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THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Parliamentary Standing Committee on Public Works

REPORT

relating to the proposed construction of a

RESEARCH LABORATORY

at

North Clayton (Monash)
Victoria

(SEVENTH REPORT OF 1973)

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

RESEARCH LABORATORY AT NORTH CLAYTON (MONASH), VICTORIA

REPORT

On 23 August 1973, the Senate referred to the Parliamentary Standing Committee on Public Works for investigation and report to the Parliament the proposal to construct a research laboratory at North Clayton (Monash), Victoria.

The Committee have the honour to report as follows:

THE REFERENCE

1. The proposal submitted to the Committee is for the construction of stage 1 of a building complex to house the Australian Post Office (A.P.O.) Research Laboratories. Stage 1 buildings will accommodate the applied sciences activities and comprise:

- applied science laboratory;
- advanced techniques laboratory;
- environmental physics laboratory;
- central plant building.

2. The complex is to be served by internal roads and car parks and the site landscaped. A cable test facility will also be provided within the grounds.

3. The work in stage 1 is estimated to cost $4.5 million.

THE COMMITTEE'S INVESTIGATION

4. The Committee received written submissions and drawings from the Australian Post Office and Department of Works and took evidence from their representatives at a public hearing in Canberra on 25 and 27 September 1973. We also took evidence from a representative of the Professional Officers' Association and received a written submission from the Postal Telecommunication Technicians' Association.

5. Prior to the hearing, the Committee inspected the existing research laboratories housed in the various buildings in Melbourne city and also the site for the proposed new complex.

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

AUSTRALIAN POST OFFICE RESEARCH LABORATORIES

7. History In 1923, the introduction into the Australian telecommunications network of newly developed electronic devices created a need for a specialist to advise the A.P.O. on the adoption of latest discoveries, inventions and developments in this field. Initially, one engineer was given this responsibility but in 1925, the research laboratories were formally established with a staff of five as part of the A.P.O. headquarters. They were to advise the Chief Engineer of promising devices likely to benefit the Department's telephone and telegraph services.

8. Rapid technological advances in intervening years have resulted in the growth of the laboratories to their present day status as a headquarters sub-division employing about 520 people. Officers of the laboratories are mainly professional engineers, physicists, chemists, metalurgists and technical officers with their supporting staff. Test equipment used by the laboratory staff total some 7,000 items with a replacement value of about $7 million.

9. Since their conception, the laboratories have contributed to Australian telecommunications by developing and initiating introduction of numerous projects, techniques and inventions. These include the establishment and maintenance of high precision standard Time and Frequency broadcast services, long line coaxial cable systems and microwave bearer systems.

10. Functions The present functions of the laboratories are unchanged from those which were originally conceived, but are now conducted at a more sophisticated level.

11. In brief, the main objective of the laboratories and regarded as being of utmost importance, is to maintain a position at the forefront of knowledge in the science and technology of telecommunications. Australia continues to draw extensively on overseas research, techniques and developments and needs to have its own expertise capable of selecting, adapting and modifying overseas developments to suit different climatic and geographic conditions in addition to developing and improving its telecommunications systems from within its own resources.

12. The laboratories are a recognised National Standards Authority and perform a specialist function in maintaining and applying the precision scientific references standards required by the Department under various Acts, including the Posts and Telegraphs Act, the Telegraphic Act and the Weights and Measures Act. Recently the laboratories have become involved in testing for "Consumer Protection" in association with the C.S.I.R.O.

13. In keeping with its functions, the research sub-division liaises with industry, universities and other Government sponsored research organizations encouraging their research in the telecommunications field.

An indirect function is to promote and encourage local industry using Australian materials to manufacture and market telecommunications devices which have been developed and standardised by the laboratories.

14. Present Facilities The present laboratory activities and equipment occupy about 13,000 square metres of floor space housed in eight buildings in the Melbourne city area. Of these, seven are leased and one is departmentally owned. One single-storey building houses the environmental physics laboratory and is located about a mile from the city at Rathbourne Street, North Carlton. The others are three or four storey buildings on small city blocks in an area between Latrobe and Flinders Streets from Exhibition to Spring Streets. All buildings were originally constructed as factories, display rooms and warehouses between the 1880s and the 1930s. The Committee noted that they all lack the standard of design, required area and engineering services considered acceptable for present day research laboratory activities.

THE NEED

15. It was explained to the Committee that the existing accommodation arrangements are a costly leasing proposition. In addition it has cost some $850,000 over the past ten years for fitting out the old buildings to render them basically operable as laboratories. We noted that research activities had to be adjusted to the limits imposed by the shape and size of the buildings and it was suggested that a fragmentation of activity has resulted.

