



1974

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Parliamentary Standing Committee on Public Works

REPORT

relating to the proposed construction of a

NEW TELEPHONE EXCHANGE

at

Haymarket
New South Wales

(THIRD REPORT OF 1974)

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

NEW TELEPHONE EXCHANGE
HAYMARKET, NEW SOUTH WALES

R E P O R T

By resolution on 30 July 1974, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report, the proposal to erect a major telecommunications building as a lateral extension of the present Haymarket Telephone Exchange situated in Parker Street, Sydney, New South Wales.

The Committee have the honour to report as follows:

THE REFERENCE

1. The proposal referred to the Committee is for the erection of a tower block comprising a basement, ground and thirteen upper floors on a site adjoining the north side of the existing Haymarket Telephone Exchange with frontages to both Parker Lane and Parker Street, Sydney. Its north boundary abuts the site presently occupied by Parker House which has been acquired for long term development.
2. The proposed building has been designed to accommodate a range of telecommunications equipment, which when installed will be sufficient to meet the estimated needs of the local subscribers area and provide switching facilities to meet the telex and data services predicted for this centre until the year 2000, at which time the value of the equipment is estimated to be \$32 million at current prices.
3. The estimated cost of the proposed work when referred to the Committee was \$7 million.

THE COMMITTEE'S INVESTIGATION

4. The Committee received written submissions and drawings from the Australian Post Office and the Department of Housing and Construction and took evidence from their representatives at a public hearing in Canberra on 21 August 1974. The Committee also received a written submission from the Council of the City of Sydney who expressed satisfaction with the proposal. Prior to the hearing the Committee inspected the facilities at the existing Haymarket Telephone Exchange and the site for the proposed building.

5. The Committee's proceedings will be printed as Minutes of Evidence.

THE EXISTING BUILDING AND FACILITIES

6. The existing facilities are accommodated in a nine-storey building established on an adjacent site to the south of the proposed building. The existing building is not capable of further vertical extension. The available equipment space is generally sufficient to meet development up to the year 1978.

7. The following telecommunication facilities are installed in the existing exchange building.

- Local Automatic Exchange Equipment.

This has a capacity of some 11,000 subscriber services.

- Automatic Telex Switching Equipment.

Capacity is limited to the provision of 8,700 services.

- Message Switching Equipment.

Accommodation is limited to the provision of 10 subscriber services.

- Long Line Equipment.

Accommodation is limited to the provision of 15,000 channels.

- Trunk Switching Equipment.

The existing equipment is capable of meeting current demands. However, as demand increases, future switching for the Haymarket area will be accommodated within the Pitt Telecommunication Complex.

- Tandem Switching Equipment.

This facility will cope with demand for the next few years and will be augmented by equipment at other exchanges in the inner city area to meet the needs of the Sydney network.

NEED FOR NEW AND ADDITIONAL FACILITIES

8. The existing accommodation in the Haymarket Exchange will not meet any of the requirements of the various telecommunications facilities beyond 1978. The expected future development of the various switching elements is as follows.

9. Subscribers' Local Exchange The Haymarket Exchange, in conjunction with the City South Exchange, caters for the requirements of local telephone subscribers in the southern sector of the Sydney City Telephone network.

10. The area surrounding the exchange is presently depressed in character but provides a reservoir of land available for commercial redevelopment to meet the needs of the next 30 years as the northern business precinct reaches saturation levels of land use intensity.

11. The Council of the City of Sydney's Strategic Plan aims at a mixed development of high density, comprising prestige commercial projects, supported by user services such as shops, entertainment, dining and residential facilities. In 1965, there were 3,208 subscribers to the local exchange and it is estimated that by the year 2000 there will be 31,000.

12. Automatic Telex Switching Equipment There has been a continuing high demand for automatic telex switching facilities since the introduction of the service. The Haymarket Exchange facilities will contribute to meeting this demand. In 1965, there were 749 telex services in New South Wales and by the year 2000, there is expected to be 24,200.

13. Automatic Data Switching Equipment This is a public circuit switched data system, similar to telex, providing a two-way transmission over high speed circuits. Overseas trends suggest that a very rapid increase in demand for data switching services, both in number and complexity, can be expected within the next few years. It is estimated that 2,000 automatic data services will be required by 1978 and 50,000 by the year 2000. The Haymarket Exchange will contribute to meeting this demand.

