Mr. Scarborough*.—I do not think that the building costs are likely to decrease, although costs may steady. I do not think that it is likely that the additional cost involved in building in two stages would be largely offset by a reduction of building costs by the time the second stage would be proceeded with.

The witness withdrew.

(Taken at Melbourne.)
WEDNESDAY, 31st OCTOBER, 1945.

Present:

Senator Lamp (in the chair).

Senator Aylett,	Mr. Harrison,
Senator Brand,	Mr. Rankin,
Senator Conelan,	Sir Frederick Stewart,

Norman William Strange, Chief Inspector of Telephones, Postmaster-General's Department, sworn and examined.

40. *To Senator Lamp*.—I have seen and studied the plans of the proposed new postal building in Russell-street. The proposal to establish an automatic exchange at Russell to serve the eastern portion of the city is essential to meet public requirements. The existing Central manual exchange, which has been in service for 35 years, has outlived its usefulness and should have been replaced many years ago. The quality of service given is not good, due mainly to the obsolete equipment which seriously handicaps the operators in carrying out their work. It is expected that there will be substantial development in the city area, and unless the Russell and other new exchanges are established it will not be possible to provide telephone facilities for all applicants. The matter is one which vitally affects the development of the business and industrial activities of this important city. The number of telephones per 100 of population in Melbourne is now 12.7, which is considerably lower than some of the other cities in the world. San Francisco has 44.6, Stockholm 43.5, New York 27.2, and Montreal 19.6, according to the latest figures available.

The transference of the existing subscribers from the Central and JM exchanges to Russell will not mean any increase of rentals or other telephone charges. In proceeding with the plans to convert the metropolitan telephone network to automatic operation, the requirements of the residents in country districts have not been overlooked. There is not a heavy demand from country subscribers for automatic switching equipment to be established but representations have been received from time to time from various centres. There are 131 rural automatic exchanges in country districts and automatic exchanges have already been installed in large centres such as Newcastle, Geelong, Wagga, Tamworth, and Rockhampton. The departmental post-war plans provide for a comprehensive programme of conversions to be undertaken, particularly in respect of those places where continuous service is not available at present. The initial scheme contemplates the provision of 100 rural automatic units in the Commonwealth, whilst the plans also provide for the installation of a number of the larger type of automatic exchanges in the main provincial centres.

In dealing with proposals to install automatic exchanges in the metropolitan area and in country districts, many factors receive consideration. These include—

- the number of existing subscribers;
- the estimated telephone development;
- the local calling rate;
- the condition of the existing equipment and plant;
- power supply availability;
- the hours of service practicable under manual conditions.

In metropolitan areas generally the calling rate is much higher than in the exchanges in country districts, and this aspect affects the economics of any proposals. It is practicable as a general rule, by converting exchanges to automatic operation, to effect greater savings in exchanges in metropolitan areas than is the case in respect of those in the country. The revenue

received from exchanges already established to cater for city subscribers in Melbourne is substantial, and subscriber's line in the city area, that is, the area now served by Central manual exchange, the JM semi-automatic exchange and the City West automatic exchange, the estimated yearly revenue from 9,000 subscriber's at the Russell exchange from rentals and local calls is £261,000, from trunk line calls £99,000, and from phonograms £15,000, making a total of £375,000. The staff employed on telephone traffic duties at the Central and JM exchanges will not be required at those places when the subscribers connected thereto are transferred to Russell. The staff at those two manual exchanges at present totals 270, consisting of 250 telephonists, 13 monitors, five supervisors and two traffic officers. Four of the supervisors and the two traffic officers are the only male employees concerned. Approximately 90 per cent. of the telephonists are temporary employees. It is not the practice to dispense with the services of any staff when manual exchanges are converted to automatic operation, as suitable adjustments can usually be made to absorb the staff into positions at other offices or exchanges. Approximately 1,231 officers of the Telephone Branch are employed in the metropolitan area on exchange duties, and replacements average about 30 per month. The average number of officers on recreation leave is about 70 per each three weeks' period. For some time prior to the date of the conversion of a manual exchange to automatic working, arrangements are made to partially hold over the recreation leave, thus permitting vacancies which occur in the meantime to be filled from the ranks of the relieving staff. After the cut-over steps are taken to increase the number of officers on such leave, and vacancies are filled as they occur. Some of the displaced officers who desire transfer as machinists, assistants, phonogram operators, etc., are released to fill such positions, and at Russell exchange it would be necessary to utilize the services of some telephonists at the proposed new attended pay station. The opportunity would be taken also to place a number of girls in training classes for trunk line operating duties. For some years, the department has had considerable difficulty in recruiting suitable girls for telephone exchange work. One of the main reasons for this is that a considerably high proportion of applicants are not desirous of taking up positions which involve shift duties and working on Sundays and holidays. Therefore it is not advisable to dispense with the services of trained telephonists if it can be avoided. For the reasons mentioned, it is considered that the staff employed at the Central and JM exchanges can be absorbed in a satisfactory manner when the Russell exchange is brought into service. There are many other matters of importance which are associated with this large and essential project, but they have been placed before the Committee by officers of the department who have already given evidence.

In reply to the question which Mr. Morrison asked Mr. McKay yesterday regarding the number of complaints made by subscribers in connexion with the calls charged to their accounts, the following indicates the average for each State per month during the twelve months ended August, 1945:—

New South Wales—123, or 0.8 per 1,000 subscribers.
Victoria—70, or 0.58 per 1,000 subscribers.
Queensland—15, or 0.2 per 1,000 subscribers.
South Australia—15, or 0.11 per 1,000 subscribers.
Western Australia—25, or 0.041 per 1,000 subscribers.
Tasmania—25, or 0.041 per 1,000 subscribers.

It is known that some subscribers make complaints in order to delay payment of their accounts. It is the usual practice for the department to hold over the accounts pending the completion of investigations, and by this means the subscriber gains more time to make

payment. The meters used in the Department's exchanges are supplied in accordance with strict electrical and mechanical specifications. They are subjected to most severe and exhaustive tests prior to being brought into use. The Department makes routine tests of all meters at frequent intervals and special checks are carried out from time to time. These tests and checks indicate that the meters operate with a high order of accuracy and the fault incidence is particularly low. After the meters are read it is necessary, of course, to bring the details to account, and as the human element is involved in doing this and even the most dependable persons make mistakes at times, some clerical errors do occur but these are very few indeed. Errors of this nature are usually detected when the next reading is taken, and in such cases the meter is adjusted before the account is sent to the subscriber. The Department is genuinely actuated by a keen desire to minimize the possibility of errors occurring in the charges made to subscribers, and the system has been adopted after years of experience and also in the light of the best practices being pursued in other countries. There is greater probability of a meter under-charging than over-charging because when a fault occurs in a meter, it usually stops it from detecting faults. One way is to put a certain number of calls through them and check the readings. Another is to compare the two readings. Usually if a meter stops it is found out within a month. To assess the number of calls made by a subscriber while his meter is not in operation, we take the average of his calling rate before it ceased to register and afterwards. We also make inquiries to ascertain whether the subscriber was at home or absent during that period. We make very careful investigations.

41. *To Mr. Harrison*.—Only rarely will calls made in telephone to ring lines be charged to subscribers. You refer to the occasion when a rebate was made in respect of 50 calls to a Sydney subscriber. In that case the over charge might have been due to the testing of the meter and the failure of the staff to make a rebate for the test calls. If there is any doubt about any particular complaint of over-charging, the Department gives the benefit of the doubt to the subscriber and makes a rebate.

42. *To Senator Lamp*.—My official duties cover the whole of Australia. They include the over-sight of the Tel phone Branch staff. Equipment is the responsibility of the Chief Engineer. The Telephone Branch is consulted regarding development, attended pay stations, and staff amenities, when plans and estimates are being prepared for new exchanges. The main responsibility for the installation of an automatic exchange is with the Chief Engineer. I assume the Committee that all of the provisions in the plans for the Russell exchange for which I am responsible are necessary and have been prepared with due regard for economy. Our estimates of revenue from the establishment of new exchanges have always been substantially correct. They are usually conservative. The demand for telephones is not abnormal at the present time. I believe that it will increase.

43. *To Mr. Conelan*.—We have a lag of six years to overcome but the demand now is about the same as before the war. In Victoria, about 13,000 people are waiting for telephones, and in New South Wales the number is about 20,000. The demand in other States is relatively on the same scale.

