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THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

REPORT

relating to the proposal to erect the

WAYMOUTH TELEPHONE EXCHANGE BUILDING

Adelaide, South Australia

BY AUTHORITY
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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

WAYMOUTH TELEPHONE EXCHANGE BUILDING, ADELAIDE, SOUTH AUSTRALIA

REPORT

By resolution on 13 June 1968, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report the proposal to erect the Waymouth Telephone Exchange Building, Adelaide, South Australia.

The Committee have the honour to report as follows:

THE COMMITTEE'S INVESTIGATION

1. The Committee received submissions and drawings from the Postmaster-General's Department and from the Department of Works and studied a model of the proposed building. Evidence was taken at a public hearing in Sydney from representatives of these departments. We inspected the site of the proposed building and facilities in the Wakefield and Franklin Exchanges.

THE PROPOSAL

2. The proposal is to erect a telephone exchange building to be known as the Waymouth Exchange having a basement, sub-basement and 13 floors above ground at 69-79 Waymouth Street, Adelaide. The rear of the proposed building will abut the Franklin Exchange which is now the main telecommunications centre for South Australia.

3. The new building will be the first stage in the development of the Waymouth Exchange which will progressively take over Franklin's role as the State's main telecommunications centre. It will accommodate subscribers exchange equipment for the Waymouth Exchange area, which is the western sector of the city area, and tandem exchange equipment serving the Waymouth tandem area and the outer metropolitan zone. It will also house the main trunk exchange for the State providing space for automatic trunk switching equipment and the trunk amplifying and carrier apparatus required for the needs of the State network for subscriber trunk dialling (STD). Associated manual trunk assistance positions will also be located in the building.

4. Space will also be provided for a computor centre for the Postmaster-General's Department, a telex exchange, radio and television programme switching facilities and radio telephone equipment associated with intra and interstate trunk traffic.

5. The facilities in this building are planned to satisfy the telecommunications requirements of the Postmaster-General's Department in the Adelaide metropolitan area until about 1990.

6. The estimated cost of the work is $6.0 million.

EXISTING FACILITIES

7. Telephone subscribers in the Adelaide city area are now served by three automatic exchanges, viz.

(a) Wakefield Exchange, which was opened in 1947 in one of the smaller buildings in the G.P.O. complex at the corner of King William and Franklin Streets. This exchange was later extended into an adjoining building;

(b) Franklin Exchange, which was opened in Franklin Street in 1951, in a building 200 yards west of the G.P.O.; and

(c) Flinders Exchange, which is 600 yards east of the G.P.O. and was opened in 1964.

8. It is proposed that when the new Waymouth Exchange is opened Wakefield Exchange will be closed and its subscribers transferred to Waymouth. The inner city area will then be divided into two exchange areas - the eastern part served by Flinders and the western part by the Waymouth and Franklin Exchanges.

9. Apart from housing a local subscribers automatic exchange, the Franklin Exchange accommodates the automatic trunk exchange, trunk amplifying and carrier equipment, an automatic telex exchange, radio and television programme switching equipment and the manual assistance exchange. There is also a considerable amount of office accommodation in the building.

10. The Franklin Exchange building before it was acquired by the Commonwealth, was a motor showroom and workshop. Because of the nature of the structure of the building, it is not suitable for the efficient placement of telecommunications equipment and it has been necessary to space equipment racks further apart than in a building designed specifically for the purpose. This has increased installation and maintenance costs and the point has now been reached where further installations can only be of a minor nature.

TELEPHONE SUBSCRIBERS GROWTH

11. The following figures supplied to the Committee in evidence compare the numbers of subscribers in the Waymouth Exchange area, the Waymouth Tandem

Area and the Adelaide Telephone Zone in 1967 and those expected to be connected in 1970, 1975, 1980, 1985 and 1990. These figures clearly show the extent of the growth expected over this period.

	Subscribers in the Waymouth Exchange Area	Subscribers in the Waymouth Tandem Area	Subscribers in the Adelaide Telephone Zone
1967	8,065	-	133,744
1970	8,800	47,850	154,000
1975	10,700	59,200	192,000
1980	12,500	70,400	231,000
1985	14,900	82,700	272,000
1990	16,700	93,700	309,000

12. The Waymouth Exchange area has a high density of business activity and employment. Some 50,000 now work in the area and this number is expected to grow to 72,000 by 1990. Considerable new building and redevelopment activity has occurred in the area in the last ten years including some 90 major building projects, some of which are high rise structures.

