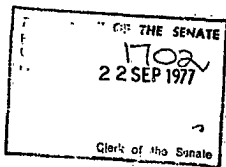


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1977

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

Parliamentary Standing Committee on Public Works

REPORT

relating to the proposed construction of an

ANALYTICAL LABORATORY

at

Pymble, N.S.W.

(EIGHTH REPORT OF 1977)

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THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA
PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

R E P O R T

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Australian Government Publishing Service
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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

ANALYTICAL LABORATORY, PYMBLE, N.S.W.

R E P O R T

By resolution on 2 June 1977, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for investigation and report to the Parliament the proposal for the construction of an analytical laboratory at Pymble, New South Wales.

The Committee has the honour to report as follows:

THE REFERENCE

1. The proposal is for the construction of a new laboratory complex to accommodate the scientific, administrative and support activities of the Australian Government Analytical Laboratory in New South Wales. The complex will consist of four elements: chemical analysis and physical testing; bacteriological testing; administration; and site services and support activities. The tasks of the laboratory include testing of goods and materials for import, export and domestic use.

2. The building will be constructed with reinforced concrete frames and brick infill walls covered with an applied textured coloured finish. The building will be designed to harmonise with the generally residential nature of the area. The complex will be air conditioned throughout and outfitted internally in materials suitable to the laboratory-type activities.

3. The estimated cost of the proposal at 13 May 1977 prices was \$6.8 million.

THE COMMITTEE'S INVESTIGATION

4. The Committee received written submissions from the Department of Science, Department of Construction and the Council of the Municipality of Ku-ring-gai and took evidence from their representatives at a public hearing in Sydney on 8 August 1977.

5. Prior to the hearing, the Committee inspected the existing facilities of the Analytical Laboratory at the Customs House in Sydney and the proposed site.

THE ANALYTICAL SERVICES BRANCH

6. The Analytical Services Branch (ASB) which is part of the General Services Division of the Department of Science comprises a small Secretariat in Canberra under the control of the Australian Government Analyst (AGA) together with laboratories in all States other than Queensland. In addition, chemists are outposted to the Bureau of Customs in all States and Territories. The laboratories are essentially a service organisation responsive to the needs of client departments. Some research is carried out into the development and validation of methods of analysis.

7. The laboratories trace their history to pre-federation days when the states operated small independent tariff and excise laboratories. After federation, control of these laboratories was vested in what has now become the Bureau of Customs. This situation prevailed until the Department of Science was created.

8. Arising from their origins as Customs Units, all the laboratories were initially located in buildings occupied by the Bureau of Customs although the Hobart, Perth and Adelaide laboratories are in separate buildings which have been transferred to the Department of Science. In New South Wales the main part of the laboratory occupies the upper floors of the Customs House, Circular Quay, Sydney.

FUNCTIONS OF THE LABORATORIES

9. The clients of the laboratories are almost exclusively Commonwealth Government departments but when required in the public interest and as facilities permit, investigations on behalf of other clients are carried out.

10. A summary of the major tasks undertaken for clients is as follows:

- (i) Bureau of Customs - Analysis of imports to determine tariff classification. Analysis of locally produced products for excise purposes. Investigation of the composition of products whether locally produced or imported to ensure compliance with the relevant legislation.

- (ii) Department of Primary Industry - Chemical and bacteriological analysis of foodstuffs and other products for export to ensure compliance with Australian regulations and international regulations and standards.
- (iii) Narcotics Bureau - Analyse suspected illicit drugs and present results in court where necessary.
- (iv) Department of Health - Carry out checks on National Health Services prescriptions. Investigate on behalf of the National Health and Medical Research Council contaminants such as pesticide residues, heavy metals, carcinogens etc in a typical Australian diet. Monitor the licit production of narcotic drugs.
- (v) Environmental analysis - Investigate on behalf of a number of clients atmospheric, marine and earthbourne pollutants.