16. The Committee were told that due to the current state of tenure of some of the buildings, there was an urgency to seek immediate alternative accommodation. Two buildings at 140 Exhibition Street and 31 Flinders Lane have leases terminating at 31.5.73 and 18.1.74 respectively which are not expected to be renewed but continued on a monthly rental basis only.

Of the remaining five buildings, tenures of three are also limited but the other two have more secure leasing arrangements with accommodation available into the 1980s.

17. It was put to the Committee that the unsuitability of the buildings, which results in separation of laboratory activities and undesirable working conditions, has contributed to managerial and staffing problems.

18. In the late 1960s, the A.P.O. undertook a comprehensive review of the laboratories' present and future accommodation requirements. The reviewing body recommended that continuation of the present accommodation arrangements was unsatisfactory and the laboratories should be consolidated in new, specially designed buildings.

19. More recently, facing uncertainty of renewals of leases and rising rentals, the A.P.O. has obtained authority to lease for a minimum of ten years two buildings being erected at Lyon Park, Clayton. The buildings will provide 8,400 square metres of floor space, largely to Post Office specifications, and are expected to be occupied early in 1974 by those sections now in leased accommodation at 140 Exhibition Street and 31 Flinders Lane.

20. Conclusion It is obvious that the laboratories exercise a significant impact on the telecommunications industry as a whole and their continuation is of vital importance. From the inspections of the existing facilities and the evidence taken, it is also clear that the laboratories are working under considerable difficulties in inadequate unsuitable and outmoded accommodation.

21. The Committee therefore agree there is a need to provide new accommodation on an appropriate site where the activities of the research laboratories can be consolidated in specially designed buildings with provision for future expansion and changing roles.

THE SITE

22. The site, comprising 19.22 hectares, is situated some 17.7 km south-east of Melbourne in Blackburn Road, Clayton. It is bounded to the south by Wellington Road and to the east and north by light industrial establishments. The Monash University campus is directly across Blackburn Road. A 12.14 hectares site now owned by the A.P.O., but occupied by Metro-Twin Drive-In Theatres under lease, is reserved for stage 4 and future expansion of the proposal.

23. Some features of the site include its proximity to the Monash University, location outside the inner city environment, yet reasonably close to other A.P.O. headquarters organizations, and it has sufficient area for future expansion needs.

24. During working hours, transport facilities include regular bus services to the University nearby and railway connections to a more limited extent at Syndal Station about 2.4 km away. The site is adequate for parking facilities for a large percentage of employees.

25. The Committee were told that under the Melbourne and Metropolitan Board of Works' zoning plan, the area to the immediate east of Monash University including the site, was reserved for the development of a research community which it is envisaged would interact with the University. We were advised that the University welcomed the establishment of the Research Laboratories in the area.

26. The Committee concluded that the site selected is suitable for the requirements of the Research Laboratories.

THE PROPOSAL

27. Planning Considerations Broadly, the requirement is for accommodation for stage 1 of the research laboratories development with a

staff of 177, incorporating in-built flexibility for re-arrangement of engineering services and some allowance for future expansion.

28. The laboratories are to be developed to an overall master plan as a group of several small buildings rather than being incorporated in a few large buildings. The architectural character of the complex will provide a campus-like atmosphere identifying it with the adjacent university campus. By limiting the buildings to three storeys and encouraging contemporary sculptured styling on their external elevations, they should suit the visual outlook in the area.

29. It was evident that the A.P.O. and the Department of Works had devoted considerable time and effort in establishing the character of the total development. We were assured by the Department of Works' representatives that the proposal was a most economical solution, considerably less than the cost of equivalent accommodation in high rise buildings.

30. Design The stage 1 plan provides for two 3-storey laboratory/office blocks and two single-storey blocks, with their long facades facing north-south to minimise solar heat.

31. The site for stage 1 lies within an established urban area and was previously used as farmland thus having no natural flora. Only limited landscaping is provided in the adjacent drive-in area. In an endeavour to achieve a similar appearance to the University campus opposite, it is proposed to provide a dense strip of spiky Australian natural shrubs along the road frontages and also low maintenance gardens and trees in the interconnecting courts between the buildings. Car parks for 121 vehicles are also to be carefully blended into the landscape.

32. Buildings and Facilities Buildings 1 and 2 comprise three-storey laboratory/office blocks and will house the applied sciences sections and the solid state and quantum electronics, guided media and visual communications

sections of the advanced techniques branch. Prior to complete transfer of the advanced techniques branch expected in stage 4 of the development, parts of building 2 will accommodate executive and administrative staff, a branch technical library and also limited cafeteria facilities scaled for stage 1 staff in a 264 square metres area.

33. Buildings 3 and 4 are industrial type structures housing the environmental physics section and the central engineering services plant respectively. They are both single floor with high ceilings, but building 3 includes a large 9.8 metre high specialised electrical laboratory and also a mezzanine floor over portion of its area.