44. *To Senator Lamp*.—When we overtake the lag I expect that the demand will still be great. It will probably increase continually. The unit figure for the average length of time to handle a call through the present manual exchange is arrived at by taking many

records of the times taken to complete the various classes of calls. We take the average time of connexion and the average time taken by the called subscriber to answer. From those statistics we work out how many switches and what equipment are required. Many thousands of calls are checked. That is the general practice in connexion with new automatic exchanges. The equipment at Central exchange is very old and much of it is quite useless. However some of it will be saved. Mr. McKay, the Chief Engineer, informed the Committee yesterday that the value of equipment saved would be about £2,000. I have received many complaints regarding the air-conditioning at Central exchange, and representations have been made to me on the subject by the Telephone Officers Association. As a result, we have installed fans and an air-conditioning system in one of the exchanges, and an exchange giving in the main common battery exchange. We have tried to improve the position as much as possible, but it would not be desirable to expend a great deal of money on the old exchange when a new one is about to be built. The staff rooms in the new building will be adequate. We will be able to improve staff facilities in the City West exchange when the new building is erected. I have heard no complaints regarding the operation of the compressed air plant which is used for cleaning delicate equipment. That is a matter for the Chief Engineer. I do not know exactly what provision is made for fire prevention in the proposed new building, but I feel sure it will be adequate. In the old exchange, where there are large staffs of girls, we have regular fire drill, and at certain periods we evacuate the staff with the exception of those who are needed to carry on business. Where we employ large staffs of girls we are very careful to see that they know what to do in the event of fire.

45. *To Mr. Harrison.*—We have no automatic sprinkler system, because water would have a very adverse effect on the equipment. However, we have sand buckets, asbestos blankets, and Pyrene fire extinguishers.

46. *To Senator Lamp.*—There is no greater risk of fire in a telephone exchange than in any electrical undertaking. The power used is not very great. The risk of fire is remote.

47. *To Mr. Conelan.*—None of the staff are likely to be dismissed when the new building is erected. In the last ten years, when we have cut over manual exchanges to automatic exchanges we have been able to retain the staff by offering leave prior to the cut-over and using the relieving staff to fill vacancies which occur at the rate of 30 monthly in the metropolitan network, and by pressing on with the annual leave after the cut-over and filling vacancies as they occur. It is not desirable to dispense with the services of any trained telephonist, because telephonists are hard to obtain and must be trained. There are always girls who are anxious to transfer to other positions within the Department, but we do not release them unless the transfer will involve promotion. Permanent telephonists, prior to appointment, are required to pass an examination set by the Public Service Board. Temporary telephonists must pass an initial examination, after which they undergo a course of instruction, for at least five weeks, during which period they are required to pass an examination each week. The cafeteria staff is conducted by the Postal Institute. The object is to run it without profit, but any profit made would go back into the cafeteria funds. The Department subsidizes it to a certain extent. I have seen the plans of the new building, and I consider that they are quite satisfactory.

48. *To Senator Aylett.*—The space provided in the new building will be sufficient to relieve existing congestion if the complete building is provided. There will not be any surplus office space. However, the new accommodation will relieve the Department of rents which it is paying at the present time, particularly in respect of the Engineering Branch.

49. *To Mr. Harrison.*—Earlier in my statement to Senator Lamp, I compared the proportion of telephone subscribers in Australia with the proportions in other countries. The low percentage in Australia is due to the fact that Australians are not so telephone-minded as people in other countries. In other countries there has been a great deal of propaganda for the use of telephones. Unfortunately the Postal Department here has not been able to continue a publicity campaign owing to the lack of equipment necessary for telephone installations. It did inaugurate a publicity scheme about 1938, and at that time eleven canvassers in the Melbourne metropolitan area were obtaining business for the department which brought in an annual revenue of £20,000. However, we had to discontinue the campaign owing to shortage of equipment. Given adequate supplies, I believe that a publicity campaign in Australia would increase the proportion of telephone users to a level comparable with any country. Telephone charges in other countries are based on similar principles to those in Australia, but generally tariffs are higher than those in the Commonwealth. The main reason why we have been unable to obtain the necessary equipment is that the Department has not been provided with sufficient money to carry out its plans fully. Its estimates have been cut down from time to time by the Government. Despite the handicaps with which we are faced, we are still able to carry on fairly well and the revenue of the Department is increasing annually. I definitely consider that it would be more beneficial to the subscribers and more efficient for the Post Office to handle its own revenue than for it to continue paying its takings into consolidated revenue. I do not know what has been done by the Department to seek the implementation of such a plan, but I believe that when Sir Harry Brown was Director-General of Posts and Telegraphs he made some representations to the government of the day regarding a change of the financial system. I consider that profits made by the Post Office should be used for the development of its services.

50. *To Senator Lamp.*—The department is not allowed to expand its undertakings out of profits. The money goes into the Consolidated Revenue. The Department submits estimates to the Treasury, and they are always cut down.

51. *To Senator Aylett.*—The estimates have been cut down for many years. Had the department been able to obtain sufficient funds during the war years it would still have been prevented, by shortages of man-power and materials, from carrying out any expansion.

52. *To Mr. Harrison.*—The proposed new exchange makes no provision for additional trunk-line facilities. The exchange will not handle trunk-line services. When the new exchange is built it will not be possible to provide additional trunk line facilities in the existing exchange. At present there is a proposal to take over the building next door to the existing main trunk exchange in order to extend the trunk line system. There is also a proposal for a new building to be erected in the position of the C.D. exchange in order to extend the trunk-line system. Such an expansion will be necessary.

53. *To Mr. Conelan.*—The site of the present manual exchange will eventually be part of the main trunk exchange in Melbourne.

54. *To Mr. Harrison.*—I expect that there will be a reduction of priority calls by Government departments, but this will have very little effect on trunk line traffic, particularly between Melbourne and Sydney. Whenever the Department installs new channels between

Melbourne and Sydney the business increases because people will make use of any improved service. I consider that the Department should be giving a very high grade of service between Sydney and Melbourne. Proposals to meet the situation are now in hand. Two twelve-channel carrier systems will be installed by about March or April next year. This will provide 24 more channels between Sydney and Melbourne. Mr. Wright, of the Research Section, will be able to inform the Committee about the work which the Engineering Branch is doing in an endeavour to split the frequencies on the carrier band, so as to provide three or four more channels in each twelve-channel carrier system. We already have two twelve-channel carrier systems between Sydney and Melbourne. The addition of two more about March next year will provide 48 of these carrier channels. If the experiments are successful, we will derive four more channels from each of those systems which will give us a total of 40 new channels. In order to reduce delay on interstate trunk line calls, the Department limited the duration of these calls to twelve minutes. The telephone operator may interrupt a conversation at the end of six minutes, but the call will not be terminated until twelve minutes have elapsed, should the caller elect to continue.

55. *To Sir Frederick Stewart.*—With the automatic telephone system, there is no way of limiting the duration of calls made from public telephone booths. We have found, by taking records, that only about two out of 100 conversations exceed 3 minutes in length. However, the Department is investigating a method of limiting the duration of conversations from automatic public telephones.

The witness withdrew.

(*Taken at Melbourne.*)
THURSDAY, 1ST NOVEMBER, 1945.

Present:

Senator Lamp (in the chair).

Senator Aylett. Mr. Harrison.
Senator Brand. Sir Frederick Stewart.
Mr. Conelan.

James Fleming, Chief Mechanical Engineer, Department of Works and Housing, sworn and examined.

56. *To Senator Lamp.*—I have seen the plans of the proposed Russell automatic telephone exchange and postal building, Melbourne. It is proposed to install the following mechanical services in the building:

	First Section of Building	Second Section of Building	Total for Complete Building
A. Air Conditioning	£ 14,500	£ 2,000	£ 17,500
B. Basement Ventilation	2,000	..	2,000
C. Battery Room Exhaust Ventil.	270	..	270
D. Latory Ventilation	500	450	950
E. Vacuum Cleaning System	1,800	200	2,100
F. Central Heating System	2,700	2,600	5,300
G. Boiler Plant	1,120	900	1,710
H. Hoists to Lavatories	330	330	330
I. Pump Pumps and Sundries	250	250	250
K. Incinerator	900	..	900
L. Electrical work for above services	6,000	6,000	6,000
M. Cafeteria	400	35,200	35,600
N. Lifts and Hoist	24,420	49,240	73,660

These amounts are included in the estimates of £125,935 and £140,315 for the first and second stages respectively of the building programme.

57. *To Mr. Harrison.*—The first section of the building is up to and including the third floor, which includes the telephone exchange only. I do not suggest that the second section might be left out. I have split the estimates into two sections so that, if the first section only were erected, the estimated cost of mechanical services for that section would not be affected.

58. *To Mr. Conelan.*—The discrepancy between the estimated costs of lifts and hoists for the two sections is due to the fact that there will be no passenger lifts in the first section.