14. Message Switching Equipment This facility has only recently been introduced to Australia and the rate of future demand can only be estimated from trends and forecasts made in both U.S.A. and the United Kingdom. In 1974, four message switching services were operating and this is expected to rise to 85 by the year 2000.
15. Long Line Equipment The long line equipment planned for progressive installation in the proposed building extension will provide the necessary junction channels to meet the network needs of the various facilities. It is estimated that 16,200 long line equipment channels will be required in 1980 and 31,600 by the year 2000.
16. Future Considerations The Committee were informed that the recent growth in telecommunications traffic and associated services has been substantial and it is expected that the trend will continue. The proposed building, in addition to providing local exchange services to the Haymarket area, will also accommodate telex, message and data switching equipment necessary to meet the requirements of the Sydney zone in the National network. The proposed development forms an integral part of the Sydney City Telephone network plan. A principal feature of network planning in all capital cities is the dispersion of network facilities between a number of suitably located exchanges so that interruptions to the network may be minimised in the event of one or more exchanges going out of service at any time.
17. The facilities accommodated in the Haymarket Exchange will be unable to cater for the increasing demand for telecommunication services beyond 1978. The existing nine-storey building is not capable of further vertical expansion and the new exchange is designed to provide the space needed to meet future demands for telecommunication services.
18. Conclusion The Committee agree that the existing facilities are inadequate to meet future requirements and that there is a need to provide a new exchange as a lateral extension to the existing Haymarket Telephone Exchange to cater for future growth in telecommunication traffic in the local, Sydney and National networks.

THE PROPOSAL

19. The proposed extension will accommodate essential additions to the following facilities.
20. Local Exchange This equipment switches and controls all calls originating from and terminating at subscribers located within the prescribed boundary of the Exchange. The area adjacent to the Haymarket Exchange will be progressively developed in the near future and it is expected that the demand for the local subscribers service will increase significantly.
21. Automatic Telex Switching Equipment This equipment will provide additional teleprinter services transmitted through the normal automatic telephone network. It is a low speed service that records, stores and transmits information in conjunction with the private subscriber teleprinter service.
22. Message Switching This equipment provides for the storage and transfer on a "store and forward basis" of low and high speed data information between private customers, government departments and other authorities on a national basis.
23. Transmission (L.L.E.) Facility This equipment involves the derivation, allocation and interconnection of the trunk channels required to meet service needs in respect of telephone, telegraph, message switching, broadcasting and television traffic. The equipment increases the capacity of the bearer and permits its utilisation to provide a multiplicity of telecommunication services.
24. Proposed Location It is proposed to locate the extensions on a site adjoining the northern side of the existing Haymarket Exchange. This site would enable most efficient extension of junction and trunk underground cable reticulation already provided to the existing exchange.

The site is fully serviced and is readily accessible through all forms of public transport. We were told that the construction of the extension to the existing exchange in this area is acceptable to the responsible local authorities.

25. Committee's Conclusion The Committee agree that the functions proposed by the Australian Post Office for the extension to the existing Haymarket Exchange are appropriate to meet the needs of the expanding national telecommunications network.

THE PROPOSED BUILDING

26. Site The site adjoins the north side of the existing telephone exchange and has a total frontage of 33.8 metres to Parker Street and a depth of 25.3 metres to Parker Lane. During the past two years, the original Haymarket Telephone Exchange site has been extended by the acquisition of three commercial properties providing sufficient site area for this proposal and also for long term development by further lateral extension to the north.

27. The properties acquired are -

27-31 Parker Street (Australian Gas Light Company)

25 Parker Street (Kai Wuen)

15-23 Parker Street (Parker House)

The proposed extension will occupy 25-31 Parker Street. Parker House, the adjoining property to the north of the proposed building, was acquired initially to accommodate telecommunication needs after 1997. However, due to a structural fault below sub-soil level, this building will now be demolished.

28. Test boring has indicated that a strip of partly decomposed basalt in the sandstone strata traverses the site on the northern alignment of the new building which would require excessive and costly structural support to Parker House in foundation work and underpinning to make it safe to be retained during and after construction. After careful examination and economic appraisal, it is apparent that Parker House should be demolished prior to the commencement of construction.

29. The Parker House site will facilitate construction and after paving and landscaping will provide some off street parking until such time as the site will be required for a further extension to the Haymarket Exchange complex expected in about 20 years. Parking space will be provided for six official vehicles in the basement of the proposed building.

30. General Planning The proposed building will rise to approximately 71.3 metres and consist of a basement, a ground floor and 13 upper floors with a gross floor area of 12,800 square metres. A pedestrian walkway and Telecommunications Sales Area have been provided at the ground floor level in response to a requirement of the State Planning Authority for the improvement of pedestrian access in the general area; this pedestrian walkway will form part of the pedestrian network development in this precinct.

