

1971

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Parliamentary Standing Committee on Public Works

REPORT

relating to the proposed construction of a

COMMUNICATIONS BUILDING

at

Bendigo, Victoria

(TENTH REPORT OF 1971)

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

COMMUNICATIONS BUILDING
BENDIGO, VICTORIA

R E P O R T

On 12 May 1971, the Senate referred to the Parliamentary Standing Committee on Public Works for investigation and report to the Parliament, the proposal for construction of a communications building at Bendigo, Victoria.

The Committee have the honour to report as follows:

THE REFERENCE

1. The proposal involves the construction at Bendigo of a building with a ground and three upper floors as the first stage of a telecommunications complex which will be the parent trunk switching centre for a large and rapidly developing area. Accommodation will be provided for trunk line and automatic trunk switching equipment, local subscribers' services, tandem switching and a manual assistance centre.
2. The first stage building is designed to meet requirements until about 1995 when a four floor vertical extension is proposed. Longer term planning allows for a lateral extension on the same site.
3. The work in this reference is estimated to cost \$1.7 million.

THE COMMITTEE'S INVESTIGATION

4. The Committee received written submissions and drawings from the Postmaster-General's Department and the Department of Works and took evidence from their representatives at a public hearing in Bendigo. At that time, we also heard evidence from the Mayor of the City of Bendigo, the Bendigo Development Committee and Mr. A.D. Kennedy, the Federal Member for Bendigo.

5. We inspected the existing exchange in the Post Office building and the site for the proposed complex.

THE NEED

6. The Proposal Because of its location in relation to existing and proposed broadband bearer routes, Bendigo is planned to become a centre capable of switching, under peak load or emergency conditions, the inter and intrastate trunk traffic normally handled by the main exchange in Melbourne. Accordingly, the accommodation required is somewhat greater than that needed in most provincial cities. The need for the accommodation for these vital facilities is the reason for the urgency of the new building.

7. The new complex is to be primarily established as one of the most important of the twelve secondary switching centres for Victoria. It will handle all trunk line traffic for Bendigo, including the automatic trunk switching facilities required for development of S.T.D. in the area, together with associated subscribers' manual assistance facilities. Additionally, the manual exchange will provide other services such as 'changed number and redirection', 'person to person' calls and 'directory information'.

8. Bendigo is also developing as a major broadband centre for Victoria. It is the geographical centre of existing or proposed broadband bearers and these will ultimately link all country automatic trunk switching exchanges in the State. This makes it a logical interconnecting point on capital city links with Adelaide and Perth to the west, Canberra, Sydney and Brisbane to the north and Melbourne and Hobart to the south.

9. A radio tower rising 350 ft above ground level will be required in the future to carry the antenna systems for the planned development of the radio microwave broadband bearers. Provision is being made in the structural design of the building for the tower to be erected on the roof over the second stage of construction or alternatively the site will permit the tower to be erected as a free standing structure if required.

10. The most modern equipment using the principles of electronic computerised switching systems and "self scan display" manual assistance boards is to be installed. Bendigo will be one of the first secondary switching centres in Australia to operate with this equipment. New generation local subscribers equipment and tandem switching facilities will eventually replace the existing exchange.

11. Existing Facilities The present trunk exchange, trunk line equipment and operator controlled trunk switching facilities which are in the Post Office building are outdated and only permit manual switching of trunk traffic. The provision of full S.T.D. facilities requires the installation of modern trunk switching equipment.

12. Trunk call manual assistance is now handled by a number of centres located at Bendigo, Castlemaine, Maryborough, Euchuca, St. Arnaud and Kerang, supplemented by several smaller minor exchanges in the secondary area.

These exchanges are equipped with obsolescent switchboards which will be incapable of economically handling the increase in traffic expected beyond 1975. They are ultimately to be eliminated and the switching facility located in the new building.

13. Radio relay equipment is installed in a building about a mile north-west of the proposed site. Equipment space in this building is expected to meet demands for some time, but the centralisation of all telecommunications facilities including the broadband radio bearer terminals in the new complex will be essential in the future for reasons of economy and efficiency.

14. The local subscribers' exchange building at the rear of the Post Office was extended recently and now has a capacity for 10,000 lines of crossbar equipment which will be fully utilised by the 1990s. The Committee noted, however, that the equipment will not be adequate to meet the total demand in the Bendigo network and it is foreseen that the installation of electronic local equipment will commence in the proposed new building by about 1980. In addition to providing for a component of the subscribers growth, the latter equipment will permit the progressive recovery from the existing building of the early type of step by step equipment which by the 1980s will be approaching the end of its economic life.