59. *To Senator Lamp.*—The following is a brief description of each service:

A. Air Conditioning.—Air conditioning will be provided in the postal hall and the three exchange floors, i.e. the ground, first, second, and third floors. The plant will be located in the basement. Fresh air will be taken at ground level and the conditioned air, air-cooled air will be conveyed to the air conditioning plant and the various floors through vertical air shafts incorporated in the building. At each floor the air will be distributed over the floor area by means of horizontal galvanized iron pipes and extraction ducts suspended from the ceiling. The air is then extracted and the air will be filtered to extract the dust, and reduced and conditioned to maintain the desired temperature and humidity within the conditioned spaces. The plant will be of the most modern kind and will be fully automatic in its operation.

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passenger and staff lifts will be of the gearless fraction type with collective control and automatic floor levelling. Our speed will be about 400 feet per minute. The goods lift will be of 3 tons capacity, with a car speed of about 150 feet per minute. It will be dual control, with automatic floor levelling. As the lifts will not be installed until the second section of the building is erected, provision is made for an electric hoist to be temporarily installed in the goods lift for use in handling the exchange equipment pending the installation of the goods lift.

The maintenance of the lifts will be a matter for the Post Department, but the Department of Works and Housing will let a contract for the work if called upon to do so. The most satisfactory way is to let a contract. In some cases, the Post Department maintains lifts with its own mechanics, but that usually depends on what staff is available in a particular building. About 90 per cent. of the mechanical equipment will be made in Australia. The Department of Works and Housing prepares plans and specifications for such equipment, and then invites tenders. Market prices of mechanical equipment fluctuate all the time, but our estimates are based on experience of previous work of a substantially similar nature. The air-conditioning plant will control humidity as well as temperature.

A system of mechanical air filtration would not be as satisfactory as air conditioning because it would give no control over temperature. We often experience temperatures up to 105 degrees in Melbourne and to force air at that temperature into a building would cause most unpleasant conditions. We can control temperature only if we have a means of cooling the air. That is why we provide refrigeration. With air filtration it is possible to cool the air to a certain extent by passing it through a spray of water, but the effect is limited by atmospheric conditions. That method does not extract heat from the air; it merely adds water to it and reduces the dry bulb temperature at the expense of increasing the moisture content of the air. This might give rise to high humidity which, with the cooling of the air at night, would cause a deposit of moisture on the exchange apparatus. Air conditioning is not essential in office buildings, but there is a general tendency in Australia to improve conditions regarding comfort of staff.

In the City West telephone exchange we installed ventilation without refrigeration, and we have had nothing but complaints from the staff ever since because the temperature becomes almost unbearable. Imagine the effect of sealing a room and blowing air into it from ventilating ducts at a temperature of about 102 degrees, when there is a sun temperature of 150 degrees on the building outside. It is worse than when the windows are open. With mechanical ventilation there must be control of temperature and humidity in order to produce comfortable conditions. Dust is extracted from the air, under the air-conditioning system, by viscous oil filters. Frames about 20 inches square are filled with metal shavings or other material which has been dipped in oil, and when the air is passed through them the dust adheres to the oil. They have to be washed out periodically.

The vacuum cleaning plant is provided for the purpose of cleaning the telephone equipment in the building. Compressed air was used in telephone exchanges for this purpose a number of years ago, but my department has not installed compressed air apparatus in any telephone exchanges recently.

The proposed air-conditioning equipment is not likely to become obsolete in a short time. The system is the best that has been devised up to date. We can consider other methods of heating than the central hot water system, but electrical heating is too costly and not altogether satisfactory in large rooms.

62. *To Mr. Harrison.*—We have made provision for all the mechanical services that will be required in a modern telephone exchange. Although I have divided the estimated costs of the services into two sections,

building. We prefer a system in which the occupants of each room can control their own conditions. If the building were in the tropics, I would favour air-conditioning throughout, but in Melbourne the hot water radiator system that we propose will be as satisfactory as any more expensive equipment.

The fire risk with the air-conditioning plant is negligible. I do not think that it would be necessary to have a fire sprinkler system in the building, and provision is not made for such protection. The telephone exchange will be occupied day and night, and any fire in that section of the building would be quickly detected. Of course, chemical fire extinguishers will be provided.

The difficulty of obtaining air-conditioning equipment since the beginning of the war has been acute, but I believe that the prospects of obtaining material quickly within the next year or so are as good as they will be for the next five or six years. Very few firms in Australia handle air-conditioning work and my department's programme calls for a considerable amount of such work within the next few years. Within the next two years, air conditioning firms will be saturated with work for about three or four years to come. All of the mechanical equipment must be installed when the building is erected.

The load on the air-conditioning plant would be

lightened if we could install double glazing or non-reflective glass or if we could keep the sun off the windows altogether, because sunlight on windows causes considerable heating. However, the majority of the windows in the new building will have a southerly aspect.

The lifts will adequately cater for the number of persons who will use the building. They will have a speed of at least 400 feet a minute, which could be increased if necessary to 450 feet a minute. Each lift will carry about eighteen passengers. They will be able to handle many people in a short space of time. I have no figures for recent tenders for lift maintenance, but the cost of maintenance is usually about £30 or £70 a year for each lift. Of course, the cost of any repairs that might be necessary would have to be added to that. Lifts have a long life. We have lifts running now which were installed 25 years ago, and they are still good. They become obsolete before they wear out. I estimate the life of the new lifts at 25 years.

My department has a copy of the code laid down by the Department of Labour and National Service for the comfort conditions of office staffs. The air-conditioning plant will be automatically controlled; its efficiency will not depend on the human element at all. The conditions that will provide comfort for the staff will also be suitable for the exchange equipment, but the air-conditioning plant will be installed mainly in the interests of the equipment; air-conditioning is necessary for the proper operation of the equipment. However, we shall make the plant produce comfortable conditions for the staff at the same time. The only work required for the maintenance of the air-conditioning plant will be a matter of inspection more than anything else, and this will involve about two hours' work daily for one man.

63. *To Senator Aylett.*—The vacuum cleaning equipment will be the best available. The only alternative method to that proposed is a portable type of cleaner in which the whole apparatus is mounted on a truck. We cannot use that apparatus in telephone exchanges, because the alleyways between the frames of apparatus are too narrow.

64. *To Mr. Harrison.*—We have made provision for all the mechanical services that will be required in a modern telephone exchange. Although I have divided the estimated costs of the services into two sections,

there would be no appreciable saving if the whole building were erected at once. Provision is made for a hoist to be installed in the first section pending the installation of the entire lift system when the second section of the building is completed. That is the only instance in which a temporary installation will be made, and, in any case, the hoist will still be worth about £350 when it is removed, because it will still be serviceable. The main saving in erecting the whole structure at once would be in building costs, not in the mechanical services.

65. *To Mr. Conlan.*—We propose to install the incinerator with the second section, because nearly all the refuse will come from the offices on the upper floors. Practically no rubbish is produced in a telephone exchange. However, the incinerator could easily be included in the first section. The waste material will be passed down a chute to a bunker alongside the incinerator.

66. *To Senator Lamp.*—Non-reflective glass would be preferable to ordinary glass, but that is a matter for the architects. From an engineer's point of view in regard to heat loads, we certainly prefer non-reflective glass or some kind of glass which excludes as much solar heat as possible. Venetian blinds are very effective. The best arrangement would be a hood which would prevent the sun from striking the windows, but that cannot be used in a city building.

All of these services, with the exception of lifts and hoists, will cost about £1,800 a year to operate. Electric motors will cost about £250 for power. I have allowed £120 a year for the replacement of refrigerant, £580 a year for fuel oil for the boilers, £100 a year for repairs and maintenance and £170 a year for contingencies. Of the £380 for electric power, refrigeration will account for about £280. Refrigeration does not cost as much as many people believe. Because this will be a 100-ton refrigerator with a 100-horse-power motor, some people think that it will be costly to operate. But it will be running at full load for only a very small fraction of the year. Usually atmospheric conditions are such that it operates at about twenty or 25 per cent. of its capacity, and its power consumption is approximately *pro rata* to its output of refrigeration.

67. *To Sir Frederick Stewart.*—We have provided for a 100-horse-power refrigerator because extreme weather conditions will sometimes call for that output, but that demand will average not more than two or three hours per day.

68. *To Senator Aylett.*—As far as I could ascertain within my department, it did not seem to have been definitely decided whether a cafeteria would be installed or not. I assumed that this Committee would make a recommendation on that point. If it is decided to have a cafeteria I have allowed a tentative amount of £6,000 to cover equipment and the provision of cooking appliances, &c. If there is to be no cafeteria, that amount will be taken out of the estimates. The sum would be adequate; a cafeteria might cost less than that. We have allowed for the serving of hot meals. A cafeteria serving only light refreshments would cost less.

The witness withdrew.

Samuel James Frederick Kellock, Superintendent, Postal Services Branch, Postmaster-General's Department, Melbourne, sworn and examined.

