

1973

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

*Parliamentary Standing Committee on Public Works*

## REPORT

relating to the proposed construction of

# EXTENSIONS TO WINDSOR TELEPHONE EXCHANGE

Melbourne, Victoria

(SECOND REPORT OF 1973)

## C O N T E N T S

	<u>Paragraph</u>
The Reference	1
The Committee's Investigation	3
Windsor Telephone Exchange	
Location	5
Buildings and Facilities	6
Role	8
The Need	10
Local Subscribers Exchange	11
Tandem Exchange	12
Trunk Switching	13
Long Line Equipment	14
Manual Assistance Services	15
Long Term Development	16
Limitations of Existing Buildings	17
Committee's Conclusion	18
The Proposal	
The Site	21
General Planning	23
Space Allocation	24
Amenities	31
Structure and External Treatment	32
Internal Finishes	33
Mechanical Services	34
Electrical Services	35
Lifts	36

Paragraph

Fire Protection	37
Hydraulic Services	38
Car Parking	39
Local Authorities	40
Environmental Impact Statement	41
Committee's Recommendation	42
Estimate of Cost	43
Programme	44
Internal Environment	47
Recommendations and Conclusions	52
Sketch of the Proposal	

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

EXTENSIONS TO WINDSOR TELEPHONE EXCHANGE  
MELBOURNE, VICTORIA

R E P O R T

By resolution on 12 April 1973, the Senate referred to the Parliamentary Standing Committee on Public Works for investigation and report to the Parliament the proposal to construct a telephone exchange building at Windsor, Victoria.

The Committee have the honour to report as follows:

THE REFERENCE

1. The proposal referred to the Committee is for the erection of a building comprising a basement, ground and six upper floors on a site adjacent to the existing exchange between Peel and Albert Streets, Windsor. The new building will provide a gross floor area of 180,000 sq. ft and is to accommodate a wide range of telecommunication facilities to meet the estimated twenty-year needs of the local subscribers area and assist in meeting the developing trunk services of the City of Melbourne.
2. The estimated cost of the proposed work is \$6 million.

THE COMMITTEE'S INVESTIGATION

3. The Committee received written submissions and drawings from the Australian Post Office and the Department of Works and took evidence from their representatives at a public hearing before a Sectional Committee

in Canberra on 7 May 1973. The Committee also received a written submission and took evidence from a representative of the Victorian Branch of the Postal Telecommunication Technicians' Association (Australia). Prior to the public hearing the Committee had inspected the site proposed for the new building and the installations and facilities in the existing exchange buildings.

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

#### WINDSOR TELEPHONE EXCHANGE

5. Location The telephone exchange is located near the junction of Peel and Albert Streets. The location is regarded by the Australian Post Office as ideal for further development from a technical view as it is located at the practical cable density centre of the local subscribers area and major trunk and junction underground cable routes converge on the exchange.

6. Buildings and Facilities The existing exchange complex comprises two adjoining buildings. Both buildings are of brick construction, one being erected in 1917 to house the original manual exchange and the other in 1938. The older building now contains a Post Office, manual assistance centre providing service difficulties facility and directory assistance information, subscribers trunk equipment and staff amenities areas. The other building accommodates local subscribers equipment, tandem and long line equipment associated with the local service area.

7. The local exchange equipment has approximately 9,000 subscribers connected at present and space is available for additional equipment to cater for a maximum of 10,600 subscribers. The existing tandem exchange

equipment is of the crossbar type and with additional equipment planned to be installed in the near future, will reach a capacity of 5,000 terminations. The manual assistance centre currently has 65 operator positions and in association with those at the Hawthorn Exchange, provides for Melbourne subscriber services in directory information, interception, service difficulties and faults.

8. Role The Post Office proposes that the Windsor Exchange will become a key point in the Victorian sector of the national trunk network. As such it will be required to perform several separate functions. These are:

- (i) the interconnection by means of appropriate automatic switching equipment of subscribers services in accordance with established transmission standards. To carry out this function, the centre will contain the following specific facilities:
  - a local exchange which switches and controls all calls originating and terminating between subscribers located within its boundary;
  - a tandem exchange which switches transit traffic either between a group of local exchanges, to one or more other tandem exchanges, or alternatively to a trunk exchange;
  - a trunk exchange which switches all trunk traffic either directly by means of subscriber dialling or alternatively through a manual assistance exchange;
  - a manual assistance exchange which permits the interconnection of trunk calls by telephone operators and additionally provides a wide range of subscriber assistance services;

- (ii) provision of transmission facilities which involve the derivation, allocation and interconnection of trunk channels required to meet service needs in respect of telephone, telegraph, broadcasting and television traffic.

