Parliamentary Standing Committee on Public Works

REPORT

relating to the proposed

CSIRO RIVERSIDE CORPORATE PARK, NORTH RYDE, NSW—JOINT RESEARCH COMPLEX FOR CSIRO MOLECULAR SCIENCE AND FOOD SCIENCE AUSTRALIA

(Eighth Report of 1999)

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA
1999

The Parliament of the Commonwealth of Australia

CSIRO Riverside Corporate Park, North Ryde, NSW—Joint Research Complex for CSIRO Molecular Science and Food Science Australia

Parliamentary Standing Committee on Public Works

23 September 1999
Canberra

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Contents

APPENDICES

Membership of the Committee

Chair	Hon. Judi Moylan MP	
Deputy Chair	Hon. Janice Crosio MBE, MP	
Members	**House of Representatives**	**Senate**
	Mr John Forrest MP	Senator Paul Calvert
	Mr Colin Hollis MP	Senator Alan Ferguson
	Mr Peter Lindsay MP	Senator Shayne Murphy
	Mr Bernie Ripoll MP	

Committee Secretariat

Secretary	Mr Bjarne Nordin
Inquiry Secretaries	Mr Michael Fetter
Administrative Officer	Mrs Angela Nagy

Extract from the Votes and Proceedings of the House of Representatives

No. 33 dated Tuesday, 30 March 1999

PUBLIC WORKS—PARLIAMENTARY STANDING COMMITTEE—REFERENCE OF WORK—CSIRO RIVERSIDE CORPORATE PARK, NORTH RYDE, NSW

Mr Slipper (Parliamentary Secretary to the Minister for Finance and Administration), pursuant to notice, moved—That, in accordance with the provisions of the *Public Works Committee Act 1969*, the following proposed work be referred to the Parliamentary Standing Committee on Public Works for consideration and report: CSIRO Riverside Corporate Park, North Ryde, NSW—Joint Research Complex for CSIRO Molecular Science and Food Science Australia.

Question—put and passed.

1. On 30 March 1999, the House of Representatives referred to the Parliamentary Standing Committee on Public Works for consideration and report the proposed CSIRO Riverside Corporate Park, North Ryde, NSW—Joint Research Complex for CSIRO Molecular Science and Food Science Australia.

The Reference

2. The terms of the reference were as follows:

> CSIRO proposes to construct a new joint complex for its Division of Molecular Science and Food Science Australia at Riverside Corporate Park, North Ryde, New South Wales. The proposed works are a further stage in the major redevelopment of the CSIRO site at North Ryde into a high technology business park—Riverside Corporate Park, which will incorporate both CSIRO research and development facilities and compatible private industry technology developments.
>
> The new complex will replace predominantly old and substandard existing facilities at North Ryde that are now inadequate for conducting modern scientific research. This project will establish and consolidate new replacement research facilities for Food Science Australia—an incorporated joint venture between CSIRO, the Australian food industry science centre and the Division of Molecular Science—within the central CSIRO precinct at Riverside Corporate Park.
>
> The new facilities will provide accommodation for some 220 Food Science Australia and Division of Molecular Science staff plus long-term visitors and students. It will also provide amenities, support services and infrastructure which will be shared among all CSIRO divisions within the central precinct of Riverside

Corporate Park. The new research facilities will consist of modern laboratories, laboratory special suites, support areas, laboratory offices, industrial scale process bays, as well as accommodation for the management and administration staff.

The joint facilities to be shared among all CSIRO divisions on the site include a library, canteen, a 140-seat auditorium and a central reception area as well as common store for both hazardous and non-hazardous goods and general consumables.

Associated infrastructure—including fully networked computing capabilities, a comprehensive access control security system and a building maintenance system—will be included in the project.

Associated siteworks will include roads, carparking, site engineering services and landscaping. Substandard, temporary and redundant existing buildings located on the site of the new complex will be demolished.