11. Committee's Conclusion The Analytical Laboratory in New South Wales carries out a wide range of analyses and investigations of imports and exports on behalf of a number of Commonwealth Government Departments.

THE NEED

12. Present Accommodation

13. The Customs House The main part of the laboratory occupies approximately 1600 square metres on the 4th, 5th and 6th floors. This space is totally inadequate and the move of some staff to Alexandria was made as a measure of temporary relief. The total space available is approximately 2000 sq.m. and the extent of overcrowding may be judged by comparison with the estimate of space to be provided in the proposed complex which is approximately 8000 sq.m. This estimate is based on modern laboratory requirements and authorised standards of office accommodation and amenities. The inadequacy arises from two main factors:

- (i) Demands for laboratory services which have more than doubled over the last two decades with the result that with existing facilities the work requested by many clients cannot be accepted; and

- (ii) Modern techniques of analysis and testing have become increasingly automated which, whilst greatly improving the output of each laboratory worker, makes correspondingly greater demands on bench and floor space since it requires permanent or semi-permanent siting of instruments and apparatus.

14. The Customs House itself is a historic building which has been proposed for inclusion in the National Estate. It is of stone and timber construction and was never intended for laboratory use. The reticulated services such as electricity gas and water have been extended over the years on an ad-hoc basis and are now difficult and expensive to maintain. If the laboratory is to remain for more than a short term these services will require to be totally reviewed and extended and this will be a very difficult and expensive task.

15. The building is indifferently fire protected and there is a potential fire and safety hazard arising from the use of considerable quantities of volatile and flammable substances in a structure in itself flammable. Adverse reports from the fire, safety and maintenance authorities have been received and, therefore, even assuming that additional space in the building could be made available, it would be neither practical nor economic to carry out the very expensive outfitting of this space and the extensive replacement of existing services which would be required.

16. The laboratory staff are, of course, acutely aware of their adverse position in respect of overcrowding, safety and lack of amenities. Representations have been received from the staff associations and these must be expected to continue until the situation is relieved.

17. Alexandria The staff at Alexandria occupy part of a building of the Materials Research Laboratories of the Department of Defence which has a continuing requirement for it. The building is of the saw-toothed factory type of steel and fibro construction with internal timber framed partitions. Hence it is flammable. The fire and safety authorities have commented adversely on its use and it is considered that the deficiencies could not be overcome economically in the present building. In addition, management and communications problems arise from the separation of the Alexandria and Customs House units by the main business areas of Sydney.

18. Increase in Demand for Laboratory Services The demands for laboratory services have increased significantly over the last two decades. For example, bacteriological examination was commenced in the early 1950s when one officer only was involved. Today the bacteriology section has a staff of 21. As a result of the increase in total work, the laboratory was extended to include nearly the whole of the fourth floor of the Customs House in 1967. A further aspect of the work is that whereas twenty years ago the general requirement was one test per sample, today up to a dozen tests are required and this involves more complicated and extensive equipment.

19. The increasing need for space was met by ad hoc extensions within the Customs House and as far back as the mid-1960s the need for a new separate laboratory was recognised. Plans were prepared for a site at Ryde but it was not possible to negotiate satisfactorily with the owner. Several other attempts were made without success and led to continuing ad hoc arrangements including the most recent movement of some staff to premises of the Department of Defence at Alexandria. Whilst this move relieved some of the pressure on space at the Customs House, the premises are old flammable timber framed buildings which are unsatisfactory as has been mentioned previously.

20. Committee's Conclusion Demands for laboratory services have more than doubled over the last two decades. The laboratory staff are operating in overcrowded and adverse conditions. The existing Customs House building was never intended for laboratory use. There is a need for a new laboratory complex.

THE PROPOSAL

21. The proposal is for the construction of a new laboratory complex on a 3.5 ha. site of Commonwealth Government owned land at Pymble, New South Wales. The complex will accommodate all the present and foreseen activities of the New South Wales laboratories including scientific, administrative, logistic and support.