9. It is proposed that Windsor will become the second of three main centres to meet the needs of Melbourne telecommunications traffic up until the end of this century. The first centre has been established in the Lonsdale Exchange which at present is the main trunk switching centre for the whole of Victoria. The third centre is expected to be constructed in the north-eastern sector of the city probably in 1985. Decentralization of major essential facilities to this degree is regarded essential by the Post Office to avoid heavy concentrations of transmission facilities and other services.

#### THE NEED

10. This proposal is to provide a facility which will be progressively installed with equipment to meet the estimated twenty-year needs of the local area and to assist in meeting the trunk service requirements in the City of Melbourne until about 1985 when it is expected that a third major centre will be established. The facilities required to be replaced and supplemented under the proposal are described in the following paragraphs.

11. Local Subscribers Exchange The Windsor local subscribers area has in recent years been subject to extensive redevelopment in the form of multi-storey dwellings, commercial and business office development. With such significant development, mainly high rise, there has been a considerable demand for new subscriber connections. Connections are expected to increase from the present 9,000 to 16,000 by 1985 and to about 19,000 by 1995.

Space available in the existing exchange will be able to cater for 10,600 subscribers only and this capacity is expected to be reached by the end of 1973. It will be necessary to relocate some facilities in the exchange to allow the installation of additional equipment as a temporary expedient until the proposed new building can be equipped in 1976.

12. Tandem Exchange Installed equipment is of the crossbar type and with additional equipment planned to be installed in the near future is expected to cope with demand until early 1977. Subscriber growth in the tandem exchange area is expected to reach 256,300 by 1980 and 352,900 by 1995. This demand will require a total of 10,000 tandem terminations together with associated switching equipment. However, the existing building can provide for 5,000 terminations only.

13. Trunk Switching Whilst the national average growth per year in trunk calls is 13%, for the Melbourne zone it is 16%. To cater for this substantial growth, a further 50,000 trunk line terminals will be required in addition to those already installed and proposed for the Lonsdale Exchange, the only major trunk centre in the network at present. This capacity will cater for expected growth up until 1985 when it is planned that the third major centre will be brought into operation.

14. Long Line Equipment Trunk circuits are connected through long line equipment to the terminations of automatic trunk switching equipment. Long line equipment is also required for circuits associated with the local and tandem switching equipment in the building. The Post Office estimates that 14,000 channels of long line terminating and amplifying equipment will be required by the end of the century.



15. Manual Assistance Services With the development of both local and trunk traffic handled by the Melbourne zone, there is an associated need to increase manual assistance services to meet the needs of persons who prefer not to use subscriber trunk dialling facilities (STD) and for expected growth in demand for user services. Two hundred positions will be required in the Windsor Exchange by 1995. These positions will cover the services of trunk assistance, country and metropolitan directory information, service difficulties and faults and interception.
16. Long Term Development It is proposed to progressively phase out of service the telephone equipment in the old buildings as the new exchange is equipped. These structures will be demolished by about 1990. The sites covered by the old buildings together with additional adjacent properties which will be purchased as they become available will be held for future development.
17. Limitations of Existing Buildings The existing buildings were designed to house relatively unsophisticated equipment by modern standards and the scope for coping with further technical advances is thus extremely limited. Further, we were told that neither building is capable of economic vertical expansion to provide more space for even short term requirements.
18. Committee's Conclusion It was evident from the enquiry that at present rate of growth of subscribers services, all accommodation in the existing buildings will be fully utilised by 1976 after allowing for short term expedients for expansion of certain facilities. It was further evident from the enquiry and the site inspection that the buildings are not suitable for modern telecommunications equipment and cannot be extended.

19. The Committee therefore agreed that there is a need to provide a new telecommunications facility to cater for future growth in subscriber and trunk services. We were also of the opinion that it is appropriate to plan the new exchange as a major trunk switching centre in the Melbourne network.