34. Buildings 1 and 3 are linked together by a ground floor laboratory and office structure. Two small structures, a gatehouse and a line test laboratory are also included in the works. Covered walkways flanked by courtyards and car parks will connect the four buildings.

35. The total gross area of these buildings is 16,400 square metres and includes 6,780 square metres of laboratories and 1,020 square metres of research offices and administrative support facilities.

36. Environmental Impact Research work will involve both telecommunication and chemical laboratories and the Committee were told that while the bulk of the work done will result in practically no escape of waste products, small quantities of chemical exhaust are emitted via fume cupboards but these have no significant detrimental effect. Engineering services will ensure appropriate sewer and drainage disposal and a waste disposal contractor will collect metals suitable for recycling along with other solids. Boiler flue smoke emission is envisaged to be insignificant with no odour due to the proposed use of natural gas. Design work on the buildings is

expected to ensure that they do not visually dominate the area. Acoustic treatment to building 3, where artificial lightning strikes are produced, is designed to maintain residential area acoustic standards.

37. The two roadways adjoining the site are high capacity arterial roads and they are expected to adequately disperse traffic generating from the laboratories, while incoming traffic will eventually require provision of decentralisation lanes and median strips as the laboratories become established. The Committee were told that building operations would have no detrimental effect, as dust and noise will be minimal and construction vehicles will be off public areas due to the adequate area of the site.

CONSTRUCTION

38. Structure The 3-storey laboratory buildings will generally be of reinforced concrete ribbed floor slabs and concrete block load bearing walls. At each floor level external horizontal service ducts double as balcony floors and vertical ducts are part of the sculptured external walls. Reinforced concrete blockwork around stairs, lifts and other service areas will ensure lateral stability. The single storey central plant and environmental physics buildings will have exposed steel frames with infill concrete block external walls. Internal walls will be as far as possible metal stud frame, sheeted with plaster.

39. All buildings will be founded on stiff clay overlapping rock and footings will be of concrete strips under load bearing walls and concrete pads under steel portal frames.

40. Materials and Finishes External walls will reveal exposed coloured concrete blockwork. Pre-coloured steel sheeting will be utilised for the roof, deep roof fascia and external horizontal service duct fascia of the buildings.

Windows throughout the complex will be framed with pre-coloured metal sections and will be glazed with a reflective double glass unit to reduce solar heating load on air conditioned areas.

41. Internally, flush jointed concrete block walls in the laboratories and offices will be painted. Other areas will be left unpainted but sealed with clear silicone. Partition walls sub-dividing laboratories and offices will be removable and, being made of steel and plaster sheets, give at least a one hour fire rated wall. Laboratory ceilings will have non-flame acoustic tiles. Offices and amenities areas will have similar ceilings with vinyl and ceramic tile floors generally but some areas will be carpeted. Standard modular telecommunications and chemical type bench units will be provided with connections to all necessary services as required.

42. Mechanical Services Water refrigeration plant and natural gas fired boilers will be located in the central plant building with reticulation installed to individual plant rooms in other buildings. Air conditioning will be provided to all laboratories, offices, cafeteria, P.A.B.X. and amenities rooms. Other areas will be provided with mechanical ventilation and heating. Laboratories will have mechanical ventilation as well as air conditioning.

43. Other mechanical services will include automatic fire sprinkler systems in special risk areas, reticulated domestic hot water, compressed air, vacuum and special gases. Chilled drinking water coolers, cafeteria equipment etc. will also be provided.

44. Electrical Services Dual separate electricity supply from the State Electricity Commission lines will serve the establishment through a high voltage underground ring main emanating from the central plant building.

Transformers will be suitably distributed along the ring main from which medium voltage power will be reticulated as necessary. Installations including cabling, switchboards, power outlets, clocks and lighting will generally be surface mounted to facilitate flexibility for possible future re-arrangement. External security lighting will be installed at selected points throughout the complex. Provision will be made for the required P.A.B.X. cabling.

45. Hydraulics Water to serve the establishment will be tapped from the Melbourne Metropolitan Board of Works' mains. Special requirements for smaller quantities of purified water will also be provided for. Plant rooms in each building will have storage tanks installed for normal and emergency purposes as required.

46. The sewerage system will be connected to the Melbourne Metropolitan Board of Works' mains and appropriate laboratory waste plumbing including localised facilities for neutralizing any small quantity of corrosive wastes will be provided.

47. Stormwater runoff from the buildings and site will be collected and discharged into the Dandenong Valley Authority's mains at the north and east property boundaries.

48. Lifts Buildings 1 and 2 will each be provided with a fully automatic electro hydraulic goods/passenger lift to serve all floor levels.