31. As mentioned previously, the area surrounding the Haymarket complex is generally depressed but the Council of the City of Sydney's Strategic Plan aims at a mixed development of high density, comprising prestige commercial projects supported by user services such as shops, entertainment, dining and residential facilities. A large office development comprising two separate towers of approximately 18 and 35 storeys is planned for the

site to the east. Construction has already commenced on an office development on the block to the south.

32. The lower floors contain the public and heavily staffed areas. Additional space will be provided on the ninth floor to allow the extension of the lunch room and general recreation area on the ninth floor of the existing co-joining exchange building. Because of the importance of the Haymarket Exchange in the State and National telecommunication network, special security features have been incorporated into the basic building design. The main mechanical plant and centralised control equipment for all building services are located on the twelfth floor. Cooling towers and emergency power plant are accommodated on part of the roof area.

33. It is proposed that the building will be occupied in the following manner.

34. Ground Floor The Telecommunication Sales and Information Centre combined with a public pedestrian throughfare will occupy the majority of the ground floor area. By providing this facility, which will be needed in this sector of the city, the Australian Post Office has been allotted floor space ratio bonuses for the proposal under the Council of the City of Sydney's "Development Control and Floor Space Ratio Code". The main pedestrian entry and also access for unloading heavy equipment vehicles will be located at this level. A ramp will provide access to the basement for lighter vehicles.

35. Upper Floors Floors 1 to 11 inclusive will accommodate the various forms of telecommunications equipment proposed together with power and battery rooms, air handling plant, equipment, maintenance area and offices for technical and clerical staff, and staff amenities. The telecommunications facilities to be provided include local subscriber switching, long line transmission equipment, automatic telex and data switching equipment and message switching equipment.
36. Twelfth Floor This floor will contain the main mechanical plant and centralised control equipment for all building services.
37. Roof (Thirteenth Floor) Part of the roof area will accommodate cooling towers and emergency power plant.
38. Amenities The Committee were informed that the building has been designed to incorporate amenities in accordance with the relevant ordinances, the amenities code and the normal Post Office standards.
39. The lunch room and general recreation area on the ninth floor of the existing co-joining exchange building, with minor alteration and some additional space provided within the ninth floor of the proposed building, will be capable of providing a cafeteria serving light refreshments for the staff of the combined Haymarket Exchange complex.
40. Toilets with lunch and rest rooms will be provided at ground level for the staff of the Telecommunication Sales and Information Centre.

STRUCTURE

41. The structural system has been designed to meet the special functions and requirements of the building, including heavy floor loadings for equipment floors, building plant loads, provision of slots in floors for cable penetration and the need to position columns to suit the spacing of equipment racks. Design studies have shown that reinforced concrete construction will be most suitable and economical for this building.

Foundations will be of reinforced concrete founded on rock. Provision has been made for necessary underpinning of the existing exchange building.

42. External Finishes All faces of the building will be clad with precast concrete units which will accent the verticality of the structure. Glazing will be provided in vertical panels of similar width in positions in which natural lighting is desired. The ground floor area will be given an open treatment using large glazed panels.

43. Internal Finishes Plain smooth internal surfaces which will not generate or harbour dust will be used throughout the building. All equipment areas will have a minimum maintenance coating applied to walls. Floors will be screeded level and finished with vinyl flooring to equipment and general areas. A waterproof deck will be laid over the concrete slab on the thirteenth floor. Toilet areas will have ceramic tiles on floors and walls. Equipment, amenity areas and toilets will have painted off-form concrete ceilings. Corridors, pedestrian link and the Telecommunication Sales area will have suspended ceilings.

44. Mechanical Services Air conditioning will be provided to serve all equipment and other normally occupied areas. Central plants located on the twelfth floor will provide chilled water and hot water to the individual air handling plants located throughout the building.

45. Equipment areas, where the control of temperature and relative humidity is to meet the high reliability requirements of telecommunication equipment, will be served by air handling plant of high reliability. Conventional air handling plant will serve areas where there are no special technical requirements. Mechanical ventilation will be provided to the power rooms, locker rooms, toilet areas, basement, refrigeration plant room on the twelfth floor and to the diesel room on the thirteenth floor. Ventilation plants will be located on the twelfth and thirteenth floors.

46. The emergency generating plant in the adjoining exchange building will have spare capacity when the new building is completed, sufficient to provide emergency power for both buildings for some years. Space provision has been made in the new building for the inclusion of additional emergency power plants when the building load warrants extra capacity.

47. Mobile hoisting facilities will be used on the twelfth and thirteenth floors for the refrigeration equipment and the diesel generating sets.

