PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

R E P O R T

relating to the proposed construction of a

GENERAL LABORATORY BUILDING

for the

COMMONWEALTH SERUM LABORATORIES

at

PARKVILLE, VICTORIA

CONTENTS

THE PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

GENERAL LABORATORY BUILDING, COMMONWEALTH SERUM LABORATORIES - PARKVILLE, VICTORIA

R E P O R T

By resolution on 16th November, 1960, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report, the proposal to construct a new general laboratory building for the Commonwealth Serum Laboratories at Parkville, Victoria. The Committee have the honour to report as follows:-

S E C T I O N I - INTRODUCTION

Historical

1. The Commonwealth Serum Laboratories began operating at Parkville in 1916, By 1918 there were about 35 people employed, this figure rising to 750 in 1953 and 1076 in 1960.

2. Apart from the addition of wings and floors to existing buildings, no new laboratory blocks have been constructed since West Block was erected in 1940 for the carrying out of bacteria-free processes.

3. There has been a most substantial increase in production in the last twenty years, sales increasing from £139,418 in 1940 to £2,275,242 in 1960.

SECTION II - THE COMMITTEE'S INQUIRIES

General

4. The Committee inspected existing facilities and the site for the proposed building at Parkville and heard evidence from representatives of the Commonwealth Serum Laboratories and the Department of Works.

Activities for which additional space is required

5. The proposed building is intended to provide space for the production of bacterial prophylactics and diagnostic reagents for veterinary and human use and for development work.

6. Products for human use include vaccines, tuberculins, diagnostic reagents, toxoids and culture media, while those for veterinary purposes include a wide range of vaccines including pulpy kidney, black disease, botulinum and brucella abortus.

7. Development work is concerned with pilot scale tests and runs to determine final operating conditions before large-scale processes are adopted, and to provide sufficient products for trial.

Existing accommodation

8. The present accommodation used for these activities is obsolete compared with modern standards. Overcrowding is severe and there is no alternative but to carry out sterile and infective processes in close proximity. Since pooling of final sterile products has to be done in the same area there is always a possibility of batches becoming contaminated.

9. Potentially dangerous conditions.- Cultural work is being carried out without the protection of adequate change rooms for staff who are required to work with products involving highly pathogenic micro-organisms such as tubercle bacilli.

10. Increased safety control of the various processes is needed and cannot be guaranteed under present working conditions.

11. All phases of this work should be carried out in a single enclosed area, but this is not possible at present.

12. Evidence was given that, since increased production is necessary to meet orders, there is no alternative but to continue production under unsatisfactory and potentially dangerous conditions.

13. Limitations in vaccine production.- With rapid population increases and greater recognition of the benefits of active immunization, especially in children, there is a greater and increasing demand for human bacterial prophylactics.

14. We were told that lack of space and out-of-date laboratory design have imposed limitations on vaccine production.

15. Insufficient bench space.- Diagnostic agents mainly for human testing include the important reagents for blood grouping and the detection of blood incompatibilities.

16. Since inadequately prepared and standardized reagents could result in wrong diagnosis, complex testing of each of the agents produced is necessary. Bench space for this work is inadequate.

17. Lack of facilities for development work.- With the increase in requirements for biological products such as human and veterinary vaccines and toxoids, production in small batches has become far too cumbersome and uneconomical.

18. Production has therefore to get out of the test tube or small bottle stage into larger vessels with their ancillary equipment such as stirrers, aerators and automatic control of operation.

19. In the change-over to any such large-scale process it is essential for pilot scale runs to be made to determine final operating conditions and to provide sufficient products for trial.

20. At present there are no facilities suitably designed and equipped for this work.

21. Lack of space for research.- Lack of space for research is one of the factors which restricts the capacity of the Commonwealth Serum Laboratories to tackle new problems that arise. Due largely to the problem of contamination, it is frequently necessary to carry out this research in a completely separate location and such space can only be made available by the inconvenient process of re-allocating space and moving

staff to different quarters.

22. As an example, we were told that because of insufficient space, adequate investigation of the recent polio vaccine break-down cannot be carried out. In addition there is very little space available for bacteriological research into tetanus, a very large problem with the Commonwealth Serum Laboratories.

23. Inability to meet an emergency.- Evidence was given that the Commonwealth Serum Laboratories could not meet an emergency demand without reducing standards, exposing staff to the possibility of accident or failing to pass products through the necessary procedures with the present degree of safety .