20. In view of the present concentration of cabling at the Windsor site, including major trunk circuits, the Committee agree that it is suitable for the establishment of a major telecommunications facility.

#### THE PROPOSAL

21. The Site The site selected for the new exchange is adjacent to the existing buildings. It has a frontage of 298 ft to Peel Street, 278 ft to Albert Street and a depth of 165 ft, is relatively flat and is now virtually cleared of previous development. It is owned by the Commonwealth.

22. The site is well served by public transport including trains, trams and bus services. It has access from both streets and is close to Dandenong Road, a major road outlet from the City of Melbourne. The surrounding area is predominantly residential in character with considerable retail business development. Establishment of major exchange facilities is not expected to generate any traffic congestion.

23. General Planning The almost square building will be set back 1 ft from Albert Street and 14 ft from Peel Street. Landscaping will be provided along Peel Street and a portion of the western boundary. The building will rise approximately 122 ft to become the highest in its immediate surroundings and will be readily viewed from most angles. The design features strong elevational form appropriate to the building's scale and prominence.

24. Space Allocation Because of the importance of this exchange in the State and national communications network, the disposition of the various facilities has regard to established principles of security and special features have been incorporated in the basic building design. Generally, air handling plants serving equipment areas will be located in plant rooms provided on all floors. The balance of the areas on each floor will be occupied by the following main facilities.

25. The major portion of the basement will be used for official car parking. A cable chamber will extend along the eastern wall so as to permit cable entry from either street. Also in the basement will be located an electricity supply substation and locker/change facilities for staff working in the manual assistance centre.

26. The ground floor will be occupied by the manual assistance centre, its amenities and operational management areas and the main street entrance. The main distributing frame and testing positions will also be located at this level.

27. The first and second floors will be progressively occupied by local exchange and tandem equipment.

28. The third floor will contain long line equipment and a proportion of the trunk switching equipment requirement.

29. The fourth and fifth floors will be progressively occupied by automatic trunk switching equipment except for an area on the fifth floor allocated for administrative staff and a lunch room.

30. The sixth floor will be utilised for the central air conditioning plant, central control facility for building services, emergency power generators, a workshop and a staff recreation area.

31. Amenities The building will incorporate amenities in accordance with relevant local ordinances, the Public Service amenities code and relevant Post Office standards.
32. Structure and External Treatment The building will have a reinforced concrete frame and slab floors. External walls will be of light colour clay bricks with exposed concrete columns and beams on the ground floor. External treatment will feature dark bronze finish aluminium louvres and windows in selected locations.
33. Internal Finishes Finishes will be selected for economy, minimum maintenance and dust free properties. They will include vinyl paint finish and vinyl floor tiles generally throughout with ceramic and granolithic tiles as appropriate for toilets and service areas. The manual assistance centre will be carpeted and acoustically treated.
34. Mechanical Services Equipment and occupied areas will be air conditioned to provide the required temperature and humidity controls needed for equipment and personnel in each area. Toilets, locker rooms, basement car park, the sixth floor plant room and other areas not requiring air conditioning will be mechanically ventilated. Mechanical plant to be installed in the building will include four water chillers, two oil fired boilers, air handling plants, domestic hot water supply, boiling water units and equipment hoists. Initially two and ultimately three diesel generating sets will be provided for emergency power.
35. Electrical Services The State Electricity Commission of Victoria will instal its power supply equipment in substation rooms in the basement and the sixth floor. Fluorescent lighting will be installed throughout to provide illumination in accordance with the codes of the

Standards Association of Australia, except for telecommunication areas where lighting will be to the special standards required by the Post Office.

36. Lifts Two lifts, one passenger and one goods/passenger, will be installed.

37. Fire Protection Early warning detectors will be provided in equipment areas and other areas will have thermal detectors. The basement car park will be provided with an automatic fire sprinkler system. Other protection items will include hydrants and small bore hose reels and portable extinguishers. Provision will be made for smoke venting of occupied areas.

38. Hydraulic Services Water, sewerage and drainage services will be connected to existing Council mains. Water storage and pumps will be provided within the building to maintain adequate water pressure.