22. Management and Administration This unit is to be constructed and equipped to approved standards for office accommodation. It will provide the following services:

- reception, waiting and related facilities;
- management offices;
- general clerical and administration space;
- library and conference rooms;
- canteen and amenities areas.

23. Chemical Analysis and Physical Testing This unit is to be constructed and equipped to codes approved for laboratories of this type. Up to 60 work stations are to be provided each with appropriate bench and fume cupboard space. A work station is defined as 5 metres of bench space, one metre of fume cupboard and appropriate floor space to permit free movement. In addition, laboratory offices and a number of special purpose rooms are to be provided for common facilities required by all workers but separate from the work stations proper such as precision weighing, spectography, chromatography, furnace rooms etc.

24. Experience has shown that the types and methods of analysis can change rapidly requiring changes of layout and equipment. The Department of Construction has been asked to design accordingly and provide maximum flexibility with a minimum of structural change in the main laboratory area. It is expected that this can be accomplished by subdividing a main area into optimum size laboratories using removable partitions of the appropriate fire rating. Similarly, the extensive reticulated services which are required are to be designed in a way which will permit simple and economic changes to be made. Corridors and access ways are to be on a scale to permit the free movement of stores and equipment. Domestic facilities to an appropriate scale are to be provided.

25. Bacteriological Testing The concept adopted for the Bacteriology unit is similar to that for the Chemical unit and work stations for up to 25 workers are proposed. The main difference between the groups is that bacteriological work requires a high degree of sterility and extensive use will be made of stainless steel and glass. Large free-standing units such as incubators and refrigerators are also required.

26. Site Services and Support This unit provides general supporting facilities for the complex including storage areas, instrument workshops and accommodation for support personnel such as storemen, courier drivers, maintenance workers and similar staff. The storage area is necessary to allow storage of flammable and otherwise hazardous substances within the working areas of the laboratory to be kept to the absolute minimum required for immediate use.

27. Expansion Capacity Provision has been made within the proposed laboratories for such expansion as can be foreseen over a 10 year period. Expansion beyond that point would necessitate building extensions for which adequate space is available.

28. Committee's Conclusion The proposed facilities will accommodate the present activities of the New South Wales Laboratory and provision exists for expansion, if necessary.

THE SITE

29. Selection of Pymble Site The criteria for the site selection was:

- large enough to accommodate a complex of laboratory, administration and service units of approximately 6000 sq. m. which should be in a low rise configuration for technical and safety reasons;
- good access to the premises of main clients which include the docks and adjacent import-export complexes;
- a location not inaccessible from the present residential distribution of staff;
- sufficient space for on-site parking and vehicular access which will not cause major interference to existing traffic flows;
- acceptable to the Location of Australian Government Employment (L.A.G.E.) committee;
- acceptable from a local authority zoning and environmental point of view.

30. The Department of Environment, Housing and Community Development has reported that, subject to agreement by the local authority,

a full environmental inquiry will not be necessary. The L.A.G.E. Committee reported no objection to the proposal.

31. Site Details The site is located in the northern Sydney suburb of Pymble, approximately 17 km by road via the Pacific Highway from Sydney's central business district.

32. The site is approximately 100 m above sea level and portion of it gently slopes before steeply falling away to Blackbutt Creek which bounds the site to the north-west and south-west.

33. The site is currently undeveloped and a portion of the total area remains in a natural bushland state. The major development immediately adjoining the site comprises a Defence development (Training Depot and parade ground) and an Australian Telecommunications Commission development (line depot, storage sheds and open storage areas) to the north east, and an industrial and commercial complex development adjacent to the eastern boundary of the site.

34. On the north-west and south-west boundaries, the site adjoins residential areas. Services readily available are electricity supply, water supply, sewerage and rubbish disposal. Gas supply is available in West Street.

35. Investigations indicate that sound Hawkesbury sandstone exists at between 3 and 7 metres below the underside of the various proposed floor slabs. No ground water was encountered during the investigations.

