

1968

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

REPORT

relating to the proposal to erect a

LABORATORY BUILDING

for the

Division of Mineral Chemistry
C.S.I.R.O., North Ryde
New South Wales

BY AUTHORITY

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PARLIAMENTARY STANDING COMMITTEE ON PUBLIC WORKS

LABORATORY BUILDING FOR DIVISION OF MINERAL CHEMISTRY
C.S.I.R.O., NORTH RYDE, N.S.W.

R E P O R T

On 24 July 1968, His Excellency the Governor-General in Council referred to the Parliamentary Standing Committee on Public Works for investigation and report to the House of Representatives the proposal to erect at North Ryde, New South Wales a laboratory building for the Division of Mineral Chemistry of the C.S.I.R.O.

The Committee have the honour to report as follows:

THE COMMITTEE'S INVESTIGATION

1. The Committee received written submissions from the C.S.I.R.O. and the Department of Works and took evidence in Canberra from representatives of these bodies. We inspected the site of the proposed building as well as the facilities now being used by the Division of Mineral Chemistry at North Ryde.

THE PROPOSAL

2. The proposal submitted to the Committee is for the erection of a building comprising a ground and five upper floors for the Division of Mineral Chemistry, at an estimated cost of \$1.8 million. The building will in the main provide laboratory and ancillary space.

MINERALS RESEARCH BY C.S.I.R.O.

3. The spectacular growth of the Australian minerals industry in recent years and its potential for future growth is now widely known. A number of estimates have been made of the extent of deposits and the value of production. Indicative of these is the prediction that the annual value of exports of a group of 12 selected mineral products will increase from \$384 million in 1966-67 to \$829 million in 1971-72, thus equalling the value of Australia's major export, wool.

4. In the light of the vital and growing contribution that mining, processing and transport of minerals is making to the economy, C.S.I.R.O. has been increasingly conscious of the need for a more broadly based minerals research programme within the organization on a scale appropriate to the growing importance of the industry and with the object of ensuring even greater returns. Although the industry itself is spending about \$6 million annually on research, C.S.I.R.O. believes that it can make a unique contribution in this direction with its special skills and facilities, particularly in relation to longer term projects of broad national importance.

5. Minerals research in C.S.I.R.O. is carried out in the following major units -

Division of Mineral Chemistry (Melbourne and Sydney);

Division of Applied Mineralogy (Melbourne and Perth);

Division of Chemical Engineering (Melbourne); and

Ore Dressing Investigations Unit (Melbourne).

In addition to the work of these groups, investigations of interest to the industry are carried out on a smaller scale in other C.S.I.R.O. laboratories.

6. C.S.I.R.O. research has already made significant technological and economic contributions to the industry. Notable among these have been the initial discovery of a method of recovering uranium oxide from ore, increasing the efficiency of the recovery of gold by cyanidation, development of an instrument for determining the fineness of ground ores, and a method of atomic absorption spectroscopy for the analysis of mineral samples.

7. Other important projects including those on aluminium, beach sands and tin are currently in an advanced stage of development. Thus far the C.S.I.R.O. minerals research work has been restricted to processing and utilization, but exploration and mining are beginning to receive attention. It is clear, however, that much remains to be done to serve the national interest.

DIVISION OF MINERAL CHEMISTRY

8. Role In brief, the main object of the research of the Division is the economic advancement of the Australian minerals industry by the application of chemistry. It pursues this aim through four major avenues of research: mineral exploration, ore treatment, fuel technology, solids and surfaces; and its interest covers electrochemistry, fuel chemistry, geochemistry, inorganic chemistry and metallurgical chemistry. Projects are selected after consultation with, or under the financial sponsorship of mining companies, commercial institutions, State instrumentalities and Commonwealth departments having regard to the range of the Division's specialities.

9. History The Division had its origin in 1941 in the Minerals Utilization Section of the Division of Industrial Chemistry. Reorganization

of the latter in 1959 resulted in the formation of a number of separate divisions, one of which was the Division of Mineral Chemistry. Since 1965 the Division has occupied a former paint factory at Garden City in Melbourne and the staff located there is now about 90.