3. When referred to the Committee, the project had a budget of $49 million.

The Committee's Investigation

4. The Committee received a written submission from the CSIRO and took evidence from CSIRO officials at a public hearing held at Riverside Corporate Park, North Ryde on 11 May 1999.

5. The Committee also took evidence from:

- Ryde-Hunters Hill Flora and Fauna Preservation Society;
- Goodman Fielder;
- Meddicoll Pty Ltd;
- Miss Rhonda Ware (private citizen); and
- Mrs Helen Ferns (private citizen).

6. In conjunction with the public hearing, the Committee was briefed by CSIRO officials on the proposed works and undertook an extensive inspection of existing CSIRO facilities at North Ryde and the site proposed for the new facility.

7. Written submissions were also received from the following organisations and were incorporated in the transcript of evidence:

- Elastomedic Pty Limited;

- AMBRI Pty Limited;
- Peptech Limited and Peptech Animal Health Pty Limited;
- Environment Australia—Environment Protection Group;
- Dragoco Australia;
- Faulding;
- Cooperative Research Centre for Eye Research and Technology;
- NSW Department of Transport;
- Grains Research and Development Corporation;
- Bakels Research (Pty) Limited;
- Bioquest Limited;
- CIBA Vision;
- Orica Australia Pty Ltd;
- Ryde City Council;
- NSW Dairy Corporation;
- NSW Environment Protection Authority;
- University of New South Wales—Faculty of Life Sciences;
- NSW National Parkes and Wildlife Service;
- Silesia Flavours;
- New South Wales Fire Brigades;
- Mrs Diane Michel; and the
- Australian Food and Grocery Council.

8. Witnesses who appeared before the Committee at the public hearing are listed in APPENDIX A. The Committee's proceedings will be printed as Minutes of Evidence.

Background

Overview

9. CSIRO is one of the largest and most diverse national scientific research institutions in the world. It has a staff of 7,000 working in 70 laboratories and field station sites throughout Australia and some foreign countries. Since its inception in 1926, CSIRO has established an international reputation for excellence and achievement in basic and applied research.

10. About 2,500 research scientists are employed by CSIRO with collective expertise in almost every major scientific discipline.

11. CSIRO collaborates with industry and maintains close and mutually profitable relationships with universities and other research and tertiary education bodies in Australia and overseas.

12. In 1998/99 the Organisation's revenue budget is $722.2 million. Of this amount $475.4 million has been appropriated by the Parliament. CSIRO estimates that the balance of $246.8 million will come from industry and other sponsors of research.

Organisational structure

13. CSIRO has been structured to respond to Australia's needs and to ensure that its research effort and scientific resources are focussed in areas of national priorities.

14. The basic business units of CSIRO are 23 Divisions which are organised along discipline lines. Each Division is headed by a Chief who plans, guides and evaluates the research efforts of the Division. Chiefs of Divisions are accountable to one of four Deputy Chief Executives for the operations of their Divisions. Divisions are grouped into five Alliances, each chaired by a Deputy Chief Executive. Each Alliance concentrates on a broad industry field, such as Agribusiness

15. The Deputy Chief Executives and the Chief Executive form CSIRO's senior management team. The Chief Executive, who is a member of the ten-member CSIRO Board, is responsible for the Organisation's activities as a whole.

Food Science Australia

Largest food research and development organisation

16. Food Science Australia is Australia's largest food research and development organisation. It is a joint venture of CSIRO Food Science and Technology and the Australian Food Industry Science Centre (AFISC), a statutory organisation in Victoria. The joint venture commenced in December 1997 in response to the desire of the food industry, CSIRO and AFISC to:

    - create a more capable and internationally competitive national research and development facility for the Australian food industry; and
    - make more efficient and effective use of human, physical and financial resources.

17. Food Science Australia has a Board consisting of senior executives from the food industry, academia, the Victorian government and CSIRO. The Chief Executive is located at Riverside Corporate Park.