48. Miscellaneous equipment will include hot water supply to all sinks and basins, refrigerated drinking fountains, tea preparation and lunch room equipment.

49. Electrical Services Power will be supplied from the Sydney County Council mains. To cater for the high reliability requirements of the equipment, there will be duplication of critical electrical components within the building. On the twelfth floor, a centralised control room will be provided for the supervisory system to monitor mechanical and electrical services.

50. Illumination will be provided from fluorescent light fittings, located to suit the needs of the project, to the standards of the S.A.A. lighting code. A master clock will be provided with slave clocks suitably located on each floor.

51. Lift Services Two passenger lifts and one goods lift are to be provided, each serving the basement, ground and floors one to twelve inclusive, excepting that the goods lift will service the thirteenth floor.

52. Hydraulic Services The building will have water, sewerage and drainage services connected to mains services in Parker Lane. Pumping facilities will be provided within the building for sewerage, site drainage, fire protection and fuel as required.

53. Fire Protection The building is of fire resisting construction and has fire isolated stairways. The stair in the existing building will also serve as a fire escape to the new building from the ninth floor downwards. Fire services and equipment include

- a preaction dry pipe sprinkler system in the telecommunication equipment areas and a conventional wet pipe sprinkler system in the remainder of the buildings;
- hydrant and hose reel coverage on all floors;
- hand fire extinguishers located throughout the building in accordance with normal standards;
- alarm calls from the sprinkler system and from manual alarm points provided on all floors at appropriate locations will be connected to the fire brigade;
- manual call points.

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

ESTIMATE OF COST

55. The estimated cost of the work when referred to the Committee was \$7 million made up as follows:

	\$
Mechanical services	2,200,000
Electrical services	600,000
Lifts	200,000
Hydraulic services	200,000
Building works including demolition, alteration and site works	<u>3,800,000</u>
	<u>7,000,000</u>

56. During the hearing, the Committee were informed that the revised estimate of the cost of the project is \$7.5 million, due to the national wage increases and increases in building trades awards and cost of materials since the preliminary estimate was prepared.

PROGRAMME

57. It is estimated that contract documents necessary for the construction of the project could be prepared for tenders to be invited early in 1975.

58. Construction of the building will require a minimum of twenty-four months after the acceptance of a tender.

ENVIRONMENTAL CONSIDERATIONS

59. The Committee are aware that detailed consideration has been given to the effect of the proposal on the immediate environment and is satisfied that no adverse environmental impact is likely to occur.

OTHER OBSERVATIONS

60. Fire Protection The Committee noted that a preaction dry pipe sprinkler system will be installed in telecommunication equipment areas, together with a smoke detector system to actuate the sprinkler heads at the point where the fire has occurred. Possible damage to telecommunication equipment by inadvertent discharge is a constant problem in buildings of this nature. The Committee noted with satisfaction that the Department of Housing and Construction is planning to test a new fire detector and alarm system developed jointly by the Australian Post Office and the C.S.I.R.O. for possible installation in buildings such as the Haymarket Exchange. It is claimed that this device is more sensitive and versatile than conventional systems.

61. Windowless Design Concept In its report to the Parliament on the Telephone Exchange at Windsor, Victoria (Second Report of 1973) the Committee suggested that the Australian Post Office should carry out an in-depth study of effects on staff of working in a windowless environment. As a result, the Australian Post Office has now modified its windowless design concept to allow a minimum provision of windows into equipment areas.

62. Changing Employment Pattern The Committee were told that changes in the pattern of employment has meant that women are now being employed in technical areas in telephone exchanges. This building has been designed to allow for the provision of additional facilities for female staff.

RECOMMENDATIONS AND CONCLUSIONS

63. 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. THERE IS A NEED TO PROVIDE A NEW TELEPHONE EXCHANGE AS A LATERAL EXTENSION TO THE EXISTING HAYMARKET TELEPHONE EXCHANGE TO CATER FOR FUTURE GROWTH IN TELECOMMUNICATION TRAFFIC IN THE LOCAL, SYDNEY AND NATIONAL NETWORKS. 18
2. THE COMMITTEE AGREE THAT THE FUNCTIONS PROPOSED BY THE AUSTRALIAN POST OFFICE FOR THE EXTENSION TO THE EXISTING HAYMARKET EXCHANGE ARE APPROPRIATE TO MEET THE NEEDS OF THE EXPANDING NATIONAL TELECOMMUNICATIONS NETWORK. 25
3. THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORK IN THIS REFERENCE. 54
4. THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS \$7.0 MILLION. 55



(L.K. JOHNSON)
Chairman

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19 September 1974.