49. Fire Protection Fire protection provisions will meet the Melbourne Metropolitan Fire Board's requirements and include early warning detectors, external hydrants, internal hydrants and hose reels, portable extinguishers, an automatic sprinkler system and manual points at all internal hydrant locations. The appropriate equipment is designed to suitably cover the particular activities within the buildings.

50. Security Security features are incorporated into the basic building design and will include external lighting of buildings, a gatehouse, and a dense strip of spiky Australian natural shrubs with a 3 ft high perimeter fence along road frontages.

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

PROGRAMME

52. It is expected that after an approval to proceed is given, preparation of final drawings and tender documents, subsequent invitation of tenders and letting of a contract will take approximately 54 weeks. Construction time for stage 1 is estimated at two years after a contract is let. However, it is planned to stage progressive occupancy of buildings 2 and 4 at the end of the first construction year.

ESTIMATE OF COST

53. The estimated cost of the work when referred to the Committee was $4.5 million made up as follows:

	$
Building works	2,530,000
Mechanical services	1,130,000
Electrical services	490,000
Hydraulic services	150,000
Site works	150,000
Security protection	50,000
	4,500,000

FUTURE DEVELOPMENT

54. It is proposed that stages 2 and 3 are also to be sited on the 7.08 hectares of land in this reference, designed according to the master plan with the buildings having a similar architectural character to those in stage 1. The Committee consider that proposed development to stage 3 as presently described is satisfactory and that the client department's assessment of the projected expansion of the laboratories in the foreseeable years appears sound. The Committee therefore recommend that stage 2 and stage 3 should proceed along similar lines of construction to stage 1 without further reference to the Committee. However, the Committee regard stage 4 of the laboratories development as a major addition involving many buildings on the large site currently occupied by Metro-Twin Drive-in Theatres. This proposal would have to be looked at more fully at an appropriate time in the future.

RECOMMENDATIONS AND CONCLUSIONS

55. 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 NEW ACCOMMODATION.	21
2.	THE SITE SELECTED IS SUITABLE.	26
3.	THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORK IN THIS REFERENCE.	51
4.	THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS $4.5 MILLION.	53

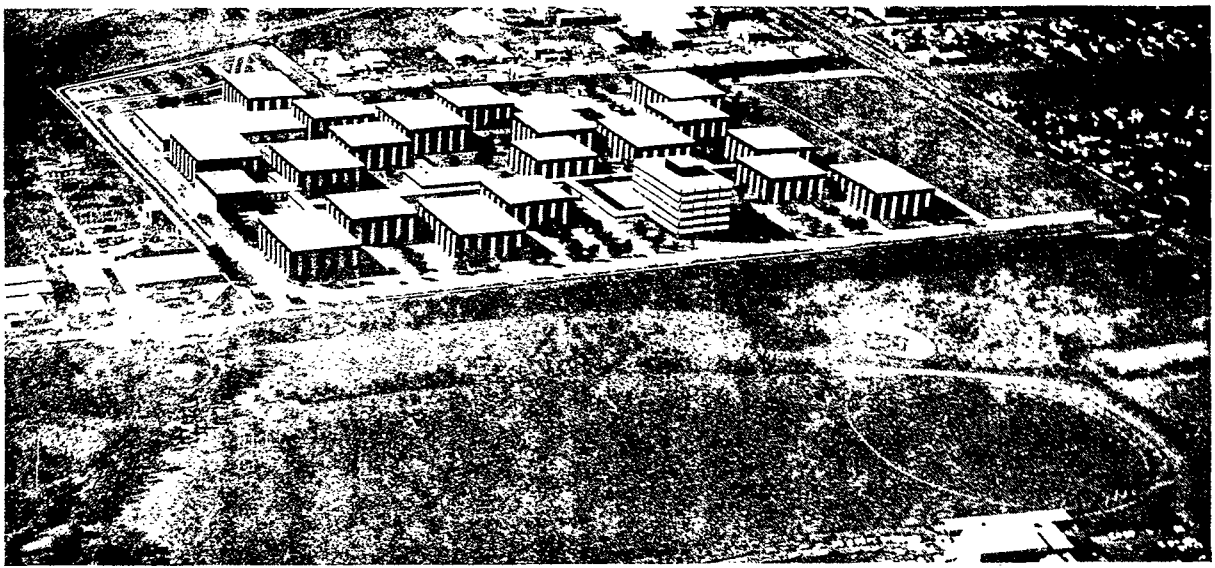
Paragraph

5. THE COMMITTEE RECOMMEND THAT STAGE 2 AND STAGE 3 SHOULD PROCEED ALONG SIMILAR LINES OF CONSTRUCTION TO STAGE 1 WITHOUT FURTHER REFERENCE TO THE COMMITTEE. 54

(W.J. FULTON)
Chairman

Parliamentary Standing Committee on Public Works,
Parliament House,
CANBERRA, A.C.T.

11 October 1973.



STAGE 1 DEVELOPMENT