69. *To Senator Lamp.*—I am aware that the Committee is inquiring into the proposal to erect a new post office and automatic telephone exchange at Russell street. I submit the following prepared statement:

I desire to confine my evidence to the Post Office aspects of the proposal.

2. *Development in Eastern Section of City.*—The development of the City of Melbourne in its eastern section has

resulted in heavy increase in demands on all post office facilities. The resulting business has been handled at the two existing post offices.

(a) Russell street Post Office, between Collins street and Elizabeth street.

(b) Bourke street East Post Office, near Spring street. Both are conducted in leased premises which are inadequate and unsuitable at an annual rental cost of £1,210 per annum.

3. The following is a comparison of the revenue derived from these offices for 1934-35 with that for 1944-45.

	Revenue Derived.	
	1934-35	1944-45
Russell-street Post Office ..	£ 40,972	76,953
Bourke-street East Post Office ..	16,451	25,508
Total ..	57,423	101,461

Some of the more important items of business transacted at these offices compare as follows over the same period:

Item.	Bourke-street Post Office		Bourke-street East Post Office	
	1934-35	1944-45	1934-35	1944-45
Ordinary postal articles posted at office ..	712,733	2,112,072	6,802	*
Parcels posted ..	53,021	105,324	9,880	21,935
Registered articles posted ..	10,083	97,719	—	—
Telegrams ..	47,002	67,403	23,835	34,017
Originating ..	101,149	146,069	—	—
Terminating ..	43,730	58,291	31,384	38,880
Postal notes issued ..	59,018	£14,175	£20,815	—
Pensions paid (Old-age, Invalids and War) ..	—	£3,105	—	—
Child endowment ..	—	—	—	—
Local calls from public telephones ..	42,021	103,111	20,521	31,953

* Not handled at this office.

† Payments transferred to Russell street.

4. *Present Accommodation Unsatisfactory.*—I submit photo graphs of the existing post offices for the information of the Committee. Neither building is satisfactory standard and the Russell-street accommodation is particularly poor in every respect. Location of a high grade of office to the post office is extremely difficult and the comfort of the department's customers is not considered. The staff work under conditions which are substandard in every respect. The sanitary conveniences available to the staff are in another building some distance along Russell street. Lock-up room accommodation is extremely poor and is supplied with bicycle stable and storage space.

5. *Proposed Enlargement of Telegraph Delivery Area.*—Not only has the business, at present, offering rendered the post office accommodation inadequate, but it is desired to add a further section to take in all delivery points east of Elizabeth street. This would obviate a considerable amount of travelling by messengers through the extremely congested traffic streets in the heart of the city. This change cannot be effected until better accommodation is available.

6. The number of telegrams and express delivery articles delivered from the Central Telegraph Office, Post Office Place, have increased over a period of nine years as shown below:

	1935-36	1944-45
Telegrams ..	1,109,894	1,504,508
Express delivery articles ..	42,802	77,376

7. A new post office in Russell street is urgently needed. The site and terms of Little Collins street is excellent from the point of view of post office location and the combination of automatic exchange and post office is economically sound. The ground floor space which, in my opinion, is best suited to the exchange, is available at a reasonable rent.

8. *Site for Elizabeth-street Post Office.*—The enormous volume of business offering at Elizabeth-street post office has, during some time past, been a source of embarrassment to the department and an extensive scheme of re-building has been under consideration, but a considerable time will elapse before this

scheme is brought to fruition. Some early relief from the pressure of business at Elizabeth-street is highly desirable. Furthermore, when the rebuilding and extension of Elizabeth-street post office is undertaken there will be a considerable period during which service to the public will be under serious difficulties. The department will experience a period of discomfort. The provision for post office facilities in the plans for Russell is necessarily generous because it must meet all demands over a long period of years. At the outset, accommodation will be available for the purpose of diverting from Elizabeth-street post office a volume of business and this would be of material assistance in riding out a somewhat extended and very difficult period.

Some idea of the extent to which the public will use of facilities at Elizabeth-street will be gained when it is stated that the number of customers handled each day approximates 18,000. Some illuminating figures are shown below to illustrate the rapid growth in business at Elizabeth-street over a period of ten years and the enormous volume now handled.

	1934-35	1944-45
Financial turnover	\$ 3,582,607	\$ 5,389,672
Postage stamps sold	190,650	288,140
Postal Notes—		
Issued	116,018	160,922
Paid	492,722	645,363
Money orders—		
Issued	180,110	248,965
Paid	672,161	1,370,333
War pensions paid	108,681	233,915
Taxation stamps sold		231,995
War savings certificates		163,120
Telegrams lodged for transmission—		
Number	1,023,356	2,297,045
Value	£123,133	£297,405
Registered articles posted—Number	1934-35	310,090
Parcels posted—Number	416,932	517,721

10. **Staff.**—On the removal of the Russell-street Post Office to the new building and the closing of the Bourke-street Post Office, the post office staff will be transferred to the new post office, and will be transferred to the new post office, with the exception of the Postmaster, Bourke-street East, who would be available for duty elsewhere. It is expected also that additional subordinate staff would be required to meet the increased business, which the improved accommodation and facilities would afford. The transfer of the telegraph delivery area would necessitate the transfer of four telegraph messages from the Central Telegraph Office to the new post office in Russell-street.

68. **To Sir Frederick Stewart.**—We do not pay any social service payments except war pensions at Elizabeth-street, but that taxes our accommodation considerably.

69. **To Senator Lamp.**—The item shown as "ordinary postal articles" in my statement includes letters. Many of the big firms post their mail in bulk, but thousands of firms post their mail at the ordinary post office. When Mr. Fanning was speaking of Post East, he was referring to Russell automatic exchange. It cannot be denied that many large business establishments in the vicinity of the existing post office in Bourke-street and Russell-street East will be adversely affected to some degree if those offices are closed. However, the department has carefully considered that aspect. We will provide high class accommodation in the new building, and we cannot be expected to retain the existing post offices in the same area. We cannot be expected to provide a post office at every street corner. In fact, the city proper in Melbourne is much better served with post offices than Sydney. In any case the new post office will be only a little more than 300 yards distant from the existing post office in Russell-street, and the new site will give us excellent facilities as against the existing inferior facilities. All social service payments will be made at the new post office.

Sufficient lavatory accommodation and lunch room accommodation for the post office staff was provided on the ground floor in the original plan because of the possibility that the complete building would not be erected at the outset. In Melbourne we have no mechanical mail handling plant with the exception of

a band which conveys the mails after they arrive at the General Post Office to the mail opening section. However, one of our post-war projects is the rebuilding and extension of the Spencer-street building. We are now negotiating for the purchase of a large adjacent building, and plans are now being provided for that project. Associated with that project plans are being prepared for the mechanization of the whole of the work of the mail branch. We have machine stampers in Melbourne, that is, to post-mark mail matter. Mail is partly broken up by the provision of special apertures in city posting boxes. It is marvellous what the public will do when you invite them to do something. We have found that posting by the public in apertures for special separations is 90 per cent. accurate. However, there is a limit to that system. No matter to what degree you break up the mail in that way, the mail must still be sorted by the staff.

71. **To Mr. Harrison.**—You say that it will take three years to complete the new building, and you ask what steps, if any, are being taken to provide for the development which must take place at the existing post offices in that period. I agree that business at the existing post offices is congested, but we must not lose sight of the fact that some at least of the present business which has risen mainly under war conditions will regress. We will lose some of that business. To that degree my development in the immediate years ahead will be off-set. We have had an enormous increase of telegram traffic during the war owing partly to the fact that hundreds of thousands of people have been taken from their normal habitat.

To Mr. Rankin.—Savings bank business is done at the Bourke-street East Post Office. In the past year at that office we had 3,042 individual deposits and 1,769 individual withdrawals. As to where that business would be handled on the closure of the Bourke-street Post Office, we would discuss the matter with the Commonwealth Bank. However, with a savings bank branch within the vicinity, I should not expect that we would do much saving bank business at the new post office.

73. **To Senator Lamp.**—As I mentioned earlier, we propose later on to establish a post office in the north-eastern corner of Melbourne, but we have not yet acquired a site in that area. Our commitments in respect of sites are so huge that we find that we have used up our money before we can make provision for sites in all areas.

74. **To Mr. Rankin.**—It would be very difficult at the moment to foresee development in the north-eastern area, and to decide upon a site which would be a good site, say, ten years hence. I agree that we should keep that matter in mind.

The witness withdrew.

Norman William Victor Hayes, Superintending Engineer, Victoria, Postmaster-General's Department, sworn and examined.