24. Apart from the inability to meet an emergency, the Laboratories could not without additional accommodation, look after the demands which will arise from future increases in Australia's population.

The need for a new building

25. It will be obvious that these unsatisfactory conditions should not be allowed to persist. Both the evidence presented and the observations made during an inspection of the existing accommodation have impressed upon the Committee the urgent need to erect a new laboratory building and we recommend accordingly.

The site

26. The site for the proposed laboratory building is within the area occupied by the Commonwealth Serum Laboratories at Parkville, Victoria.

27. Although the area has been extensively developed over the years, there is ample space for the proposed building and also for other similar units when the need arises.

28. It is planned to erect the building to the west of West Block on land occupied by obsolete animal houses which are to be demolished this year.

29. Nearby industrial development.- There are constant changes taking place in the factory content of the suburbs of Flemington and Brunswick, to the west and north respectively, of the Laboratories.

To the east and south is Royal Park.

30. Evidence was given that no industrial processes introducing contaminating influences which could not be handled by modern air filtration equipment, could be foreseen.

31. In the absence of any problem arising from industrial development and in view of the fact that there is adequate space for the proposed building and for similar ones in the future, the Committee are satisfied that the site is suitable.

The proposed building

32. There are no plans to increase production for its own sake. The building has been designed, therefore, to provide better facilities and safer working conditions and to improve efficiency. In addition, sufficient space is proposed to meet potential demands arising from increases in population or an emergency.

33. The design- A building, which will be connected to the West Block by walkways at each of the top three floors and comprising a basement, ground and four upper floors, has been designed to meet the special requirements of the Commonwealth Serum Laboratories.

34. It will provide a total floor area of 33,000 square feet and when in full operation will be occupied by a staff of 87. At the present rate of increase in demand for the products to be manufactured, the space should be sufficient for twenty years.

35. No provision has been made in the design for the extension of the building as it is considered that it will be of optimum size and officials of the Commonwealth Serum Laboratories would prefer to have another similar building erected when the need arises.

36. The basement will be used for the manufacture of pulpy kidney and other veterinary vaccines produced on a large scale and will contain wash-up facilities and cold and hot rooms. Service plant, electrical transformers, switch rooms and mechanical engineering plant will also be located in this area.

37. The ground floor will provide facilities for the sterilization of infected material, fittings, apparatus, tanks, media and glassware,

the cleaning drying and preparation of glassware, spray drying, the preparation of media and the assembly of clinical diagnostic outfits. The equipment will include autoclaves, dry sterilizers and steamers. The floor will also contain a processing laboratory for the handling of sterile horse and sheep blood.

38. The first floor will provide facilities for diagnostic agents, production and potency testing of media and the preparation of brucella abortus vaccine. Wash-up and glassware preparation areas and a cold room will also be provided.

39. On the second floor laboratories will be provided for the production of veterinary vaccines. Standardization and control laboratories and cold and warm rooms will be provided in addition.

40. Diphtheria prophylactics will be produced, and combined prophylactics will be pooled on the third floor. Other products to be prepared in this area will be bacterial vaccines, staphylococcal toxoids, autogenous vaccines and tuberculins for human and veterinary testing.

41. The fourth floor will provide laboratory and cold room facilities for investigation into general bacteriology, antibiotics, media, processing of culture fluids, pilot scale culture of bacteria and moulds and preparation and testing of antibiotic formulations.

42. The proposed design meets with requirements of the Commonwealth Serum Laboratories. Sketch plans have been discussed with the Melbourne City Council and the Department of Works has received advice that the proposal is acceptable to that authority.

43. The Committee recommend construction of the building to the size and design proposed.

44. Production plant.- The value of production plant to be installed is estimated to be £210,000, of which approximately £110,000 worth will be transferred from the existing building.

45. Building materials and finishes. - The proposed building will be of steel framed construction with reinforced concrete floors designed for an added load of 200 lbs per square foot to carry known equipment and to provide for changes in the use of floor space.

46. The north and south elevations to the work space will be enclosed with modified curtain walls permitting the use of removable metal panels to provide access to the horizontal and vertical service ducts. The service block at the eastern end of the building and the western wall will be faced with brickwork.

47. The roof will be low pitched, fully sarked and covered with glazed terra cotta tiles.

48. All internal walls will be finished in hard plaster except in toilet areas where glazed tile dadoes will be provided.

49. Window frames will be of aluminium and provision has been made for double glazing of all laboratory windows on the north and south elevations.