13. Recent and expected growth is creating a continuing need for additional telephone exchange facilities which is of four basic parts, namely,

(a) a need for additional subscribers exchange equipment to meet subscribers development in the western part of the inner city area;

(b) a need for more automatic trunk switching equipment to meet the development of STD in the city and State networks;

(c) a need for more manual assistance positions for that part of trunk traffic not handled by STD; and

(d) an increasing requirement for tandem exchange facilities for the metropolitan and outer metropolitan areas.

14. The expected growth in the demand for telephone services and the inability of the existing exchange space to cope with this expansion are therefore creating a need for additional telephone exchange accommodation in the western sector of the Adelaide city area.

ROLE OF WAYMOUTH EXCHANGE

15. It is proposed that the demand for additional telephone services will be satisfied, in the period to 1990, in the following ways:

16. Subscribers Local Exchange Equipment The capacity of the subscribers exchange equipment in the Franklin Exchange, which is 7,200 lines, will be fully utilised before the Waymouth Exchange is operating. Development in the interim period will be met by connecting subscribers temporarily to the Wakefield Exchange. When Waymouth is cut over all Wakefield lines will be transferred to the new equipment as will new subscribers until about 1990. A capacity of 16,000 subscriber lines in the new exchange is planned.

17. Tandem Exchange Equipment In the Adelaide Telephone Zone tandem exchanges are required at Waymouth, North Adelaide and Edwardstown to serve the area within a 10 mile radius of the G.P.O. The North Adelaide tandem is established and will carry out tandem functions for Waymouth until equipment in the new exchange is operating.

18. When the Waymouth tandem is available it will also act as the tandem point for the crossbar exchanges in the outer metropolitan zone, which is the area between the 10 and 20 mile radii from the G.P.O. The Waymouth Exchange will then become the principal tandem switching point in the metroplitan and outer metropolitan zones.

19. Automatic Trunk Switching Equipment The establishment of the main automatic trunk switching centre for South Australia in the Waymouth Exchange will meet requirements until about 1990 and allow full extension of STD to South Australia in accordance with the Community Telephone Plan. The initial automatic trunk switching installation at Waymouth is planned to be 9,200 terminations in 1974 rising to 22,000 in 1994.

20. Trunk Amplifying and Carrier Equipment Trunk amplifying and carrier equipment should be close to the associated automatic trunk switching equipment. Switching equipment is now located near the Franklin Exchange and it is intended to continue on this basis when extending these facilities into the Waymouth building. Waymouth, with Franklin, will then become the main trunk amplifying and carrier equipment centre for South Australia and the main terminal point for intra and interstate links.

21. The Committee noted that the use of trunk amplifying and carrier equipment on short distance trunk channels and local junction channels is increasing and that provision will be made in Waymouth for this facility to operate in conjunction with the proposed tandem exchange.

22. Manual Assistance Services Even with STD, manual trunk assistance is required for subscribers who require credit card, particular person, or other special call services. An assistance centre and manual services associated with directory information, changed number and redirection services are thus proposed in the new exchange.

23. The present manual trunk exchange which is now located at Franklin and is being extended, will meet manual assistance needs for the next five years. The new manual assistance centre in the Waymouth Exchange should

then be operating. From that time the two installations are expected to meet developments until about 1990.

24. It is proposed to operate initially about 60 trunk assistance positions in the Waymouth building at the same time retaining Franklin at its capacity of 73 positions. It is thought that about 170 positions will eventually be required in Waymouth.

25. Automatic Telex Equipment The automatic telex system established two years ago, allows telex subscribers to be automatically connected to any other telex subscriber in Australia. Initially, the switching equipment has been provided in the Franklin building. As the space there is limited, it is proposed to relocate the main telex exchange for the State in the Waymouth Exchange.

26. Automatic Data Processing Centre Space is being provided for a computor and data processing centre. This is part of a plan to link all states in a computor network. The facility will process telephone and other service accounts and be suitable for special technical studies and investigations.