75. **To Senator Lamp.**—I am aware that this Committee is inquiring into the proposal to erect a building to house an automatic telephone exchange and post office in Russell-street, Melbourne; and I have seen the office in Russell-street, Melbourne; and I have seen the plans of the building. I submit the following prepared statement:—

The statements submitted by earlier witnesses have set out the proposal for the establishment of the new Russell exchange and it does not appear to be necessary to again cover the same ground. It may be desirable, however, to give more detail in certain respects.

Dealing with the necessity for the new exchange, the following are the reasons making its provision essential:—

(a) The existing equipment of modern type at City West exchange caters for 10,000 lines only, while Central exchange and "JAI" exchange, which between them serve some 5,000 lines, are obsolescent.

(b) Lines have been taken from the city area and fed into the Carlton exchange. These lines now should be diverted from Carlton.

(c) The existing cables serving the eastern end of Melbourne are seriously congested.

(d) There is considerable difficulty in connecting additional cables to the Central exchange.

(e) There is a definite economic loss involved in the connexion of additional lines to Central or in connecting facilities in the Central exchange building.

(f) The desirability of closing down "JAI" exchange.

(g) The need of planning now for future development. It is now proposed to give details justifying the above reasons:—

Taking (a), in the network which is now operated largely on an automatic switching basis, manually operated exchanges are the only exchanges in the network, of which 100,000 are connected to automatic exchanges. Any call from Central exchange or from "JAI" exchange to any of these automatic exchange subscribers requires the services of at least two telephone operators to complete it and such an arrangement is not available to subscribers. It is a common practice to dial direct, while the circuit which manual switching is used, introduces errors. It may be mentioned, also, that Central exchange was erected 35 years ago, and even if it were a suitable type of exchange for inclusion in the network, the equipment is now in such condition that it should be replaced.

At the present time, the Carlton exchange now carries a total of 6,100 lines, of which 1,800 are in the Melbourne city area. Carlton at present is overloaded and, in addition, some 230 applications for service are listed awaiting the removal of restrictions. This is an area where considerable development may be expected, and the number of offices and developments may be expected to increase rapidly, and development in this area is to be given to existing Carlton subscribers and development not, then it is imperative that some or all of the 1,800 lines mentioned above be transferred to their own exchange.

To Mr. Rankin.—Savings bank business is done at the Bourke-street East Post Office. In the past year at that office we had 3,042 individual deposits and 1,769 individual withdrawals. As to where that business would be handled on the closure of the Bourke-street Post Office, we would discuss the matter with the Commonwealth Bank. However, with a savings bank branch within the vicinity, I should not expect that we would do much saving bank business at the new post office.

To (e) above, while it is practicable to reconnect subscribers to Central exchange for the time being, it will take some time yet before the date that the building of the Russell exchange is commenced until the automatic exchange is open for service. There are now over 4,900 lines connected to Central exchange and the maximum capacity is 6,000, but it is difficult, owing to congested cables, to take service from the east end of Melbourne. The cables which are serving from the Central exchange to the area to be served by Russell are in almost full use and, in many cases, it is impossible to provide service to subscribers except at high cost. As an example, it may be mentioned that the lines serving east of Elsternwick have from Swanston street 88 lines of which 30 are in use and in the case of the street lines existing in the cable frequently they are not available at points where they are wanted. It is uneconomical to run such an arrangement continually to this Russell area, and such an arrangement could only be a temporary one, and where the exchange is established.

To reason (d), the present main distribution frame at Central exchange on which cables are terminated is congested and is so situated that it is difficult to extend it to permit of additional cables being run to the main distribution at this point is so great that the provision of additional cables for this distribution is impracticable.

To reason (c), the proposed exchange will be the main exchange of the "F" group and, as such, all subscribers connected to that exchange will have numbers commencing with "F". If the establishment of the new exchange will fill all subscribers connected to that exchange to give a service on a reasonable basis, must have their numbers changed when they are subsequently transferred to the Russell exchange. In the aggregate this is a serious matter to those subscribers who are resident in this particular area. It may also be mentioned that the Central exchange is not in a position to undertake the provision of service from Central exchange to the remainder of the network, which it would be necessary to run additional junction cables to the main exchanges of each of the other groups, i.e., to "F", "J", "L", &c., and these also would later become scarce.

So far as (f) is concerned, it covers the need to close down the "JAI" exchange entirely, if possible. This exchange was established during the war period as a temporary exchange and it was necessary to again cover the event of the loss of the City West or Central exchanges from any cause and carries high priority lines only. When this exchange was established, it was included in the "JAI" exchange as a附屬 exchange, therefore, calls from the network to the "JAI" exchange were taken by the Collingwood automatic exchange before returning to "JAI". In normal services this is an anomaly and it is essential to close down the exchange as early as practicable. Pending the establishment of Russell, however, it is not considered desirable to divert to

and so use up any of the spare numbers on City West or Central. In any case, it would involve two changes of number for those subscribers who were diverted to Central exchange, as they would again be diverted to Russell at a later date.

In connexion with (g), the point has been made in earlier evidence that the number of lines expected in the city area for 1965 is 31,000 and that it is the intention to establish four exchanges to serve these subscribers. It is considered that the maximum size to which an exchange, including extensions, removals and other activities of subscribers, will allow the total to a figure not greater than 9,500 lines. As an example, it is possible for a number on the exchange to become vacant for three days before the directory has closed, but it is not practicable to recall this number until the new subscriber until such time as a new directory is issued, otherwise the new subscriber will be seriously inconvenienced in receiving calls to the listing in the current directory. While it would be possible to establish this number or more 10,000 line exchanges in the same building, this is undesirable, because—

(a) should a fire occur, the office might be greatly increased and, if, for instance, four exchanges were established in any one building, all four might be lost as a result of a fire.

(b) The considerable concentration of street cables in the neighbourhood of the proposed exchange, where more than one exchange were located would considerably increase the risk of extensive damage to the cables due to gas explosions, burst water mains, or at some later date possibly enemy action, would be greatly increased and the result would be considerably more disastrous.

(c) The power plant would become of such a size that it would be difficult to handle as one installation.

(d) The building itself, would require a site of considerable dimensions not easily obtained in the heart of the city.

(e) It is uneconomical from the point of view of the provision of cables, because of the increase in the average length of the lines when fed from one central point.

It will therefore be seen that the provision of service for Melbourne for a period of twenty years ahead requires the establishment of exchanges in separate buildings. The first of these was City West, the second is Russell.

There are existing exchanges in the Melbourne city area with a potential capacity of lines as follows:

	Lines.
Central	.. .. .. .. .. 6,000
City West	.. .. .. .. .. 10,000
"JM"	.. .. .. .. .. 1,000
Total	.. .. .. .. .. 17,000

The existing subscribers within the ultimate exchange boundary number approximately 17,000, of whom 1,800 are served by the Carlton exchange and another by other exchanges. When the Russell exchange is established, the potential capacity, assuming that "JM" and Central exchanges are abandoned, will be as follows:

	Lines.
City West	.. .. .. .. .. 10,000
Russell	.. .. .. .. .. 10,000
Total	.. .. .. .. .. 20,000

If the Russell exchange is completed in three years, then the position at that date is estimated to be as follows:

	Lines.
Existing, now	.. .. .. .. .. 17,000
Applications now listed	.. .. .. .. .. 2,000
Development for three years, say	.. .. .. .. .. 2,000
Total	.. .. .. .. .. 19,400

It will be seen, therefore, that when Russell is completed, while the department will be in the position of being able to serve the Melbourne city area subscribers from its city automatic exchanges, it will have very little margin for future development. If the department fails to meet its responsibilities to the public, it is obvious, (a) that Russell exchange should be completed as soon as possible and (b) that the Central exchange be commenced also as early as possible. As the Committee is no doubt aware, the department has purchased a site for Batman and the building plans have been prepared.

The site chosen for Russell has the following advantages over any other available site:

(a) The area purchased is practically an island site as it is bounded by Little Collins-street, Russell-street, Melbourne-place and Crownland-street. This reduces the fire risk, provides good natural lighting and makes unnecessary the provision of

light areas which would otherwise occupy part of the actual ground purchased by the Commonwealth.

- (b) The particular site is in a position where it can easily be connected into the existing conduit and cable system, and the extension of the underground tunnel from the corner of Little Bourke-street and Russell-street can be carried out without difficulty and will permit of Russell exchange using the existing tunnel system.
- (c) The site is bounded by the underground tunnels and the basement is kept fairly dry.
- (d) The existing buildings on the site are some of the oldest and most dilapidated in Melbourne and there is practically no economic loss in their demolition. The site is under the control of the department and no dispossessment of tenants is involved.

The staff which will be required at Russell subsequent to the turnover will be 80 technicians of various grades. The time involved in the actual work of installation and testing after the building is handed over to the department will be approximately eighteen months, during which period some 100 men will be employed for the first twelve months and some 100 men for the remaining six months.

