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THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

## REPORT

relating to the proposed extension of

# PIER TELEPHONE EXCHANGE

Perth

BY AUTHORITY  
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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

EXTENSION OF PIER TELEPHONE EXCHANGE, PERTH

R E P O R T

By resolution on 6 June 1968, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report, the proposal to extend the Pier Telephone Exchange, Perth.

The Committee have the honour to report as follows:

THE COMMITTEE'S INVESTIGATION

1. The Committee received written submissions and drawings from the Postmaster-General's Department and the Department of Works. Evidence was taken at a public hearing in Perth from representatives of these departments and of the Perth Chamber of Commerce. We inspected the facilities in the existing exchange.

THE REFERENCE

2. The proposal referred to the Committee is for a four-storey vertical extension to the Pier Telephone Exchange in Pier Street, Perth. The work is estimated to cost \$960,000.

3. The additional accommodation is for local subscribers exchange equipment for the Pier Exchange area, extensions to the tandem exchange equipment for the Perth Telephone District, extensions to the main automatic trunk exchange for Western Australia and a manual assistance centre.

4. The extension is designed to meet space requirements until about 1980. By then, further accommodation in a new building on the remainder of the Commonwealth's site at the corner of Pier and Murray Streets will be needed.

#### EXISTING FACILITIES

5. On the premise that centralisation of the major telecommunications facilities for Perth and the State was sound, preliminary planning for a new telephone exchange was first commenced in 1946. The plan then was to erect in Murray Street a new building to be known as the Irwin Telephone Exchange. This proposal which was examined by the then Public Works Committee and approved by Parliament in 1951, was for an 11-storey building at a cost of \$1,704,000. Due to limited resources at that time the project was deferred and the more urgently required elements of the Irwin proposal were provided on a shorter term basis by implementation of several smaller projects, the main one of these being the Bulwer Exchange.

6. The Perth city area is now divided into three exchange areas: Bulwer in the north, Central in the west and Pier in the east. Until 1956 the area was served by one exchange, the Central automatic exchange in Murray Street just over a half mile west of the Pier site. It was originally intended that the Irwin Exchange would provide some relief for Central, but when it was deferred Bulwer took precedence.

7. In 1961, by arrangement with the Perth General Hospital, the Commonwealth exchanged the Irwin site for a nearby site in Pier Street. The latter is larger and is technically suitable for telephone exchange purposes. It was at this new location, early in 1965, that the three-storey Pier Exchange building was completed at a cost of \$480,000.

8. On the first floor, the Pier Exchange presently accommodates television programme switching equipment as well as carrier equipment which is operating in conjunction with manual trunk positions in the G.P.O. The recently completed initial installation of automatic trunk switching equipment is on the second floor. Tandem switching equipment is being installed on the second floor also. It is expected that this equipment will be in full operation shortly providing a much improved service for subscribers using this equipment.

9. Subscribers in the Pier Exchange area are at the moment connected to an exchange in the Central building. This building therefore accommodates two exchanges, Central and Pier. The equipment serving the Central Exchange is fairly modern whereas the Pier Exchange equipment is over 40 years old and does not permit efficient handling of present day high density traffic.

#### THE NEED

10. Subscriber Growth Since 1945 Western Australia and the city of Perth in particular, have experienced rapid growth, stimulated in recent years by large scale exploitation of mineral deposits. This development has attracted migration from interstate and overseas resulting in accelerated population growth. Figures for the Perth Statistical Division, the boundaries of which approximate those of the Perth Telephone District, show that the population of the Division increased from 395,000 to 558,000 between 1954 and 1966. It has been estimated that the population in 1970 will be 635,000 increasing to 876,000 in 1980.

11. The extent of growth generally is well illustrated by the considerable building activity taking place in the Perth city area. Statistics from the Department of Industrial Development indicate that in 1968 12 buildings valued at \$34 million were under construction in the Pier Exchange area alone.

12. The demand for facilities in Western Australia has produced an increase of 300% in telephone subscribers over the last two decades. This compares with the Commonwealth average of 250%.