Largest sector of manufacturing industries

18. Food Science Australia provides research and development and scientific services for the largest sector of the Australian manufacturing industry, both in turnover and employment. In 1995 exports by the food processing sector accounted for $16.8 billion. In sharp contrast, imports totalled $3.8 billion.

19. The food processing sector has grown by 3.5 per cent annually over the last five years. It is an important provider of employment, particularly in small to medium enterprises. The majority of food processing operations are located in the eastern States in and around the capital cities, notably Sydney, although they are also a key component of many regional economies.

Budget, staff, locations

20. Food Science Australia has an annual operating budget of approximately $33 million, a staff of about 300. It operates from four major sites at:

    - Riverside Corporate Park;
    - Cannon Hill (Brisbane);
    - Werribee (Melbourne); and
    - Highett (Melbourne).

21. Each site has a focus on a set of individual scientific and technical strengths and industry sectors of particular importance to each geographic region.

National expertise in science groups

22. The North Ryde laboratory has national expertise in food safety, food packaging, refrigeration, storage and transport, food processing, process control, plant biopolymers, micro analytical chemistry and sensory research.

23. The five current scientific groups of Food Science research groups are:

- Ingredient innovation
  - ⇒ development, manufacture and utilisation of food ingredients
- Food and packaging technology
  - ⇒ adding value to commodity raw materials by transforming and packaging them to create food products that meet consumer requirements of safety and price
- Food engineering
  - ⇒ process modelling, development, design and specification
  - ⇒ equipment design, prototyping and development
  - ⇒ refrigeration, storage, transport and pilot process testing for the whole food value chain
- Food safety and quality
  - ⇒ understanding the environmental conditions that control food-borne micro organisms through the food chain
  - ⇒ microbiology and Production Hygiene section at each site
  - ⇒ identification and evaluation of trace food chemicals
  - ⇒ provision of expertise to meat industry
- Consumer science
  - ⇒ identification of the nutritional, sensory, attitudinal and psychosocial determinants of food choice and of optimal food intake patterns
  - ⇒ enables food industry to identify customer needs and preferences and to clearly establish the health and nutrition benefits of their products
  - ⇒ joint initiative with the CSIRO Division of Human Nutrition

24. In addition, the Food Australia Commercial Group works with scientific groups to:

- identify and capture new business opportunities;
- deliver commercial outcomes; and

- deliver / advise information and professional development services to the food industry.

Companies and exports benefit

25. Interaction with industry customers and collaborators associated with the Riverside Corporate Park site include the following companies:

Large Companies	**Small-Medium Enterprises (SMEs)**
Arnotts	Flavourtech
Cadbury Schweppes	Snow Confectionery
Goodman Fielder	Green Triangle Growers
Dairy Farmers	Tensa Food P / L
Master Foods	Sias Australia
Bonlac	Appledale Processors
Simplot	Original Juice Co.
Southcorp	Ardmona

Encouragement of industry investment

26. Food Science Australia has sought to increase industry investment in research and development through the outsourcing by the private sector of business development.

27. An example is the 'Food into Asia' Program. This aims to increase exports of Australian food into Asia by use of a CSIRO-government fund to match expenditure by companies on research with CSIRO.

Food policies

28. Food Science Australia continues to have a significant role in providing scientific and technical information to underpin the development of Commonwealth and State food policies achieved by interaction with key government agencies and committees, such as the Australian and New Zealand Food Authority, Australian Quarantine Inspection Service and State Government departments. FSA has made a substantial contribution to the development of food safety policy, for example, in the production of smallgoods.

CSIRO Molecular Science

Centre of excellence

29. CSIRO Molecular Science is a centre of excellence for biological and chemical discovery. It provides a broad research base to support the development of industries in the pharmaceutical and human health and the chemicals and plastics sectors of the economy.