10. In March 1967, the Division expanded by taking over the former Division of Coal Research which was located at North Ryde, a north-western suburb of Sydney. This move was appropriate because of the changing situation in the coal industry which had developed large export markets and was not so much concerned with non-fuel utilization of coal. Furthermore, the discovery in Australia of natural gas made redundant most of the research programme on the gasification of coal. The interests and technical requirements of the two Divisions had much in common and the training and experience of the staff of the groups was very similar.

11. The Committee were told that the result has been to broaden the thinking of those concerned. It has also permitted more effective use of the knowledge, experience and facilities available and there has been improved planning of long-range programmes. The change has not significantly affected the amount of research being carried out for the coal industry except on some aspects of coal utilization.

12. Present Facilities Over 150 of the Division's staff are now located at North Ryde in some 20 buildings scattered over a nine acre site which is intersected by a busy arterial road, Delhi Road. Of permanent construction are two technical scale laboratories, two workshop buildings and a laboratory. The other buildings which vary in age up to about 20 years include prefabricated asbestos cement huts and temporary timber framed buildings.

13. Three of the asbestos cement huts are still in use - one accommodates the library and a drawing office, another the coal assay laboratory and the third houses expensive instrumental facilities for electron spin resonance spectrometry, gas chromatography and electron microscopy. Several of the huts have been improved by brick veneering. Administrative staff and the canteen occupy valuable floor space in one of the technical scale laboratories.

THE NEED

14. While the temporary and prefabricated buildings at North Ryde have served and are continuing to serve a useful purpose and efforts have obviously been made to maintain them in a satisfactory condition, they generally provide a very poor standard of accommodation for scientific research purposes. In some cases they pose a serious safety risk. Not only are they overcrowded for the present level of activity, but they do not provide the Division with the degree of flexibility which we believe it needs to accommodate changing programmes and technical requirements.

15. The fact that Delhi Road divides the site and the facilities is a major disability.

16. We therefore agree that there is a need to replace substandard and overcrowded space.

17. The provision of the proposed building is designed to allow

- staff to function more effectively;
- consolidation of the scattered resources of the group on the south side of Delhi Road;

- space in technical scale laboratories, now occupied by offices, library and canteen, to be used for its proper purpose;
- Melbourne staff to work in Sydney temporarily when their skills and knowledge are required there;
- greater flexibility in the Division's activities;
- an expansion of collaborative work with the industry.

Furthermore, it will permit, by the provision of expansion space for an extension of the Division's research activities when necessary.

18. The Committee believe therefore that there is a need for the work in this reference.

THE SITE

19. The Division's site is approximately six and a half miles from the Sydney G.P.O. It is proposed to erect the new laboratory building on a vacant area between the existing laboratory buildings and Dolhi Road. The laboratory will be located at the northern end of this area so that the remainder can be used for a future building should the need arise.

20. The terrain will allow the building to have a north/south orientation which is desirable for laboratory purposes.

21. Test bores have shown sound sandstone at depths varying between 10 ft and 25 ft and this is considered satisfactory for the building foundations.

22. The Committee consider that the site selected is suitable.

THE BUILDING PROPOSAL

23. Planning Considerations The relatively limited site and the need to plan for future building expansion are the reasons for proposing a multi-storey building comprising a ground and five upper floors.
24. The diversity of research interests and the need for adaptability of the Division's laboratories demanded a design which will permit ready change of layout. The design has therefore been planned to provide maximum flexibility of services and laboratory arrangements so that work areas can be adapted to meet the requirements of changing research programmes.
25. The multi-storey structure will not impede laboratory work of the Division. In fact, all laboratory rooms will have optimum natural light and without interference from any future buildings.
26. The building will be the tallest structure in the C.S.I.R.O. complex. Its height to width proportion will be architecturally pleasing and its design character, utilitarian. The laboratory function is expressed by the window grouping and the demountable facing to the vertical riser shafts on the external walls.
27. Occupation The ground floor will provide executive and administrative office accommodation and house the PABX, library, lunch room and plant room.
28. The laboratory floors will be from the first to the fifth. Each floor will have a number of laboratories as required, with associated office space, laboratory service rooms, workshops, conference rooms, plant rooms, toilets and change rooms. The computing room and drawing office will be on the first floor.