36. Arrangements and Siting of Building The proposal was developed in close liaison with officers of the Department of Science and provides for the stated requirements of that Department.

37. The building form and massing have been developed to suit the site and to meet the request of the Ku-ring-gai Municipal Council to limit the height of the building to the minimum possible and to minimise the length of the building as viewed from the residential area to the west of the site.

The building has been designed to align with the contours of the site, with the major portion containing chemistry laboratories and associated plant and service rooms, having a north-east to south-west axis.

38. The adjoining administration and bacteriological laboratories areas are aligned on a north-west to south-east axis.

39. The maximum distance possible has been provided between the Blackbutt Creek and the building to minimise encroachment into the natural timbered area and to permit this portion of the site to be adequately landscaped.

40. Committee's Conclusion The site selected is suitable.

CONSTRUCTION

41. Building Plan The building has been designed with a total of four floor levels, arranged to cater for the various functions and services required and to use the available site to the optimum advantage economically and aesthetically.

42. Entry to the site via Suskin Street leads to the main entrance at the top level of the administration area, with delivery vehicles being handled on the level immediately below.

43. The chemical group of accommodation occupies two levels, with laboratories having a south-easterly aspect. Mechanical plant rooms are located beneath the laboratories. The bacteriological group of laboratories and service rooms are located on the lowest level, with all rooms having a south-westerly aspect. The library and staff canteen have been situated to obtain advantage of the outlook into the timbered area of the site adjacent to Blackbutt Creek.

44. The laboratories and service rooms have been designed on a modular grid which will provide planning flexibility, permitting the dividing partition walls to be removed if desired, or to be relocated at the centre lines of modules to subdivide areas.

45. Structure The concrete slab and column structure has been designed to meet the special functions and requirements of the building, including flat soffits to floor slabs and provision for adequate penetrations through floor slabs for services.

46. Foundations The building will be founded on bored piers generally. Pad footings will be used where sound rock occurs in close proximity to the ground surface.

47. Materials and Finishes The building construction is designed to conform with the requirements of N.S.W. Local Government Ordinance 70.
48. External walls are of brickwork and internal partition walls are of steel studding with fire-rated gypsaum plasterboard facings.
49. The roof is of concrete with screeded topping finished with a weatherproof trafficable membrane.
50. Suspended ceilings will be provided only in administration, corridors and supervisory office areas and will be used to conceal service ducts and lines.
51. Finishes to be used in the laboratories areas will not generate or harbour dust, comprise sheet vinyl flooring and co-polymer vinyl finish to walls and ceilings. Administration office areas will be finished with carpeted floors and painted or veneered panel wall finishes.
52. Stores, plant rooms and workshop areas will have a steel trowelled granolithic floor finish and a co-polymer vinyl finish to walls and ceilings.
53. Toilet and ablution areas will be finished with ceramic wall and floor tiles.
54. Externally, wall and structural surfaces will have an applied textured acrylic co-polymer emulsion finish.
55. Windows generally will be double glazed tinted glass in anodised aluminium frames with integral venetian blinds for sunlight control.
56. Mechanical Services Air conditioning will be provided to serve all laboratories, offices, library and canteen area.
57. Central plant located on the second floor of the administrative building will provide chilled water and hot water to the individual air conditioning air handling plants located at various locations on the second floor level.
58. Mechanical ventilation will be provided to fume cupboard areas, oven rooms, atomic absorption, sterilising, washing, workshop and toilet areas.