30. The CSIRO Molecular Science Laboratory conducts research predominantly in two broad areas: molecular biology and biomaterials. This research benefits the Pharmaceutical and Human Health Sector of the economy by working with industry partners to develop new products.

31. In 1995/96 the pharmaceutical industry accounted for exports of $800 million and imports of $1.6 billion, with total industry sales of $4.3 billion. New products capable of earning export income for Australia will have a direct national benefit by reducing the gap between value of imports and exports and thus directly benefit the Australian economy.

32. The Division has an annual budget of $38 million and a total of 334 staff at sites at Riverside Corporate Park and at Clayton and Parkville in Melbourne.

33. The laboratory at Riverside Corporate Park has 65 staff and is envisaged to expand to 85 with the development of the organic chemistry capability to support research programs and to increase service to the chemicals and plastics industry in the Sydney region.

34. The Division has six research programs:

- Biotherapeutics and delivery
  - ⇒ prostate cancer diagnosis and therapeutics
  - ⇒ drug delivery technology based on fatty acid conjugates
  - ⇒ bacterial drug resistance
  - ⇒ engineered gene regulation for use as therapeutics that can interfere with disease gene expression

  These are based at Riverside Corporate Park

- Molecular discovery and processing
  - ⇒ chemical synthesis and processing based on organic chemistry
  - ⇒ scale-up facilities to transform laboratory processes to prototypes and pilot plants
  - ⇒ fermentation technologies

about one quarter is based at Riverside Corporate Park with the balance at Clayton

- Biomaterials and bioengineering
  - ⇒ biomaterials design for implantable and disposable medical devices
  - ⇒ evaluation of biocompatibility of synthetic implantable materials
  - ⇒ production of prototype materials and medical devices for clinical evaluation

  These are based at North Ryde, Clayton and Parkville

- Applied chemistry and polymer science
  - ⇒ the design and synthesis of polymers, composites and engineered resins, including advanced materials for the aeronautical and automotive industries
  - ⇒ plastics recycling, molecular simulation, microwave reactor technology, clean production

  These are based at Clayton

- Specialty chemicals and environmental technologies
  - ⇒ design of processes for water treatment and cleaner production
  - ⇒ applied surface chemistry, electrolyte chemistry, sewage treatment and sludge characterisations

  These are based at Clayton

- Protein and pharmaceutical sciences
  - ⇒ receptor structure, cell signalling and glucose transport, protein engineering for diagnostics and therapeutics, new pharmaceuticals
  - ⇒ disease targets are diabetes and cancer

  These are based at Parkville

35. All the research programs of CSIRO Molecular Science have extensive collaboration and interactions with industry. For example, at North Ryde, F.H. Faulding and Co. Ltd has had a three year joint research program on new drug delivery technology, which has found methods for delivery of many existing and future pharmaceuticals, as well as for delivery of gene therapeutics. This will be marketed as lipidation technology, with Faulding targeting applications in the area of auto-immune diseases and seeking alliance partners to commercialise the technology for other areas.

36. F.H. Faulding and Co. Ltd is also a major supporter of a gene therapy research project at North Ryde which is, initially, targeting prostate cancer, but with potential application to cancer treatment in general.

37. Products from the gene therapy group are undergoing licensing for research sale by Life Technologies Inc (USA) and are under evaluation by Gene Therapeutics Inc. Contracts have been entered into with the Beta-Alastine foundation and DuPont (USA) for development of products of research at North Ryde.

38. The Novartis subsidiary of Ciba Vision Corporation, has been commercialising eye products such as long life lenses, intraocular implants and an implantable artificial 'contact lens', derived from the Biomaterials Program contribution to the CRC for Eye Research and Technology. Commercialisation of these materials for non-eye applications is being pursued by another company formed from the CRC participants.