15. Automatic minor trunk switching and tandem facilities have also been established in the existing building and will be extended in that location for the time being. When justified by the growth of the Bendigo network, those facilities will also be incorporated in the electronic local equipment in the new building. The existing and proposed buildings have

thus been planned to provide for combined growth of local tandem and minor switching functions for more than 20 years.

16. The Committee observed that the building complex which houses both the postal operations and much of the telecommunications equipment and associated facilities has been extended as fully as the site permits. The point has now been reached where congestion and overcrowding on the site and in the buildings is occurring. Further expected growth in either service will only accentuate this unsatisfactory situation. The establishment of a separate communications building will overcome the problem and allow expansion of both services as the demand warrants and in locations appropriate to their needs.

17. Subscriber Growth Bendigo, one of the largest inland cities in Australia is at the hub of Victoria's arterial road and rail links. It is 92 road miles north of Melbourne and with its fringe urban areas had a population of 42,000 in 1966. The present population is estimated at 47,000 and this is expected to increase to 75,000 by 1995.

18. The immediate justification for the proposed building has been the increase in trunk telephone traffic which over the past seven years has averaged 11.89% per annum. This compares with the Victorian country average of 11%.

19. The following table shows the present and estimated growth over the next 25 years of subscribers in the Bendigo local exchange and secondary switching areas.

	<u>1970</u>	<u>1975</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>
Bendigo Local Exchange Area	7,300	9,100	10,850	12,600	14,500	16,300
Bendigo Secondary Exchange Area	33,000	38,700	44,300	50,300	56,600	63,000

20. The trunk equipment in the new building is planned to handle all traffic routed to and from and through Bendigo. This traffic is expected to increase from 4.2 million calls in 1975 to 6.7 million in 1980, 10.8 million in 1985, 17.3 million in 1990 and to 27.4 million in 1995. It will require equipment with 1,900 terminations in 1975, 2,550 by 1985 and about 4,200 by 1995. To serve these terminations, the present nine bearers will need to be increased to 20 by 1980 and 31 by 1990. Each bearer will provide approximately 900 telephone channels.

21. The new manual assistance sector is planned to cater for the whole of the secondary switching area. The planned cutover from existing minor exchanges during 1975 and 1976 will require 46 positions initially reducing to about 41 positions by 1980 due to the impact of S.T.D. penetration in the area. Subsequently, the normal increase expected in trunk traffic will necessitate provision of 53 positions by 1990 and some 68 by 1995.

22. The Committee were told that to augment the existing exchange, 2,000 lines of local subscribers' electronic equipment will be installed in the new building in 1980 increasing to about 8,000 lines by 1995.

23. Committee's Conclusion Because of the shortcomings of the present facilities and their inability to meet the needs of the future, the Committee are agreed there is a need for the work in this reference.

THE SITE

24. The Commonwealth-owned site has a frontage of 242 ft to Short Street and 61 ft to High Street and an area of one acre $\frac{3}{4}$ perches. It is bounded on the south-east by Bendigo Creek and on the north-east and north-west by private property. The site is presently occupied by old buildings which will be demolished. It is at the practical centre

of the exchange area it is to serve being situated one third of a mile from the post office and on the fringe of the commercial centre.

25. To ensure provision for long term development in this area, it is proposed to acquire the property on the corner of High and Short Streets which abuts the north-western boundary of the site when it is available.

26. The Committee concluded that the site selected is suitable.

OCCUPATION OF THE PROPOSED BUILDING

27. The evidence submitted to the Committee showed the space in the proposed building being occupied in the following way:

Ground Floor Mostly this floor will accommodate mechanical plant associated with air conditioning and building services. A cable chamber designed to cater ultimately for eight equipment floors, an electricity substation, emergency power generators, and an area for uncrating telephone switching equipment will be provided. Other areas will be used as interim office accommodation until required for future additional equipment.

First Floor Located on this floor will be local exchange and tandem switching equipment, its associated control apparatus, power and battery plant and air handling plant. The main distributing frame for connection to equipment areas will be located at this level as will staff amenities, supervisory staff and network performance facilities. The area required for local exchange and tandem switching equipment will be used for interim office accommodation until about 1980.

Second Floor This floor will accommodate automatic trunk switching equipment, trunk line and radio apparatus, fault despatch, technicians' training areas, and staff amenities. Separate air handling plant will also be provided.

Third Floor Ultimately the manual assistance centre and associated telephonists' lockers, rest rooms and amenities will occupy the whole of this floor. However, initially these facilities will require only about half the overall floor area. The balance will be used for a lunch room, Postal Institute activities and other staff amenities until the building is extended. Air handling plant will also be installed on this floor.