59. All supply ventilation plants will be located on the second floor plant room area, while the exhaust ventilation plants including fume scrubbers will be located on the roof. Compressed air, nitrogen gas, town gas and demineralised water will be reticulated throughout the laboratories. Domestic hot water plant will serve all sinks and basins in laboratories, washing areas and toilets.
60. A pathological incinerator will be installed in the second floor plant room area. The incinerator will be designed to comply with the requirements of the N.S.W. Clean Air Act.
61. Sterilising equipment, incubator rooms and cool rooms will be provided in the bacteriology area.
62. Laboratory glassware washing machines and dryers will be provided in washing areas.
63. Refrigerated drinking fountains, tea preparation and canteen equipment will be provided.
64. Electrical Electrical supply will be obtained from the Sydney County Council and be reticulated underground within the site to a substation located in the administration area. Cabling will be reticulated from the main switchroom, adjacent to the substation, to the chemical area to distribution switchboards located on each floor level.
65. External lighting will be provided for security purposes, on roadways and in the car park. Cablings for this will be reticulated underground.
66. Internal lighting will be provided by fluorescent light fittings located so as to attain the lighting levels recommended in AS.1680 and provide a modular configuration.
67. General power reticulation will be in accordance with normal requirements for cleaning purposes, laboratory benches will have power outlets fitted and connection will be made to items of equipment installed.
68. Flameproof equipment will be installed in fume cupboards where required and in addition, interlocks will be provided so that the exhaust fan runs whenever a power outlet within the fume cupboard is in use.

69. A PABX including an operator's console with facilities for 100 internal and 10 - 15 exchange lines will be provided. Internal conduits and ducts will also be provided for telephone block wiring and allowance has been made in the estimate for payment of the first year's rental on the PABX equipment.
70. A synchronous master clock with slave clocks in selected positions will be provided.
71. An internal paging and emergency warning system will be provided to each laboratory and to strategic points throughout the complex.
72. Lift An electric passenger/goods lift will be provided, serving four floor levels, to be used primarily for the movement of stores and equipment. The Committee was satisfied with the additional information provided to substantiate the need for the lift.
73. Hydraulic Services The building will have water supply systems for domestic, laboratory and fire protection purposes. Connection will be made into the Metropolitan Water Sewerage and Drainage Board's main, which is capable of meeting all supply demands, located in Ryde Road. The connecting main will be laid along West Street and Suekin Street to the site.
74. Domestic water will be provided direct from the proposed main. Water reticulated to all laboratory and service areas will be isolated from the main supply by a break tank. A pressurising system will be used to provide water in laboratory and service areas.
75. A water supply system is proposed for the fire hydrants and for the building sprinkler system.
76. Chemical laboratory wastes will discharge through corrosion resistant pipes into an arrestor pit and then into an automatically controlled neutralising pit to meet Metropolitan Water Sewerage and Drainage Board requirements before being discharged into the sewer.
77. Bacteriological laboratory wastes will discharge into an arrestor pit before entering the sewer. There will be no chemical discharges from these laboratories. Wastes from the arrestor pits are to be pumped periodically into a collection well from where they will be collected by road tanker for disposal.

78. Sewer connections are proposed to two existing Metropolitan Water Sewerage and Drainage Board manholes located within the site. The existing sewer main is capable of handling discharges from the proposed building.

79. Civil A sealed roadway will be provided from the entry into the site from Suakin Street, giving access to the main entrance, service and delivery areas and the parking areas. The parking areas for visitors and staff will be sealed.

80. General sitework will be carried out in conjunction with the proposed landscaping treatment. Where necessary, retaining walls will be of the "crib wall" type.

81. Fire Protection The building will be protected by an automatic fire sprinkler system, internal hose reels and hydrants and external hydrants. Fire alarm connection will be made to the nearest fire station equipped with an alarm board.

82. An automatic Halon gas (B.T.M.) system will be provided in the overnight laboratory.

83. Smoke detectors will be installed in air conditioning and ventilation ducts. Fire extinguishers of appropriate types and number will be provided throughout the building.

84. Security Subsequent to the hearing, the Committee considered further information from the Department of Construction resulting from their discussions with the Department of Science regarding additional security requirements. The Committee agrees with these proposals to the extent of an additional \$20 000 above the costs given at the formal hearing.