CSIRO and CRC Research Activities

39. Several of the Research Groups of CSIRO Molecular Science and Food Science Australia have formed highly successful alliances by way of CRCs with other Australian research and development providers to facilitate closer ties between public and private research groups and to assist the uptake of new technologies by industry. The CRCs and alliances are:

- CRC for food industry innovation;
- CRC for international food manufacture and packaging science;
- CRC for industrial plant biopolymers;
- CSIRO Aquaculture;
- CRC for eye research and technology;
- CRC for cardiac technology; and
- CRC for diagnostic technologies.

The Need

Development of facilities at North Ryde

40. The North Ryde site is now known as Riverside Corporate Park which is located on the north eastern fringe of the Ryde Municipality adjacent to the Lane Cove State Recreational Area, with frontages to Delhi Road and Epping

Road, North Ryde. Riverside Corporate Park has an area of 27.77 hectares and is approximately 12 kilometres north-west of the Sydney Central Business District. It is the CSIRO principal research centre in NSW.

41. In 1988, the Committee examined and reported on a proposal for the redevelopment of the North Ryde site. The proposal encompassed:

- construction of a gene technology laboratory for the Division of Biotechnology;
- a geophysics laboratory for the Division of Minerals Exploration;
- modifications to mechanical services;
- enlargement of central plant areas;
- extension and modification of existing facilities; and
- construction of a number of new roads and services.

42. The Committee recommended construction of the redevelopment at a cost of $18.5 million at August 1988 prices.

43. The proposal was not proceeded with. Planning coincided with the acquisition by CSIRO of portions of the Riverside site from the Department of Transport Materials Handling Bureau and the absorption of the National Building and Technology Centre into the organisation.

44. As a result, the CSIRO land inventory at North Ryde increased to 27 hectares. The land was very lightly occupied. It was subsequently decided by the Government that, rather than fund any redevelopment and new construction from the budget, it should be funded from the proceeds of a rationalisation of CSIRO property holdings at North Ryde. A subsequent study, undertaken by CSIRO consultants to assess the full potential of the site, found:

- much of the building stock at North Ryde was substandard, with a number of more substantial buildings nearing the end of their economic lives; and
- if CSIRO rationalised and redeveloped its activities on the site, not only could priority buildings be funded, but the land released could allow the development of a high quality technology park with CSIRO as a central precinct.

45. The consultants also found that the site, of 27 hectares, was lightly occupied with a floor space to land area ration of 0.18:1 compared with CSIRO's 15.4 hectare site at Clayton (Victoria) which has plot ratios of 0.6-0.74:1.

Committee endorses Technology Park concept

46. In 1991/92, the Committee examined and reported on the implementation of a strategy involving the staged development of the North Ryde site as envisaged by the Government. (Committee's First Report of 1992, Parliamentary Paper 82/1992). The main elements of the strategy, which embodied four development principles were:

    - rationalisation of all CSIRO research activities at North Ryde and the consolidation of all of its facilities then scattered across the whole site, into discrete, identifiable CSIRO precincts;
    - upgrading of all potentially viable existing accommodation within such precincts;
    - alienation of the land freed-up as a result of the consolidation as a business precinct, which could be sub divided into marketable parcels of land for private sale to commercial interests; and
    - redevelopment and reconstruction of CSIRO facilities on the CSIRO precincts from funds realised from land sales.

47. CSIRO advised the Committee that rationalisation of activities and the redevelopment of its existing resources at North Ryde has involved a continuing program to provide and consolidate, within identifiable CSIRO precincts, high quality, modern facilities appropriate for conducting current and anticipated scientific research and development activities.

48. Concurrently and progressively the business precinct has been developed and the infrastructure and site services across the whole of the North Ryde property upgraded or replaced.

Molecular Science

49. CSIRO Molecular Science is currently located on the eastern boundary of the North Ryde site in five buildings built or refurbished between 1964 and 1981, two of them double storey.

50. Gene technology, cell biology and polymer chemistry and the application of these to the development of pharmaceuticals and medical devices, have been some of the most rapidly developing fields of science over the past twenty years. There have been enormous developments in new sophisticated techniques and associated equipment. These changes have combined to make the current Molecular Science laboratories, and its facilities for specialised equipment and support, inadequate for the Division to continue to perform leading edge research.