13. The Committee noted that post office planning is currently based on subscriber growth of the following order:

	<u>Subscribers in the Pier Exchange Area</u>	<u>Subscribers in the Perth Telephone Zone</u>	<u>Subscribers in the Perth Telephone District</u>
1965	3,700	81,750	86,180
1970	4,250	117,400	125,000
1975	4,875	153,500	165,500
1980	5,600	196,300	214,700
1985	6,600	249,600	277,200
1990	7,600	318,000	358,000

14. Local Subscribers Exchange The Committee were told that the equipment serving the Pier Exchange area is, due to its age, providing subscribers with a substandard service. The geographic location of the equipment in the Central building is also unsatisfactory from a functional viewpoint.

15. The removal of the Pier local subscribers exchange from the Central building will relieve equipment in the Central Exchange of some common functions, thus easing congestion there and improving the standard of service. The relocation is also essential to relieve congestion in cable reticulation.

16. Furthermore, it is necessary to provide for growth in the number of subscribers connected to the Pier Exchange. This is not possible in the Central building.

17. Expansion of Other Services Although the most pressing need for the work in this reference relates to the Pier local subscribers exchange, population growth and associated factors are creating a requirement for space into which the tandem and automatic trunk switching exchanges can expand. For example, it is expected that the present trunk exchange will be used to capacity in 1971 and it has no expansion space.

18. Concurrently with the establishment of Pier as the focal point in Western Australia for trunk traffic, it is also desirable for functional reasons, for the manual trunk assistance centre to be located nearby. Existing manual services are now provided by old and unsuitable switchboards in the G.P.O. Furthermore, a now changed number and redirection service is needed and it is thought that for economical operation it should be located in the same centre as the manual trunk assistance centre.

19. The Committee's Conclusion The Committee are agreed that in order to provide

- a satisfactory service to local subscribers connected to the Pier Exchange;
- for the expansion in the near future of the tandem and automatic trunk switching exchanges; and
- for the relocation of the manual trunk assistance centre

there is a need for the works in this reference.

#### FUTURE ROLE OF THE PIER EXCHANGE

20. It is proposed to develop the Pier Exchange as the major telecommunication centre for Perth and the State in the following way.

21. Local Subscribers Exchange Subscribers in the Pier Exchange area will be served by equipment located in the proposed Pier extension. It will provide 7,000 lines, which will be adequate until about 1985. By this time Pier Stage 3 would need to be operating to meet the long term development of local subscribers growth.

22. Tandem Exchange Crossbar equipment, which is progressively taking over from the older types of telephone equipment requires through switching points or tandem exchanges. One such exchange will meet the requirements of the Perth Telephone District and some country exchanges within the foreseeable future.

23. The first stage of this tandem exchange with 1,040 inlets is being installed in the Pier building. The second stage of 1,600 inlets which will be installed in the proposed extension is expected to satisfy requirements until about 1980.

24. Automatic Trunk Switching The main automatic trunk switching centre for Perth and Western Australia will be located at Pier. In the automatic trunk switching plan, the Pier centre will be linked directly to other State capitals, and to all intrastate, secondary and some minor switching centres. It will thus be a key point in the national trunk network.

25. The first stage of 2,600 terminations now being installed on the second floor will meet requirements to about 1971. Space is proposed on the fourth floor for a further 8,400 terminations which should suffice until 1980.

26. Manual Assistance Services Manual trunk assistance is required for subscribers who do not avail themselves of subscriber trunk dialling facilities or who require credit card, particular person or other special



call services. A manual trunk assistance centre to provide these services and manual positions to provide changed number and redirection services is to be located in the Pier Exchange.

27. The new switchboards will be installed near the associated automatic trunk equipment which is the most efficient and economical location. The initial installation in the proposed building will be 50 trunk and 60 miscellaneous positions. Expansion space will be available to extend these facilities in line with the expected growth of the automatic trunk switching facilities.