Finally the summing of the advantages from the telephone engineering point of view, which will be achieved by this exchange towards solving the difficulties in the Melbourne telephone network is given. They are as follows:—

- (a) It will be possible to the department to provide a more satisfactory service for those subscribers changed over from Central Exchange and "JM" exchange to the automatic service.
- (b) It will permit of the installation of cable distribution to the section of Melbourne on a permanent basis and make unnecessary the provision of temporary cables and conduits serving from the top of the City to Central exchange. At the same time it will remove now existing congestion from portions of the conduit and cable system.
- (c) It will permit of the establishment of a new main exchange for the "P" group in Carlton which is the existing main, was established some twenty years ago, in general. This will permit an improvement in service throughout the "P" group of exchanges.
- (d) It will permit of the growth in the Carlton area being met on the Carlton exchange.
- (e) The department will be able to meet the expected growth in the Melbourne city area until Batman exchange is established, and will then continue to meet the development in the Russell exchange area for a period of up to eight years.

76. To Mr. Harrison.—We are afraid that we shall have to keep "JM" exchange open until we can see sufficient automatic switching equipment in front of us to enable us to get rid of it completely. As you say, there is the problem of providing for development during the next three years until the new Russell-street exchange is opened. Until that time, our policy will be to keep the "JM" exchange going as a temporary expedient; but if we had the "JM" exchange as a permanent or semi-permanent feature, we would be forced into doing something on a long-term basis instead of on a day-to-day basis. At present, we are working on a day-to-day basis. Unfortunately, with automatic telephone exchanges, we cannot afford to continue for very long on that basis because the moment you get over a certain load your switches become busy. There is a crucial point of overloading. Once you go over that point you get into desperate straits. At present we are working on a day-to-day basis with a minimum of expenditure and the smallest possible amount of cable. We shall possibly carry on by running one cable out from Central to some point and using it from that point, wherever we have spare cable.

77. To Mr. Conelan.—The crucial overloading point involves the number of switches available to carry the traffic. When you reach a point where you get blocks, due to the excessive number of calls, you get a jam in traffic, and people cannot get through to switches further on. The result is that they hang up and dial two, or three, times to get their number. It is a disastrous business when you reach that stage, when individual subscribers have to dial

three times to get one call through. On that basis, the traffic is being trebled. We cannot afford to allow our junction cables, which are a part of the switching network, to reach the overloading point. We do not want to put cables in from Central to these other exchanges as a policy.

78. To Mr. Harrison.—We are afraid that we shall have to continue the "JM" exchange for some time.

79. To Senator Lamp.—I am in charge of the present manual exchange from an engineering point of view, but not so far as operation is concerned. The manual equipment does not require an undue amount of maintenance. We want to get rid of it primarily because it is obsolescent, although, at the same time, the equipment is largely worn-out.

A form of air-conditioning is essential in the new building for the efficient working of the equipment. You must not allow the humidity to rise above a certain point at a certain temperature. For instance, if you have a relative humidity of 70 degrees in a temperature of 90 degrees, you can avoid trouble so far as the equipment is concerned by raising the temperature to 100 degrees; but at that stage the staff begins to suffer. Where we have a big staff employed, as at City West, full air-conditioning is essential, but in other exchanges, it is only necessary to keep the humidity down for the efficient working of the equipment. Our present system in Melbourne is merely to heat and clean the air. We do not cool the air. In summer the temperature becomes extremely trying on the staff, but I would not suggest that it would pay to install refrigeration in a place where you have, say, only half a dozen mechanics. Where you have some hundreds of people working, full air conditioning with refrigeration is essential. This matter really depends on the comfort of the staff, because you can keep the equipment working by keeping down the relative humidity. In any exchange on a hot humid day in Melbourne, you will get complaints from the staff. They do not like to have to lift the temperature, making the atmosphere inside the building as warm as that outside. However, in Melbourne there are not very many days when that would occur.

The compressed air service is a suitable method for cleaning delicate and inaccessible parts of the automatic equipment. At City West, girls oil and take parts to pieces. Actually they are running over a switch. They are giving it a routine examination. In general you keep the exchange clean, and that is done quite well by the compressed air method. Then there is general maintenance work, oiling and cleaning. Dry lubricant can only be removed manually. The installation of numbers of lines to business houses does not necessitate much extra apparatus and resulting expense.

We get much greater revenue from business services than residential services. The average revenue at City West would be approximately £45 a year for each subscriber. That is purely a business service. The average revenue for Melbourne would be approximately £12 for each subscriber. The Russell-street exchange area contains a large number of business houses requiring the operation of switch boards.

The proposed staff rooms should meet all requirements. If the plan now proposed to make available one floor for amenities is gone on with, the amenities will be satisfactory, bearing in mind that locker rooms are also to be provided for the staff where they will be working. Where you are working 24 hours a day seven days a week, it is essential to provide proper amenities in the building itself.

The traffic unit figure for an exchange is arrived at by determining the amount of traffic that is actually passing through the switches. The number of calls and the average time occupied by those calls is definitely read.

We have a staff which goes round reading the traffic, and the unit figures are computed from those figures. The average calling rate at City West is about seven on a day which is very much higher than the average for Melbourne of three or four calls a day. City West will not be varied at all by the establishment of the new exchange at Russell-street. The average number of calls daily per line for the manual exchange is about twelve as against seven for City West; but they are different classes of business. On Central for Melbourne of three or four calls a day, City West you have business people, including stock brokers, who practically live on their lines.

80. To Mr. Harrison.—The restrictions to which I referred in my statement are restrictions upon installing telephones in private residences during the war. Yesterday, I received notice that these restrictions had been lifted. They were imposed as a war-time measure and not because of the shortage of equipment, although generally it could be said that there was a shortage of equipment. However, there were exchanges where we had spare lines existing but where we could not connect other than essential lines. We could not connect new subscribers for purely residential service.

81. To Senator Brand.—A considerable number of telephones were passed to the American and other allied services, whilst thousands of telephones, such as field sets, were built specially for the services. All the equipment passed to the American services has been returned. Those telephones will be restored in buildings from which they were taken. They were charged for services just as any government department or any user of the telephone would be charged. They entered into similar contracts to those entered into by any one receiving telephone service.

The witness withdrew.

Vivian Rowland Hill, secretary, Melbourne Chamber of Commerce, 37 William-street, Melbourne, sworn and examined.

82. To Senator Lamp.—I am aware that this committee is inquiring into the proposed construction of a postal building in Russell-street, Melbourne. The area in which the proposed building will be erected is one of considerable business activity. The added postal facilities should be valuable and the saving of rent makes the proposition attractive. Extension of telephone accommodation is very desirable. Any manual exchange acts as a bottleneck, and much time is now wasted because of congestion at Central. There is an accumulated demand for telephones which will to a degree be satisfied when war-time departments relinquish them. The scheme of telephone extension set out in the official booklet seems to be based on sound lines. If the building can provide accommodation for government departments which now rent space to the exclusion of commerce it will render a great service. There is urgent need for office accommodation in Melbourne. If it were possible to make space available to commerce after departmental needs were satisfied, such space would be rushed. What I have said emphasizes the necessity for the work being undertaken without delay, providing that it will not retard housing, which is A1 priority. In this connexion, I would point out that the building will be of steel frame structure with reinforced concrete floors. This class of building will not interfere with the supply of either material or labour for housing, providing sufficient coal is available to manufacture cement. The quantity of cement necessary for a villa is very small, and the steel essential for a building of this description is totally different from that required in villa construction. The labour in the building contemplated is mainly builder's

labourer, outside the engineers necessary for the steel construction, and these are not required in any great number in villa construction. Unfortunately, through the difficulty of getting sufficient supplies of coal, cement at the present time is in very short supply. If it is possible to persuade the coal miners to work so that cement and bricks can again be produced to fulfil the requirements of the building industry, there is no reason why such a building should not be commenced at the earliest possible moment. In brief, the Chamber of Commerce favours proceeding with the work without delay, subject only to the proviso that it should not interfere with house construction. The area served by Central manual exchange contains many large business firms which have difficulties due to delays and faults in the existing telephone service. Additional modern facilities are urgently needed in this area, and there is a great demand for improved postal and telegraphic facilities also. The accommodation of postal officials in offices in the new building will be generally beneficial because of the release of office space in the city at present rented by the department.

I have no opinion on the parking problems that might be associated with the new building. However, I do not believe that any special parking problem will arise there, although parking throughout the city generally will cause a great deal of trouble. I have no suggestions for any additional provisions in the new building which might be of advantage to the business community.