51. CSIRO submitted that due to lack of facilities in Sydney, CSIRO Molecular Science has not been able to adequately respond to the regional need for research, which is significant and growing. The Sydney region is the base for about 30 per cent of Australia's chemicals and plastics industry. Without an adequate facility, CSIRO Molecular Science has supported this region of the industry from its Clayton laboratories This is not as effective and efficient as providing service from a local base.

52. Apart from being inadequate in terms of facilitates available for science, the current molecular science building does not have a sprinkler system. It is vulnerable to fire. The ventilation of laboratories is also severely deficient. Many are only ventilated with window air-conditioners which are inadequate for proper ventilation to modern standards. CSIRO indicated that safety standards in laboratories are moving ahead and new buildings need to be configured to the latest standards. It would be totally uneconomic to upgrade these services in the existing building.

Food Science Australia

53. Food Science Australia currently operates from 14 buildings in the north-west corner of Riverside Corporate Park. These house laboratories, food process bays, a food sensory research centre, a library and related support and administrative facilities. The buildings, which range in age from 38 to 8 years, are at or nearing the end of their economic and useful lives.

54. In terms of occupational health and safety, the laboratory facilities and services, particularly process bays do not comply with current codes of practice and standards and are incompatible with the requirements for modern research.

55. Food Science Australia at Riverside Corporate Park interacts extensively with the food processing industry and related research groups in the Sydney region. This includes BRI Ltd (located on Riverside Corporate Park), CRCs for International Food Manufacturing and Packaging Science, Industrial Plant Biopolymers, Food Industry Innovation and Quality Wheat, the Universities of Sydney, New South Wales and Western Sydney and Newcastle University. The facilities available in the proposed complex will further enhance and extend the benefits of these interactions.

56. Some of the key issues driving change in the food processing industry have raised the demand for the expert industry support provided by Food Science Australia. Industry growth is increasingly based on value addition to products that are manufactured in Australia and sold in the global market. Greater emphasis is being placed on product quality, including food safety,

and processing efficiency. The industry recognises innovation as central to long term survival of manufacturers. Company restructuring has given rise to increased outsourcing of research and development and some scientific functions. In this industry environment it is essential that Food Science Australia has the laboratory and associated facilities needed to perform the long term, strategic research that underpins the development of future technologies and capabilities for the industry.

Location of food science in Sydney

57. Food Science Australia deals mainly with processed food and deals mainly with companies located in the Sydney area. The headquarters of all major food companies are located in Sydney and Melbourne with more local operators based in Brisbane and Perth. Most of the companies and personnel CSIRO staff have dealings with are in the Sydney area. CSIRO deals with senior management and product and marketing directors. The organisation also has links with the University of Western Sydney, University of Sydney and the University of New South Wales.

Food Science—Victorian Government—continuation of funding

58. The Committee questioned CSIRO about guaranteed funding of Food Science Australia by the Victorian Government. CSIRO advised that there is no formal requirement for the Victorian Government to continue to contribute funds into the joint venture, nor is there a requirement on the part of CSIRO. CSIRO is, however, confident that the Victorian Government has shown a long-term commitment to investment in food and agriculture. In the recent Victorian budget there was a substantial increase in the amount of funding available for research and development in food and agricultural industries. There is a long record of commitment by the Victorian Government and CSIRO believes this will not diminish in the future.

Summary

59. The existing buildings on both CSIRO Molecular Science and Food Science Australia sites have problems with occupational health and safety and fire protection to be addressed, but in their current condition, do not warrant the expense required bringing them to the current standards. The inadequacies include overcrowding, the lack of proper ventilation and specialised fume cupboard facilities, poor air-conditioning, substandard electrical and mechanical services, inappropriate space and conditions for highly sensitive equipment and inadequate fire safety measures.