#### THE SITE

28. The Commonwealth's site has a frontage of 202 ft to Pier Street and 143 ft to Murray Street, while to the north and east the boundaries measure 119 ft and 201 ft respectively. The northern part is occupied by the Pier Exchange building. The State Government occupies the old Government Printing Office on the remainder of the site on a permissive occupancy basis. This building is unsuitable for post office purposes and it is planned that it will be demolished in about 10 years time to make way for a further stage of development of the Pier telecommunication centre.

29. The site is well located, being at the practical centre of cable reticulation for the area it serves. It is also the terminating point for major junction and trunk cables.

30. Continued development of the site will establish this exchange as the main telecommunication centre for the State. This is a most economical and practical arrangement as the existing building and the proposed vertical extension will occupy less than half the available site area. There will be space after demolition of the old Printing Office building for a major extension which would be the third stage of development.

31. The Committee are agreed that the site selected is suitable.

OCCUPATION OF THE PROPOSED EXTENSION

32. It is proposed that space in the existing building and the proposed extension will be occupied in the following way:

Ground Floor (existing)

This floor is constructed on two levels. The main entrance porch, toilet facilities, cleaners' accommodation, and a loading dock are on the upper level. On the lower level are located the cable chamber, air conditioning plant, emergency power plant, an unloading bay and parking area for six vehicles.

First Floor (existing)

Carrier equipment, radio and T.V. switching apparatus, and the main distribution frame for the ultimate building, are located on this floor.

Second Floor (existing)

This floor contains automatic trunk and tandem exchange equipment, a power and battery room and mechanical plant.

Third Floor (proposed)

Most of the space will be occupied by local subscribers exchange equipment, a power and battery room and mechanical plant. An area has also been allocated for supplementary tandem exchange equipment.

Fourth Floor (proposed)

Space on this floor will be for automatic trunk exchange equipment, power and battery plant and air treatment equipment.

Fifth Floor (proposed)

The changed number and redirection manual exchange, amenities, a lunch room, a power and battery room and a mechanical plant room will occupy about two-thirds of this floor. The remaining space will be used for the future development of automatic switching equipment or manual assistance positions.

Sixth Floor (proposed)

A trunk assistance manual exchange of 120 positions, together with amenity areas, will be accommodated at this level.

33. The exchange is expected eventually to be staffed by about 300 officers of whom 250 would be females. The maximum number on duty at the one time would be 170 including 140 females. The Committee were told that amenities to be provided in the building will be in accordance with usual post office standards.

THE BUILDING PROPOSAL

34. Planning Considerations The structure of the existing Pier Exchange envisaged the future provision of three extra floors and a flat concrete roof. However, it has been found that a fourth additional floor can be added providing the live loading on that floor is limited to 60 lbs per square foot and the roof not used for staff purposes.

35. The proposal submitted to the Committee is thus for a four floor extension to the existing building. Each floor will be of similar form and area to those existing, and stairs, lifts and toilets etc will be in the same relative positions. The same floor to floor heights are to be maintained and design features and materials will be repeated.

36. Structure The frame of the extensions will be in the same form of construction as the existing building with reinforced concrete columns and mainly flat slab floor construction.

37. The manual assistance exchange on the sixth floor will have a raised modular patent floor 18 inches above the structural slab. This will provide wiring space for cables to the exchange equipment.

38. Re-use of the existing metal deck is planned. The roof area will be supported on steel trusses spanning the whole of the roof area.

39. Cooling towers and water storage tanks above roof level will be supported on precast concrete slabs with beams on columns extending through the roof. This area will be enclosed by a screen wall for functional and aesthetic reasons.

40. Finishes The main facade to Picr Street is faced with blue glazed terra cotta structural and screen blocks, whilst on the other facades face brickwork is used with tyrolean render to columns, lift shafts and stair wells. These materials are to be repeated in the proposed extension.

41. Internal finishes have been selected with a view to economy and low maintenance costs. Walls in equipment rooms will be cement rendered with some areas of vinyl coated plaster. Face bricks and off-form concrete will be used elsewhere. Toilet walls are to be finished with glazed ceramic tiles.