85. Landscaping In general, the landscaping proposed consists of modifying the existing state of the site and strengthening the overall indigenous natural quality. This would be achieved by retention of the existing natural characteristics of the site, removing where practicable any weed infestation, substituting dense vegetation of desirable species and in parts resurfacing with mown grass. Suitable plantings are proposed to provide sight screening and subdivision within the car parking area.

86. Committee's Conclusion Additional security arrangements, estimated to cost \$20 000, should be provided.
87. The Committee recommends the construction of the work in this reference.
88. Other Authorities The building will be designed to comply with the requirements and regulations of the N.S.W. State Pollution Control Commission, the Metropolitan Water Sewerage and Drainage Board, Sydney County Council and the N.S.W. Local Government.
89. Local Authority From the development stage of the proposal, the Department of Construction maintained close consultation with the Ku-ring-gai Municipal Council, whose requirement was for a low rise building. Council, to its credit, put the proposal on public display and sought comment from citizens of the Municipality. The Committee notes that Council was able to provide satisfactory answers to those who had expressed doubts as well as those who had raised objections to the proposals.
90. Car Parking A survey carried out by Department of Science indicated that approximately 60 per cent of the staff propose to travel to the Pymble site by private vehicles and a check of their home locations supports this figure in terms of the likelihood of usage of public transport facilities.
91. The Department of Science has also assessed that, due to the effects of flexible working hours, work carried out away from the building and leave, up to 14 per cent of staff are away from the site each day.
92. The proposal is to provide 60 vehicles on the eastern side of the building. Parking is also to be provided for 7 visitors' vehicles adjacent to the main entrance.
93. During the public hearing, the Ku-ring-gai Municipal Council put forward its own assessment on the provision of car parking which was in excess of that currently proposed. Council also requested that provision be made to improve the vehicular access to the site. These points were noted by the Department of Construction. Should the number of spaces currently provided prove inadequate in the future, further parking could be provided on the eastern side of the building and could also be introduced into the area on the western side of the building.

94. Charges for Services During the public hearing, the Committee was informed that no charges are made between departments for work performed at the laboratory except in the case where a department is a trading agency. We were also informed that the Department of Science had received an assessment from a consultant accountant about two years ago that if the Laboratory had charged what were then the rates recommended by the Royal Australian Chemical Institute for a commercial analysis, the Laboratory would have paid its way.

95. Committee's Conclusion An examination should be made as to whether there be charges between departments for services undertaken by the Analytical Laboratories.

ESTIMATE OF COST

96. The estimated cost of the project is \$6 820 000. This estimate is made up as follows:

	\$
Building works including structural	3 170 000
Mechanical services	2 100 000
Electrical services	610 000
Lift service	50 000
Hydraulic services	300 000
Civil work	300 000
Landscaping	250 000
Site works	20 000
Security requirements	20 000
	<hr/>
	6 820 000
	<hr/>

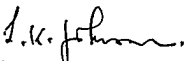
PROGRAM

97. Completion of documentation ready for calling tenders for this project is planned to take twelve months. Construction of the building will require approximately twenty-four months after letting the contract.