AMENITIES

28. The total staff of the exchange when fully equipped by 1995 will be 180 of whom 160 would be the maximum number on duty at the one time. The Committee were told that amenities to be provided in the building will comply with local ordinances and the standards laid down in the amenities code of the Commonwealth Public Service. Included will be locker/change rooms, toilets, ablution areas, first aid and rest rooms and a lunch room.

THE BUILDING PROPOSAL

29. Design As the proposed building will adjoin small scale commercial buildings and will therefore dominate the area due to its size and height, all elevations will be of equal visual importance. Brickwork has been chosen as the facing material being appropriate to the design of the building and for reasons of economy. The reinforced concrete frame

will, however, be partially exposed to provide relief and interest. Windows will generally only be provided in office areas thus reducing the solar heat loads on the air conditioning system.

30. Cable entry to the building will be from Short Street and equipment areas will be located along the western side of the building directly above the ground floor cable chamber. Cable slots along the west wall will provide vertical access to the equipment floors above. The floor to floor height of about 15 ft 9 in. has been dictated by the height of the equipment and the requirements of air supply ducts and the floor structure.

31. Vehicle access to the building will be from Short Street via a 16 ft wide driveway along the eastern side of the building. Heavy equipment will be offloaded from vehicles into the ground floor uncrating area and transported by the goods/passenger lift to the upper floors. Staff vehicles will be able to enter the site from High Street. Pedestrians will enter the building from Short Street through the front entrance or from the car park at the rear through an escape stair.

32. Structure and Foundations Site investigations indicate suitable foundation rock at about 20 ft below the surface. The structure will be of reinforced concrete on bored pile footings and provision will be made for the future vertical extension and for erection of a radio telephone tower should this be required on the roof of the building.

33. The roof will have steel decking over a concrete slab.

34. Internal Finishes Equipment room walls will have a vinyl finish applied to the cement rendered surface. Toilet walls will be ceramic tiled.

Elsewhere, walls will be finished with hard plaster and painted except in the manual assistance centre where they will have an acoustic treatment.

35. Floors will be screeded and finished with vinyl tiles, except in the cable chamber, substation and service areas where they will be granolithic, and in the toilets where they will be ceramic tiled. The manual assistance centre which will require a false floor for ready access to cables will have lint-free anti-static carpet tiles.

36. Equipment area ceilings will have a vinyl finish applied to the off-form concrete surface and occupied areas will have suspended ceilings.

37. Mechanical Services Except for toilets, plant rooms, power and battery rooms, and stairwells, which will be mechanically ventilated, the building is to be air conditioned.

38. Emergency generating plant consisting of two 400 kW capacity automatic start diesel generating sets will be installed. Space is allowed for an additional future set of similar size. Miscellaneous equipment will include a domestic hot water system, drinking water coolers, sump pumps and mechanically operated hoists.

39. Electrical Services A substation and a main low voltage switchboard will be installed on the ground floor. Space will be provided for future extensions. Electricity will be distributed throughout the building by a vertical cable duct and separate sub-mains will be provided for essential and non-essential loads.

40. Lighting will generally be fluorescent complying with the S.A.A. lighting code, except in equipment areas where it will conform to Post Office standards.

41. Lifts One passenger lift, and a goods/passenger lift designed to carry telecommunication equipment racks will be installed. The two lifts will serve all floors of the first stage building and will be capable of extension to serve future vertical additions.
42. Fire Protection The building will be of fire resistant construction. Early warning detectors will be provided in equipment areas whilst other areas will have thermal detectors. Hydrants and small bore hose reels will be located at appropriate points.
43. Hydraulic Services Water, sewerage and drainage services will be connected to the city mains and water storage facilities and pumps will be provided within the building to ensure continuity of supply for all purposes.
44. Parking and Landscaping The car park at the rear of the building, mainly on the site of the future lateral extension, will provide some 68 spaces for the use of both official vehicles and staff. The area between the building and Bendigo Creek will be landscaped.
45. Committee's Conclusion The Committee recommend the construction of the work in this reference.

ESTIMATE OF COST

46. The estimated cost of the work when referred to the Committee was \$1.7 million made up as follows:

	\$
Building work	978,000
Mechanical services	510,000
Electrical services	100,000
Other engineering services	112,000
	1,700,000
	1,700,000

PROGRAMME

47. After an approval to proceed is given, working drawings and tender documents completed and a contract let, construction of the building is estimated to take 20 months. The Post Office requirement is for the building to be completed by April 1974.

RECOMMENDATIONS AND CONCLUSIONS

48. 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. THERE IS A NEED FOR THE WORK IN THIS REFERENCE.	23
2. THE SITE SELECTED IS SUITABLE.	26
3. THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORK IN THIS REFERENCE.	45
4. THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS \$1.7 MILLION.	46


(C.R. KELLY)
Chairman

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3 August 1971.