50. Internal partitions will be prefabricated in metal and floors generally will be surfaced with sprayed vinyl flooring to eliminate jointing cracks.

51. The basement ceiling will be finished in hard plaster and false ceilings will be provided elsewhere.

52. Special precautions will be taken with internal finishes and materials, to provide a high standard of asepsis. Surfaces will need to be impervious and junctions will be taped.

53. Engineering services.- Engineering services will include the provision of incandescent lamps augmented by fluorescent lighting over benches, thermal type fire alarms, an automatic passenger-goods lift, master-slave clock system, air-conditioning, mechanical ventilation, hot water supply, cool room refrigoration and the reticulation of steam, cooling water, brine, compressed air, vacuum, distilled water and gas.

54. Air-conditioning.- As the number of operations at the Commonwealth Serum Laboratories increase and as more industrial activity takes place in nearby areas, there is a greater risk of contamination and spoilage of products. Because of the hazard and for economic reasons, it is important to prevent contamination.

55. To meet this stringent requirement, air-conditioning is proposed for the four upper floors. Mechanical ventilation will be provided for the basement and ground floor.

56. To provide sterile and dust free air, it is proposed to instal

electrostatic filters with semi automatic washing apparatus, high efficiency deep bed filters and ultra-violet lamps. Air to all floors will pass through this filtering and sterilizing equipment.

57. The air-conditioned space will be sheltered by airlocks, lifts stairs and connexions to walkways being at the airlocks. All windows will be sealed.

58. Because all laboratory windows will be fixed and in order to meet the requirements for sterile air, provision has been made for sufficient stand-by equipment to ensure continuity of service.

59. The Committee agree that air-conditioning, sterile air and mechanical ventilation as proposed should be provided and recommend that the necessary equipment be installed.

60. Construction time.- After approval to proceed is given, it is estimated that a period of forty weeks will be required to complete contract documents, invite tenders and accept a contract. The construction of the building would take seventy eight weeks.

61. Estimates of cost.- The estimated cost of the building, as referred to the Committee, is £470,000, made up as follows:-

	£.
building	260,000
air conditioning	82,000
other mechanical services	68,000
electrical services and lift	60,000
	£470,000

Vacated space

62. It is intended that the space vacated by activities which will move to the new building will be occupied by the commercial and administrative staff, a section of the research division and medical consultants.

63. The commercial and administrative staff are at present accommodated in buildings of temporary construction, one being erected in 1942 for the original manufacture of penicillin while another was originally a mould room for surface fermentation of penicillin.

64. The space to be provided for research is urgently required to overcome the serious effect of the lack of suitable laboratories in which to

carry out the planned research programme.

65. The medical consultants are at present inconveniently located in a building remote from the central administration.

66. The Committee believe that the space to be vacated can be put to good use.

Effluents

67. The Committee sought information about the way dangerous wastes and fumes are rendered harmless before being discharged. Dangerous chemicals are passed through the neutralizers before disposal into the sewer, in accordance with the Melbourne and Metropolitan Board of Works requirements, while batches of vaccine unsuitable for further processing are made safe, where necessary, by heat sterilisation treatment and disposed of as soon as possible. No dangerous fumes are given off from existing processes. However, if a new process discharging harmful fumes was introduced, these would be exhausted through disinfectant traps or destroyed by ultra violet radiation. We are satisfied that adequate precautions are taken to see that no dangerous materials are discharged from the laboratories.

S E C T I O N III - SUMMARY

Summary of recommendations and conclusions

68. The Committee's recommendations and conclusions, arrived at after studying all the evidence and material submitted, are set out below. The paragraph quoted alongside each conclusion or recommendation refers to the relevant portion of the report.

	Paragraph in report
(1) The present unsatisfactory conditions should not be allowed to persist and erection of a new laboratory building is recommended.	25
(2) The proposed site is suitable.	31
(3) The proposed building should meet requirements for twenty years.	34
(4) Construction of the building to the size and design proposed is recommended.	43

	Paragraph in report.
(5) The installation of plant as proposed for air-conditioning, sterile air supply and mechanical ventilation is recommended.	59
(6) The estimated cost of the building is £470,000.	61
(7) The space to be vacated can be put to good use.	66

(J. H. O'Byrne.)
Vice Chairman.

Office of the Parliamentary Standing
Committee on Public Works,
Parliament House,
Canberra, A.C.T.

2nd May, 1961.