THE SITE

27. The Commonwealth acquired, in three separate transactions, a site with frontages to both Waymouth and Franklin Streets and with rights over a private road leading to Bentham Street in the east. The site which includes the land on which the Franklin Exchange is built covers 1 acre 3 roods 7 perches and is 423 ft deep between Franklin and Waymouth Streets. The frontage to the latter is 155 ft.

28. The portion of the site on which the proposed building is to be erected is at present covered by single storey structures of little value.

29. The site is at the practical centre of cable reticulation for the local exchange area it is to serve. It adjoins Franklin Exchange which is the terminal point for interstate and intrastate links. Cable development in the area has been such that access is available directly from Waymouth and Franklin Streets and from the roadway leading to Bentham Street.

30. The building will occupy less than a quarter of the whole site and use about half of the frontage to Waymouth Street. The Committee considered the site to be adequate and well placed to meet the demand for future exchange accommodation in the period to about 1990. We noted that ample space is available for expansion beyond that time, particularly as it is envisaged that the Franklin building will eventually be demolished for redevelopment.

31. Future Development The Committee noted the plan to centralise at the Waymouth Exchange the main telecommunications activities for Adelaide by extending, when necessary, development on adjacent portions of the site. We consider this to be a most practical and economic arrangement.

32. It is proposed that the first stage will operate conjointly with the Franklin Exchange but Waymouth will gradually become the dominant partner.

33. A significant portion of the telecommunications equipment in Franklin is becoming obsolescent and the building itself has a limited life expectancy. These two factors and the need to meet expected developments is expected to produce a requirement for the second stage of the Waymouth development about 1990.

34. It is thought that this will take the form of a building similar to that in this reference, erected on the western portion of the site fronting Waymouth Street. Beyond that time, the Franklin Exchange would probably be demolished for a further stage of development.

OCCUPATION OF THE NEW BUILDING

35. The space to be provided in the Weymouth Exchange will ultimately be occupied in the following way:

Sub-basement:

- Lower level of cable chamber
- Emergency power plant
- Main electrical distribution board
- Building service centre
- Air treatment plant

Basement:

- Upper level of cable chamber
- Electricity substation
- Subscribers maintenance centre

Ground Floor:

- Main distributing frame
- Subscribers installation depot
- Goods unloading area

First Floor:

- Local subscribers switching equipment (11,000 lines)
- Upper level of main distributing frame

Second Floor:

- Tandem exchange equipment
- PABX equipment
- Power and battery plant rooms

Third Floor:

Local subscribers switching equipment (5,000 lines)

Tandem exchange and miscellaneous services equipment

Fourth, Fifth and Sixth Floors:

Automatic trunk switching equipment

Seventh Floor:

Trunk amplifying and carrier equipment

Radio and television programme switching facilities

Eighth Floor:

Automatic telex and associated channel equipment

Ninth Floor:

Changed number and redirection manual exchange

Computer centre

Tenth Floor:

Manual trunk assistance centre

Amenities

Eleventh Floor:

Radio telephone terminal apparatus

Cafeteria

Recreation facilities

Twelfth Floor (including mezzanine):

Mechanical plant room

36. Access to the Franklin Exchange at the rear of the building will be available at ground, first and third floor levels.

37. Interim Use of Equipment Floor Space Areas on the third, fourth and fifth floors will provide expansion space for the additional equipment required as services provided by the Exchange grow. Until this occurs, the space will be used for departmental functions which will be relocated elsewhere at the appropriate time.

38. Amenities The Exchange will ultimately be staffed by 1,217 officers of whom up to 746 could be on duty at the one time. The proposal thus includes a cafeteria providing light refreshments and a hot meal service. The lunch room and cafeteria will provide seating for 250 persons simultaneously.

39. A tea trolley service is to be established. Tea preparation areas will be provided for use when the trolley service is not operating.

40. Space is to be provided on the eleventh floor adjacent to the cafeteria for the Postal Institute. A recreation and functions room is also proposed. The latter will be separated from the cafeteria by a folding partition but they can be amalgamated if required for special functions.