The attitude of the Chamber of Commerce on the provision of canteens, including cafeterias, is that the comfort of the workers is of great importance. It is the bounden duty of any employer to make the employees' time at work as happy as possible, and the provision of cafeteria facilities helps to achieve this. However, the chamber draws the line at the selling of commodities by such canteens and cafeterias for consumption off the premises. If workers were able to buy home supplies of goods, such as canned fruits, at their canteens it would be unfair to retail traders. It is possible for a canteen to sell such goods at cut rates with which retail traders cannot compete. Such sales might be made for the purpose of making canteens profitable, but most factory proprietors are prepared to contribute to the costs of a canteen service, which eliminates the need for profit making. The provision of canteens and cafeteria services in offices and factories improves the working conditions of employees, and reduces congestion in outside cafes and restaurants.

83. *To Mr. Harrison.*—I expect that there will be considerable development in the use of business telephones as soon as war-time restrictions are lifted. There is a definite shortage of telephone facilities for business firms at the present time. Some of them were the result of the taking over of telephone equipment for war-time services. For instance, when the Army authorities occupied Wesley College they installed about 600 telephones in the building. It is not uncommon for a firm to have been clamouring for a telephone for a couple of years without having been allotted one. The business community will readily take advantage of any increased supply of telephone equipment. I am also aware of a great shortage of private telephone facilities. We have not received any advice that telephone instruments taken over from hotels and other establishments for war-time services have been returned to the original users.

84. *To Senator Aylett.*—It would be reasonable to expect that premises from which telephone sets were commanded will be the first to benefit from the release of equipment.

85. *To Senator Brand.*—Fundamentally, the construction of the new building will not interfere with the housing programme because of the type of materials and the class of labour that will be employed.

86. *To Senator Lamp.*—I do not know how long it will be before supplies of cement are available. My authoritative advice states:—"Unfortunately, through the difficulty of getting sufficient supplies of coal, cement at the present time is in very short supply."

87. *To Senator Aylett.*—I do not know whether inquiries have been made from States other than New South Wales regarding supplies of cement.

The witness withdrew.

(*Taken at Melbourne.*)
MONDAY, 5TH NOVEMBER, 1945.

Present:

Senator Lamp (in the chair).

Senator Aylett. | Mr. Conelan.
Senator Brand. | Sir Frederick Stewart.
Harold John Stanley Reed, building surveyor, City of Melbourne, sworn and examined.

88. *To Senator Lamp.*—I am aware that this Committee is inquiring into the proposal to erect a building to house an automatic telephone exchange and post office in Russell-street, Melbourne. I have seen the plans of the building. I have no comment of any consequence to make with respect to the building. The municipalities have no control over works carried out by the Crown, or over any property of the Crown, except in so far as such properties may involve encroachments beyond the street alignment, or are of a height less than the minimum height permitted by the municipalities. In this instance, the street alignment is the new alignment as supplied by the City Engineer to the department in connexion with the widening of the footpath. I have gone in to the plan of the proposed building, and so far as I can see, there are no projections less than the height permitted, which is 9 feet above the footpath level. However, there is a projection over portion of Melbourne-place running east off Russell-street. That is shown on the plan from the first floor level extending about 1 foot over the street alignment. That portion of the building is hanging over the street alignment inside which the Council has jurisdiction. That is not permissible under our building by-laws.

89. *To Sir Frederick Stewart.*—The departmental officers may have conferred with the City Engineer on these plans, but they did not consult me as building surveyor in the matter.

90. *To Senator Lamp.*—As to the height, I do not think there is any figure on the elevation to give me the actual height. The maximum height permitted in the city is 132 feet measured from the footpath level at the centre of the building on whichever front is taken.

91. *To Sir Frederick Stewart.*—That applies only to the habitable part of the building. Other projections, such as lift over-run, machinery rooms and towers, or architectural features, are permitted under the by-laws to go above 132 feet, subject to the approval of the council; but the council prohibits any superstructure above 132 feet from being used for occupation. Features above that height are not permitted to be used for advertising purposes. The existing by-laws were introduced in 1916. Some of the older buildings erected before that date exceed the 132 feet height limit.

92. *To Senator Lamp.*—The only other aspect from which the council would come into a new building being erected by private enterprise would be that we

would require the structural designs generally to be submitted to us. The regulations lay down certain added loads for which provision must be made in the floors. With regard to engineering services, water supply comes under the jurisdiction of the Melbourne and Metropolitan Board of Works. The council is concerned only with electricity supply, and in the case of a building of this kind, the Electricity Supply Department would more than likely require the owner to embody a sub-station in the design. We would bring the main into the building, and the sub-station would act as a distribution centre. I do not know whether provision has been made for a sub-station in this building, or whether the officers concerned have consulted our Electricity Supply Department on the matter. The council does not inspect the lifts. Lifts in all buildings in Melbourne are controlled under the shop and factories legislation by the State Government. With the exception of the projection I have mentioned, the plans conform with the requirements of our city building regulations. The City Council has never exercised jurisdiction over architectural, or aesthetic, treatment of buildings in the city. We have no power under the legislation under which we operate to control that aspect. We inspect private buildings in course of erection, but we would not inspect this building.

93. *To Sir Frederick Stewart.*—I am doubtful whether even in the case of a government building, the projection to which I have referred would be permitted, because the council controls the thoroughfare beyond the building alignment. We have no jurisdiction over a Crown building within the confines of the title boundary, but the council controls the pavement and maintains all services on the pavement, and such projection would not be permitted if it appeared in plans submitted to us by a private builder.

94. *To Senator Lamp.*—So far as I know, the concrete and steel frame method is the most modern method of construction for a building of this kind. There has been a scarcity of office space in Melbourne for some time, due to the fact that areas of floor space have been occupied by the Defence Department and other government departments. When they are released, the position will revert to what it was before the war, and before building restrictions were placed on private enterprise. I do not think that the release of this floor space will tend to prevent building expansion so far as the demolition of old buildings and the erection of modern maximum height buildings is concerned. The idea of widening Little Collins-street, Little Flinders-street, Little Bourke-street, and Little Lonsdale-street, is to provide greater facilities for pedestrians. The scheme is not to widen the streets, but to widen the footpaths from 4 ft. 6in. up to 9 feet; and the council has decided in conjunction with this scheme to set new buildings back to the new alignment.

95. *To Sir Frederick Stewart.*—In 1944, the council decided that no new buildings should be permitted to be cantilevered over the new alignment, thus widening the whole street; but the roadway portion is not to be widened. The tower in the proposed building seems to overhang about 1 foot over the actual title boundary.

96. *To Mr. Conelan.*—Compensation is paid in respect of land resumed for street widening. That aspect is handled by a board of valuers. Surveys have been made through these four "little" streets to determine the actual setting back from the existing alignment.

97. *To Sir Frederick Stewart.*—As new buildings are erected, they must be set back to the new alignment. We cannot at the moment order every owner to set back his building, but the time may come when so many buildings are adjusted to the new alignment that the remainder also will have to be set back.

98. *To Senator Lamp.*—I do not think that this building will compete with the housing programme for materials and man-power. The materials required will not be in maximum demand in connexion with any housing scheme.

99. *To Mr. Conelan.*—I do not think that the use of cream bricks for facing the new building would seriously decrease the supply of ordinary bricks for housing construction. If they are going to make bricks for this building, they could also make ordinary bricks for housing construction. That is my private opinion based on what I have been able to learn of the attitude adopted by the Department of Post-war Reconstruction.

100. *To Senator Lamp.*—As to whether the work of the City Council's departments is hampered by a lack of telephone facilities, I can only speak in respect of my own department. I have difficulties in raising numbers. There are eight, or nine, departments within the council administration. We can get on to both the automatic and manual exchanges. I have an automatic telephone on my table which is combined with the inter-office service; and I can also get direct connection with Central for Central numbers. I find it difficult to raise Central, but that is the only respect in which I have any difficulty. I can usually get automatic numbers without trouble.

101. *To Senator Brand.*—I know that the Commonwealth officers concerned in the preparation of these plans consulted with the city engineer with respect to street alignments, but with respect to the design of the building, no approach has been made to me as building surveyor to see whether there may be any special requirements under our building regulations. I take it that that omission is due to the fact that generally the departmental officers realize that the council has no control over Crown buildings. Generally speaking, instrumentalities of the Crown prepare their design, irrespective of whether or not they might infringe any regulations of the council, so far as the council's regulations would apply to private buildings within the confines of the title boundary. The class of labour required for this building would be common also to housing construction. Electricians could also be employed on any other type of building. Plasterers, bricklayers, carpenters and joiners could all be employed on residential construction. The services of specialist tradesmen who would be employed in the erection of steel work would never be required in the erection of homes or residential buildings unless such buildings were of steel frame construction. From my knowledge of the plans, the proposed building will be an improvement in the locality concerned.

The witness withdrew.