CONSTRUCTION

29. Structure The building frame will be reinforced concrete with steel roof trusses. Columns will be supported on concrete piers founded on sandstone. Internal partitions will be of concrete block construction.

30. Finishes and Fittings Generally, external walls and the lift tower will be of face brickwork. Between columns will be infill panels of face brick and aluminium double hung sashes. The vertical risers between windows will have removable anodised panels to harmonise with adjacent brick surfaces. Plant situated on the roof will be screened by profiled anodised sheeting whilst the roof will be covered with galvanised steel decking.

31. Interior walls will be painted concrete blocks except in toilets where glazed ceramic tile surrounds will be used. The ceilings of the ground to fourth floors will be 'off form' concrete painted to match walls, and the ceiling of the fifth floor will be fibrous plaster finished in enamel. Generally, the floors will be finished in vinyl except in toilets and stores/workshop areas, where ceramic tiles and granolithic respectively will be used. Plant room floors will have an industrial type non-slip finish.

32. Laboratories will be fitted with C.S.I.R.O. standard benches. They will be provided with sinks and service outlets for hot and cold water. Vacuum, compressed air and refrigerated water will be available as required. Fume cupboards will be provided where necessary.

33. Mechanical Services The services tunnel, lift machinery room, toilets, fire-proof stores and the kitchen section of the lunch room, will be mechanically ventilated.

34. The rest of the building will be air conditioned from chiller and oil-fired boiler units located on the ground floor. Cooling towers will be on the roof. On the south side of the laboratory floors, laboratory and computing areas requiring special temperature and humidity conditions will be served by air handling plants located on each of the floors. The larger laboratories on the north side will be conditioned by fan coil units.
35. Electrical Services The main building switchboard will be supplied from an existing substation. Distribution boards will provide a flexible electrical distribution system to satisfy the changing laboratory needs.
36. Lighting will be by fluorescent fittings.
37. Lifts An automatic passenger/goods lift designed to carry up to 4,000 lbs at a speed of 250 ft per minute will be installed initially. A second lift shaft has been provided should a further lift be needed in the future.
38. Fire Protection Generally, automatic thermal fire alarms will be provided throughout the building. In the computer room automatic early warning devices will be installed and the service plant will be protected by an automatic sprinkler system. Hydrants, hoses and portable extinguishers will be located at appropriate points throughout the building.
39. Water and Sewerage Anti-corrosive laboratory waste drainage will be provided by pyrex glass or epoxy-resin lined cast iron drains. Other areas will be served by conventional means.
40. Roads and Parking These areas will be bituminous surfaced. Parking will be available for 24 vehicles.
41. Committee's Recommendation The Committee recommend the construction of the work in this reference.

PROGRAMME

42. It is expected that after an approval to proceed is given, the preparation of final drawings and tender documents will take about six months. The Committee noted that construction of the work is expected to take about 18 months.

ESTIMATE OF COST

43. The estimated cost of the work when referred to the Committee was \$1.8 million made up as follows:

	\$
Building works	920,000
Engineering works	880,000
	<u>1,800,000</u>

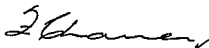
RECOMMENDATIONS AND CONCLUSIONS

44. 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

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|----|---|----|
| 1. | THE TEMPORARY AND PREFABRICATED BUILDINGS AT NORTH RYDE GENERALLY PROVIDE A VERY POOR STANDARD OF ACCOMMODATION FOR SCIENTIFIC RESEARCH PURPOSES. | 14 |
| 2. | THERE IS A NEED TO REPLACE SUBSTANDARD AND OVERCROWDED SPACE. | 16 |
| 3. | THERE IS A NEED FOR THE WORK IN THIS REFERENCE. | 18 |

	<u>Paragraph</u>
4. THE SITE SELECTED IS SUITABLE.	22
5. THE COMMITTEE RECOMMEND THE CONSTRUCTION OF THE WORK IN THIS REFERENCE.	41
6. THE ESTIMATED COST OF THE WORK WHEN REFERRED TO THE COMMITTEE WAS \$1.8 MILLION.	43



(F.C. CHANEY)
CHAIRMAN.

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

12 September 1968.