RECOMMENDATIONS AND CONCLUSIONS

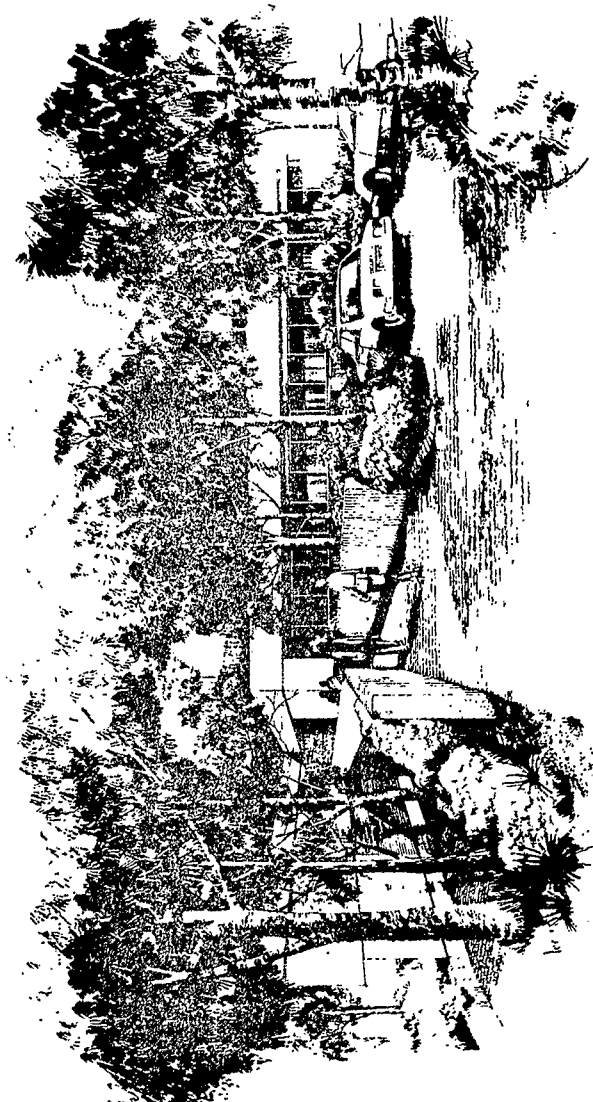
98. The summary of recommendations and conclusions of the Committee is set out below. Alongside each is shown the paragraph in the report to which it refers.

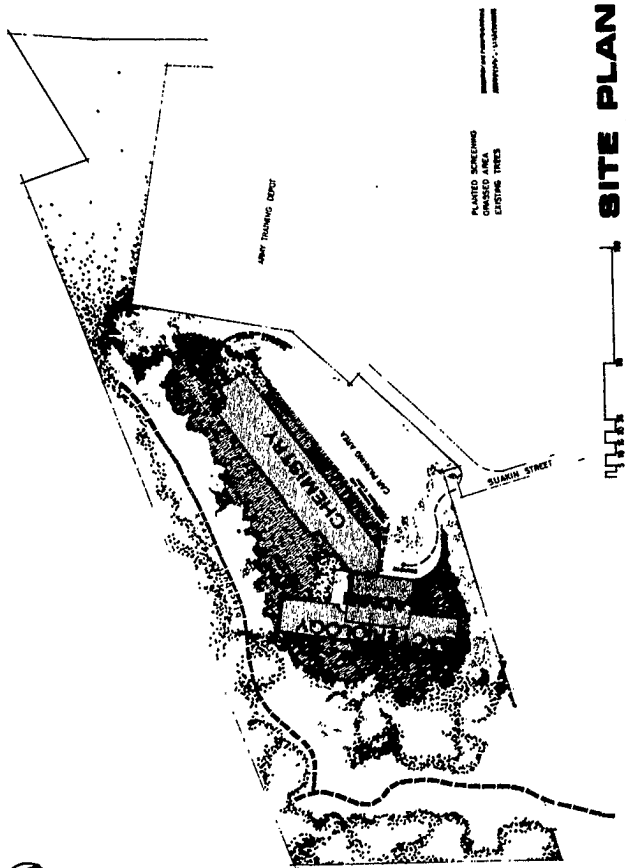
	<u>Paragraph</u>
1. THE ANALYTICAL LABORATORY IN NEW SOUTH WALES CARRIES OUT A WIDE RANGE OF ANALYSES AND INVESTIGATIONS OF IMPORTS AND EXPORTS ON BEHALF OF A NUMBER OF COMMONWEALTH GOVERNMENT DEPARTMENTS.	11
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11. THE ESTIMATED COST OF THE PROJECT IS \$6 820 000.	96


(L.K. JOHNSON)
Vice-Chairman.

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

15 September 1977.





SITE PLAN