41. Vehicle Accommodation The unused portion of the site fronting Waymouth Street is to be used as a parking area for about 65 official vehicles. After normal hours this space will be available for the private vehicles of staff on duty at the time.

THE BUILDING PROPOSALS

42. Planning The Committee noted that in evolving the design, consideration was given to a lower structure built over a larger section of the site and planned for a future vertical extension. It was found, however, that the concept of staged higher individual buildings was more economic, and we agree, a more practical arrangement.

43. The present proposal is therefore a building with a frontage of 80 ft to Waymouth Street and 213 ft deep, abutting Franklin Exchange at the rear. It is to occupy the eastern portion of the site leaving an approximately equal area adjacent, also with a frontage to Waymouth Street, for subsequent development.

44. It will be a self-contained structure comprising two basements and 13 floors above the ground. Regard has been had to the height limitations of the Adelaide City Council and although there has been a minor infringement of the regulations in this respect, the proposal has the Council's approval. It is planned that this and the second stage building will each function as independent units except for a common cable chamber.

45. The building has been designed with a service core at each end, with functional areas between. The column spacing will suit the modular arrangement of standard telephone equipment. The requirement for a clear height of 12 ft 6 ins between the floor and the under-side of the beams is also dictated by the needs of equipment.

46. The main access will open from the entrance court facing Waymouth Street and give direct access to passenger lifts and stairs.

47. A one-way traffic system for vehicular delivery is planned with entry from the private road off Bentham Street and egress to Waymouth Street. Vehicular access to the rear of the Franklin Exchange will be maintained. The drive-through goods entrance will provide access for equipment with service to all floors by goods lift.

48. Building service plant rooms will be located in the basements and on the twelfth floor.

49. Design The site is near the centre of the city in an area zoned for commercial, warehousing and office purposes. The Committee believe that the building will be of pleasing proportions and have an architectural treatment and finish consistent with its prominence and function in a developing section of the city.

50. All elevations will be of equal visual importance and will be treated accordingly. Walls will be faced with precast concrete units to which local stone aggregates will give texture and colour. These units, with deeply recessed vertical joints and horizontal joints at each floor, will add interest and scale to the sheer walls of the almost windowless building. The base of the building will be faced in granite or reconstructed stone.

51. At the eleventh or cafeteria floor level a continuous strip of windows will accent the darker facing which will cap the building and screen the plant rooms behind.

52. Generally, windows will be omitted from equipment areas on all floors to minimise air conditioning running costs. This is also a feature of the Lonsdale Exchange, Melbourne and the Pitt Exchange, Sydney, on which the Committee reported to Parliament in 1963 and 1967 respectively. Vertical windows above the Waymouth and Bentham Street entrance doors will be an architectural feature.

53. Internal Finishes On walls in exchange areas a synthetic coating will be applied directly to the off-form concrete or brick surfaces. Toilet walls will be finished with ceramic tiles. Demountable partitions will be used in areas being occupied temporarily as office accommodation.

54. Most floor areas will be screeded and surfaced with vinyl tiles. Toilet areas will be paved with ceramic tiles. False floors will be provided in the computer area, manual trunk assistance centre and redirection equipment areas to allow for under-floor ducting and ventilation.

55. Ceilings will generally have a plastic sealer applied to the off-form concrete surface. Suspended ceilings will be provided in some selected areas.

56. Structure The frame of the building has been designed to meet the requirements of a telephone exchange including floor loadings of 200 lbs per square foot on equipment floors and a considerable penetration of floors by slots for cables. The Committee were told that, in this instance, the use of steel columns and beams is favoured for reasons of economy.

57. The building is to be supported on cast insitu concrete piers founded on a calcareous sandstone layer which in this area is generally located at about 60 ft.

58. Provision has been made in the structure for the future erection on the roof of a radio transmission tower.

59. Mechanical Services Most of the building including equipment areas and ancillary rooms, the cafeteria and recreation areas will be air conditioned. The main plant will be located on the twelfth floor.

60. Power and battery rooms, the basement and sub-basement, the cable chamber, vehicle access area, plant rooms, lift machinery rooms, toilets and stair wells will be mechanically ventilated.

61. Domestic hot water will be reticulated to basins, sinks and showers and to the cafeteria and kitchen from calorifiers in the boiler rooms.