39. Car Parking Twenty-five spaces will be provided in the basement for official vehicles. Seven spaces will be provided on the site and will be available for use by staff. It was noted that a small amount of unrestricted off-street parking is available nearby.

40. Local Authorities The Committee noted that in two main aspects the proposed building and its facilities are not fully in accordance with the normal requirements and regulations of the Council of the City of Prahran. The two matters relate to the number of off-street parking spaces to be provided for staff use and the height of the building. We were told that the Council had been kept informed about the proposal during its design development. Advice was received from the Council that it did not wish to make a statement or present evidence to the Committee.

41. Environmental Impact Statement An environmental impact study on this proposal was prepared jointly by the Australian Post Office and the Department of Works and the report on their findings was presented as evidence. The matters covered by the report are visual impacts, building operations, noise, wind effects and smoke emissions, waste disposal, building services, public transport, parking and traffic flow, economics and local authorities requirements. From the comprehensive studies made, the Departments concluded that the project would not have any significant detrimental effect on the environment. Impact statements are a relatively recent requirement for major proposals and as yet the administering departments have not set down specific guidelines for sponsoring departments and the Department of Works. The Committee noted that impact statements will not be mandatory until January 1974. The Committee therefore record their appreciation of the efforts by officers of the Post Office and the Department of Works in providing the impact statement for this proposal.

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

ESTIMATE OF COST

43. The estimated cost of the work when referred to the Committee was \$6 million made up as follows:

	\$
Building works	2,880,000
Mechanical services	2,660,000
Electrical services	460,000
	6,000,000
	6,000,000

PROGRAMME

44. The Post Office requires the building to be completed by the end of 1975 to allow progressive installation of equipment in accordance with subscriber growth demands and development of tandem and trunk networks.

45. The Department of Works' representatives stated that construction time will be approximately 27 months after acceptance of a tender and advised that to enable the building to be completed on time, tenders will need to be invited during July 1973. It was noted that the Department had, in order to adhere to this programme, obtained approval to proceed with detailed design and tender documentation in advance of the Committee's report.

46. In this regard, the Committee draws attention to remarks made in previous reports pointing to the need for the Post Office to take appropriate action with regard to its forward planning to avoid the necessity for such action in the future.

INTERNAL ENVIRONMENT

47. In common with other telephone exchanges constructed in recent years and currently being designed, both in Australia and overseas, the building will be essentially a "windowless" structure except in this instance for the ground floor area. This practice has been generally adopted to provide, economically, the critical environmental conditions that are required for modern complex telecommunications equipment. This requirement will become more critical as new automated equipment is developed and greater use is made of computers for data transmission and other services.

48. The absence of windows in the design provides for considerably improved insulation against solar heat load and ensures against excessive loss of internal heat at other times.

49. It was suggested by the witness from the Postal Telecommunication Technicians' Association that lack of windows in modern telephone exchanges can cause considerable emotional problems to persons required to work in such environments - related to the necessity for full artificial illumination in the absence of natural light from windows. It was recommended that these aspects be studied in depth before proceeding further with this type of building.

50. In the case of the Windsor Exchange, the floor which will be occupied by the greatest number of people will be the ground floor where the manual assistance centre is to be located. In this area, some windows will be provided and with other special facilities will ensure a pleasant working environment. On higher floors certain areas will be glazed.

51. Whilst recognising the possibility of detrimental effects to people required to work long hours in buildings of this type, the Committee were of the opinion that insufficient evidence had been presented to date which would warrant the action recommended. However, it is suggested that the Post Office, in association with its various employee associations, might examine this matter further to decide whether a detailed enquiry is warranted.




RECOMMENDATIONS AND CONCLUSIONS

52. 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 TELECOMMUNICATIONS FACILITY TO CATER FOR FUTURE GROWTH IN SUBSCRIBER AND TRUNK SERVICES. | 19 |
| 2. | IT IS APPROPRIATE TO PLAN THE NEW EXCHANGE AS A MAJOR TRUNK SWITCHING CENTRE.   | 19 |
| 3. | THE SITE IS SUITABLE.   | 20 |
| 4. | THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORK IN THIS REFERENCE.   | 42 |
| 5. | THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS \$6 MILLION.  | 43 |

  
 (W.J. Fulton)  
Chairman.

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

10 May 1973.