42. Floors will be surfaced with vinyl tiles except in toilet areas where glazed quarry tiles will be used.

43. Ceilings will be off-form painted concrete in equipment areas, false ceilings in office areas and suspended plasterboard in toilets. The sixth floor ceiling will also be suspended plasterboard.

44. Mechanical Services The additional floors will be air conditioned by plant similar to the existing installation. Cooling will be provided by a further chiller set installed in the lower ground floor plant room, and heating will be provided by an additional oil-fired boiler. Air will be distributed through low velocity overhead ducts from handling plants to be installed on each floor at the north-west corner of the building.

45. Battery rooms on the third, fourth and fifth floors will be supplied with conditioned air which will be exhausted into a common vertical building duct.

46. A centrifugal pump will be installed in the water supply line to the storage tanks to automatically operate in periods of reduced mains pressure. Tanks will be provided for the reserve water supply required by the Western Australian Fire Brigades Board for domestic use and for the cooling towers.

47. Miscellaneous equipment will include domestic hot water supply to basins and sinks, electric tea urns, drinking water coolers, sanitary incinerators and a pie warmer.

48. Electrical Services The electricity supply from the State Electricity Commission already connected to the building is of sufficient capacity for the loadings of the proposed extensions.

49. The existing main switchboard will be extended and essential and commercial power supply will be reticulated to distribution boards and power consuming devices in the extensions.

50. Fluorescent lighting will generally be used throughout the extensions.

51. The Committee were told that the present 120 kW diesel emergency alternator set will be able to supply essential power to equipment in both the existing building and the proposed extensions.

52. Lifts Lift wells are provided in the existing building, but lifts were not installed as there are only two floors above ground level. The wells will now be extended through the additional floors and two lifts will be installed with speeds between 200 and 300 ft per minute. One lift will serve as a goods/passenger lift and will be designed to carry telephone equipment racks.

53. Fire Protection The existing thermal fire alarm system will be extended to cover the proposed additions. Fire hydrants will be installed at appropriate points. The existing fire isolated stairways will be continued through the extensions.

54. The Committee's Conclusion The Committee recommend the construction of the work in this reference.

#### PROGRAMME

55. It is expected that after an approval to proceed is given, the preparation of final drawings and tender documents will take about six months. The Committee noted that the construction of the work is expected to take about 15 months after a contract is let.

56. In view of the poor service available to subscribers connected to the Pier local subscribers exchange, the Committee believe that there is an urgent need for this work. We therefore urge the Department of Works to proceed with construction with all possible despatch and take any reasonable step it can which will hasten occupancy of the extensions.

ESTIMATE OF COST

57. The estimated cost of the work when referred to the Committee was \$960,000 made up as follows:

	\$
Building work	539,000
Engineering services	421,000
	<hr/>
	960,000
	<hr/>

RECOMMENDATIONS AND CONCLUSIONS

58. The summary of recommendations and conclusions of the Committee is set out below. Alongside each is shown the paragraph in the report to which it refers.

	<u>Paragraph</u>
1. THE LOCAL SUBSCRIBERS EXCHANGE EQUIPMENT SERVING THE PIER EXCHANGE AREA IS PROVIDING A SUBSTANDARD SERVICE.	14
2. THERE IS A REQUIREMENT FOR SPACE INTO WHICH THE TANDEM AND AUTOMATIC TRUNK SWITCHING EXCHANGES CAN EXPAND.	17
3. IT IS DESIRABLE FOR THE MANUAL TRUNK ASSISTANCE CENTRE TO BE LOCATED NEAR THE AUTOMATIC TRUNK EXCHANGE.	18

		<u>Paragraph</u>
4.	THERE IS A NEED FOR THE WORKS IN THIS REFERENCE.	19
5.	THE SITE SELECTED IS SUITABLE.	31
6.	THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORK IN THIS REFERENCE.	54
7.	THE DEPARTMENT OF WORKS SHOULD TAKE ANY REASONABLE STEP WHICH WILL HASTEN OCCUPANCY OF THE EXTENSIONS.	56
8.	THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS \$960,000.	57

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22 August 1968.