62. In the cafeteria, kitchen equipment for food preparation, cooking and serving will be provided on a scale sufficient to supply up to 250 hot meals daily and a light refreshment service. Boiling water will be available in each tea preparation room.

63. Two emergency diesel generating sets each of 750 KVA capacity are proposed. One set will have automatic starting and the other remote manual starting. They will be located in the sub-basement with cooling towers on the roof.

64. Electrical Services The main electrical substation will be located in the basement. Separate submains will be provided for essential and non-essential loads. Essential power will be provided from the emergency generating plant in the event of the failure of the mains supply. The emergency plant will also be connected to the Franklin Exchange.

65. Artificial lighting will generally be from fluorescent fittings. General purpose power outlets and distribution boards will be provided as required.

66. Lifts Four automatic passenger lifts, each designed to carry 3,000 lbs (20 persons) at a speed of 500 ft per minute will be located in the service core at the Weymouth Street end of the building. They will serve all floors up to the eleventh under a group supervisory control system. A smaller passenger lift to carry up to 2,500 lbs (16 persons) will operate at the rear of the building. It will serve all floors up to the twelfth and will operate on collective automatic control.

67. A goods lift designed to carry up to 5,000 lbs at 200 ft per minute will also be provided. This lift, which will serve all floors from the rear of the building will be designed to carry equipment racks.

68. Hydraulic Services Water, sewerage and drainage services will be connected to mains in Waymouth Street.

69. Fire Protection The building is to be of fire resisting construction in accordance with the provisions of the South Australia building code and will include two fire isolated stairways.

70. Fire hydrants, small bore hosereels and hand extinguishers will be located at appropriate points. Automatic sprinklers will be provided in parts of the ground floor and basements where water can be tolerated. In equipment and plant areas fire detectors will be provided. The computor area will be protected by a carbon dioxide system operated by smoke detectors.

71. Committee's Recommendation The Committee recommend the construction of the works in this reference.

PROGRAMME

72. The Committee were told that after an approval to proceed is given, it will take about 11 months to complete working drawings and tender documents. Construction of the building is expected to require 24 months after a tender is accepted.

73. We noted that providing this timetable is adhered to and the installation of equipment in the new building proceeds according to plan, there is not likely to be a shortage of subscribers lines nor a deterioration in the telephone service because of the timing of the work.

74. The Committee believe that this matter should be kept under review and if the demand for telephone services grows unexpectedly in the interim the Department of Works should investigate the means of accelerating completion of the building contract. In this connection, reference is made to the substantial savings in time achieved in the construction of the Pitt Exchange in Sydney by fragmenting the building contract.

ESTIMATE OF COST

75. The estimated cost of the project when referred to the Committee was $6 million as follows:

	$
Building work	3,600,000
Mechanical services	1,500,000
Electrical services	520,000
Lifts	380,000
	6,000,000

RECOMMENDATIONS AND CONCLUSIONS

76. 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.

		Paragraph
1.	A NEED IS BEING CREATED FOR ADDITIONAL TELEPHONE EXCHANGE ACCOMMODATION IN THE WESTERN SECTOR OF THE ADELAIDE CITY AREA.	14

		Paragraph
2.	THE SITE IN WAYMOUTH STREET IS ADEQUATE AND WELL PLACED TO MEET THE DEMAND FOR FUTURE EXCHANGE ACCOMMODATION IN THE PERIOD TO ABOUT 1990.	30
3.	AMPLE SPACE IS AVAILABLE FOR EXPANSION BEYOND THAT TIME.	30
4.	THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORKS IN THIS REFERENCE.	71
5.	*IF THE DEMAND FOR TELEPHONE SERVICES GROWS* UNEXPECTEDLY THE DEPARTMENT OF WORKS SHOULD INVESTIGATE THE MEANS OF ACCELERATING COMPLETION OF THE BUILDING CONTRACT.	74
6.	THE ESTIMATED COST OF THE PROJECT WHEN REFERRED TO THE COMMITTEE WAS $6 MILLION.	75

F. Chaney

F.C. CHANEY
Chairman.

Parliamentary Standing Committee on Public Works,
Parliament House,
CANBERRA.

15 August, 1968.