(*Taken at Melbourne.*)
(SECTIONAL COMMITTEE)

WEDNESDAY, 7TH NOVEMBER, 1945.

Present:

Senator Lamp (in the chair).
Senator Aylett. | Mr. Conelan.
Senator Brand.

Henry Maitland Rolland, Director of Architecture, Department of Works and Housing, recalled and further examined.

102. *To Senator Lamp.*—I have prepared figures to illustrate the effect that the erection of the new postal building will have on the housing programme. The areas, in man-weeks, of one trade to another are not the same in a city building as in a house, and some trades are employed on the former and not on the

latter, and vice versa. For the trades required in both types, the estimate for this city building is 10,322 man-weeks. The following figures show how these man-weeks are distributed by trades, and how the same total would be distributed in house building:—

Trade	Man-weeks of Labour on House Exchange.	Man-weeks of Labour on Housing.
Labourers	...	0,170
Bricklayers	...	1,266
Bricklayers	...	10
Carpenters	...	64
Plasterers	...	1,091
Plasterers	...	2,977
Plasterers	...	576
Plasterers	...	888
Painters	...	450
Painters	...	1,140
Electricians	...	260
Electricians	...	570
Electricians	...	482
Total	...	10,322
		10,322

The man-weeks of labour on this city building in trades not required for housing are estimated at—

Truck drivers (excavating)	...	48
Labourers	...	70
Floor layers	...	14
Steel riggers	...	708
Metal workers	...	48
Wall tilers	...	24
Mechanical engineers	...	408
Total	...	1,676

The man-weeks on housing, based on the same total of 10,322, in trades not required for this city building are as follows:—

Fibrous plasterers	...	443
Roof tilers	...	252
		695

I have endeavoured to make the comparison as close as possible, but it is on a very general basis because styles of city buildings and houses will change. I have with me a list, which was prepared some time ago, detailing the different classes of material required for steel-framed city buildings and for ordinary brick houses. Concrete, which consists of cement, sand and metal, is used in both cases. Re-inforcement is not used very much in housing, except in the case of bad foundations. Bricks are used in both cases, but the postal building will be faced with bricks only. Approximately 1,000,000 bricks would be required for this building, but this will be somewhat reduced by using concrete instead of bricks for the basement walls. The main structure will be of steel surrounded by concrete. Steel windows will be used, whereas timber windows are used in most houses. The department has been using steel doors in some cases, and it may do so in this case. The use of steel windows has a great deal to do with fire protection. There is no likelihood of a shortage of factory-made doors unless there should be a shortage of timber.

103. *To Mr. Conelan.*—The main types of timber doors are plywood doors, four panel doors made of pine, and hardwood doors. Pine is difficult to obtain at the present time, and it is used extensively for cupboards, shelves, &c., in houses. Better-class woods such as maple, walnut, and cedar, could be used, but they would not be appropriate to ordinary housing.

104. *To Senator Lamp.*—Plaster and cement rendering will be used in both the postal building and in houses. Fibrous plaster, which is used considerably in houses, will not be used in the city building. Very little wall tiling is used in houses but it will be used a great deal in the large building. Painting will be required for the new building as well as for houses.

Plumbing fixtures and fittings, guttering and down-piping will be used in both cases. The plans for the building will reach the stage at which men and materials will be needed about April next year. I believe that the man-power position will have improved considerably by then, as the result of releases from the services.

When I gave evidence previously, I was asked whether it would be better to proceed with the erection of the complete building at once, or to erect only the first section.

In order to give the Committee further information in regard to the comparative estimates for the erection of the building to the "initial stage" as compared with completing the whole of the building, an estimate has been prepared which shows that in the event of the building being constructed to the full height in place of separate contracts for the first stage and the completed stage respectively, the amount of £11,000 would be saved. Apart from the inconvenience that would be caused to the Post Office staff and the public during construction, the builders' overhead and plant costs would be duplicated and, in addition, roof buildings, parapet walls, roof surface finishings, &c., would have to be demolished and rebuilt if the work were carried out in two stages. In addition, the very sensitive nature of the telephone equipment that would be installed in the lower floors might easily be seriously interfered with in the event of disturbance and dust during building construction. It is difficult to estimate accurately the additional cost of completing the building in the final stage if the extra floors are added some time after the initial stage has been completed, but assuming that building conditions are similar in each case, the approximate estimate of the additional cost over the estimate already submitted is as follows:—

Builders' plans, notices, fees, insurance, &c.	500
Demolish roof buildings at second door level	100
Demolish parapet walls, box gutters, &c.	50
Remove roof surface finishings	50
Build new roof buildings	3,500
Build new parapet with box gutters, &c.	100
Pull down brick facings (3,200 square yards)	100
New brick facings to second floor level	500
Cantilever scaffolding for brick work	250
Remove timber framing and asbestos cement rendering (130 squares)	130
Remove temporary timber floors in lift wells	10
Make good damage to existing building	500
Scaffolding, platform and street hoardings	2,500
Excavate for foundations in confined space	1,000
Provision of materials storage yard ready to job	100
Make good footpaths and footways	100
10 per cent. contingencies	10,300
Credit for old materials including hoist	11,230
	330
	£11,000

The roof buildings referred to in the estimate are machine rooms for lifts. The item relating to the extra cost for working in a confined space is due to the fact that, the first section having been completed, the contractors would have little space in which to work on the second section. In addition to the factors which I have mentioned, I believe that there would be better competition in tendering for the complete building, instead of for the first section.

Accommodation in the city is very limited at present, and there will be no difficulty in occupying the office space released as the result of the erection of the complete building. The projection of the lift well over Melbourne-place is designed mostly for effect. It will be a rather interesting architectural feature. It will provide a shadow to relieve the bareness of the

wall and it will also act as a framework for the projecting windows on the north side. The projection starts on the first floor, and will therefore not obstruct the right-of-way at all. The projection has nothing to do with the mechanical part of the lift. It is not absolutely necessary and the design would not be ruined if it were omitted.

105. *To Senator Aylett.*—It will break up the monotony of the long wall.

106. *To Senator Lamp.*—The plan of the building definitely complies with the present City Council regulations. There has been some reference recently to a proposed alteration of the regulations, the intention of which I believe is to reduce the permissible height of city buildings on the basis of the number of cubic feet for each person occupying a building. This arises from difficulties caused by the amount of traffic required in connexion with the number of occupants of each building. The postal building will be occupied by about 900 people only. The three main floors will be taken up by the telephone exchange, and relatively few officers will be employed there. Therefore, in this respect, the building will probably comply with the proposed regulations because the number of cubic feet per person in the building will be relatively small. I am not sure, but I do not think that the Melbourne City Council has raised any objection to the proposed projection over Melbourne-place. I understand that the Commonwealth is not under any legal obligation to carry out the wishes of the City Council. In many cases, representatives of my department have conferred with the council authorities and have usually agreed to satisfy their requirements as far as possible. Sometimes we absolutely agree with their objections, and at other times, we reach a conditional agreement.

107. *To Mr. Conelan.*—I do not know offhand whether the department's representatives actually spoke about the proposed overlap to the City Council's representatives. I believe that it is permissible to overlap the building line above a height of 10 feet. 108. *To Senator Aylett.*—The proposed overlap will project about 2 ft. 3 in. at one corner. If buildings on each side also had similar projections, a great deal

of light might be cut off from the street. Other buildings in the city overlap the building line above a certain height. When this Committee considers the proposed Batman exchange it will find that the department has planned an overlap over Flinders-lane. This projection has been discussed with the City Council. If this sort of overlapping were used on all buildings, the tendency might be to spoil the appearance of a street.

109. *To Senator Lamp.*—The department plans all its electrical designs to the standard electrical specifications of the Standards Association.

110. *To Senator Brand.*—Cream bricks, not ordinary red bricks, will be used to face the building. This will not cut across home building requirements very much.

111. *To Mr. Conelan.*—Only one layer of bricks will be used. Terra cotta could be used instead of bricks, but the supply of terra cotta is now limited, and I do not know when full scale manufacture will be resumed. In any case, terra cotta would be more expensive than bricks, although the type of labour required would be about the same.

112. *To Senator Aylett.*—The removal of the overhang over Melbourne-place from the plans of the building would cause no inconvenience. We have not commenced the actual working drawings yet.

113. *To Senator Lamp.*—I shall try to find out what objections the City Council may have to the overhang, and try to satisfy its requirements. The shortage of cement is not likely to last long, unless the coal-miners give up work altogether. The production of bricks and cement is directly affected by coal shortages.

114. *To Mr. Conelan.*—Working plans for the building will be ready about April next year. The department is very short staffed. Many architects are being retained in the armed forces, because they are in key positions. We have plenty of work to do, and we are unable to employ sufficient men for the requirements of the post-war programme.

The witness withdrew.