Benefits of Collocation of the CSIRO Research Activities

60. There is considerable advantage in the collocation of CSIRO Molecular Science and Food Science Australia due to the opportunity to integrate many research support facilities and share equipment that underpins their research activities. The two organisations share the research disciplines of molecular biology, organic chemistry and microbiology.

61. There are opportunities for scientific synergies in several areas that collocation will enable CSIRO to capture e.g.

- Food Science Australia studies of pathogen in foods enhanced by access to CSIRO Molecular Science expertise in the molecular biology of micro organisms;
- CSIRO Molecular Science and Food Science Australia are involved in complementary work on development of sophisticated packaging materials for food products; and
- Food Science Australia studies of the molecular basis of behaviour and functionality of components of food will be enhanced by access to CSIRO Molecular Science expertise.

62. Much of the biological research performed by the two organisations requires specialist instrumentation, sterile laboratory glassware, biological media preparation, and laboratory animals. There will be considerable economies of scale and improved productivity through locating these support functions in the same building.

63. Both CSIRO Molecular Science and Food Science Australia have a requirement for specialised analytical facilities, such as Nuclear Magnetic Resonance and Electron Microscopy, that require complex, costly instruments housed in purpose-built rooms. These will be provided on a shared basis. The Committee questioned savings arising from sharing equipment. CSIRO advised, by way of example, that a typical magnetic resonance spectrometer costs between $300,000–400,000 and savings resulting from shared use would be in the vicinity of $500,000 for this item of equipment alone.

Collocation—other facilities

64. The Committee questioned CSIRO about planning involving the collocation of other CSIRO activities in Sydney at North Ryde. CSIRO advised the Committee that its divisions are located at a number of other sites in the Sydney area.

65. CSIRO is collocated with the Australian Nuclear Science and Technology Organisation at Lucas Heights. The need for access to a nuclear research reactor will remain and it is not proposed to significantly change the number of staff at Lucas Heights. CSIRO also operates from a site at Prospect which is devoted to animal production.

66. In North Sydney, apart from North Ryde, CSIRO is located at three other sites:

- a relatively small site for the Division of Mathematics and Information Sciences at Macquarie University;
- Marsfield—occupied by the Division of Radiophysics; and
- Lindfield—location of the National Measurement Laboratory.

67. In developing the master plan for North Ryde, CSIRO took into consideration activities undertaken at these other sites to establish if they could be moved to North Ryde. The National Measurement Laboratory at Lindfield requires vibration-free and electromagnetic radiation-free environments. On these grounds, North Ryde would not be suitable. There is a long-term plan for the Division of Radiophysics to relocate from Marsfield to Lindfield although details have not been finalised.

Committee's Conclusions

68. **The Riverside Corporate Park, North Ryde, contains the largest aggregation of CSIRO research activities in New South Wales. Long term planning envisages development of the corporate park, within CSIRO precincts, to provide modern research facilities.**

69. **Land surplus to CSIRO requirements has been developed and infrastructure and site services have been upgraded or replaced for sale to private sector companies. Further rationalisation and consolidation of CSIRO facilities is planned.**

70. **Food Science Australia and the Division of Molecular Science undertake wide-ranging strategic and applied research for industries which play a vital role in the continued economic growth of Australia.**

71. **Both Divisions are located at North Ryde in facilities which are inadequate and cannot be adapted to contemporary and future research requirements. North Ryde is regarded as an ideal location for both organisations which are required to interact with companies and universities located in the Sydney area.**

72. **A need therefore exists for the provision of modern research facilities for Food Science Australia and the Division of Molecular Science at the North Ryde site. Both Divisions would benefit from collocation.**

The Proposal

Outline

73. The proposal comprises a main complex of five levels and an underground carpark. The research building profile will comprise two parallel research wings, linked by a central covered space, with perimeter window walls to office and laboratory benches.

74. The complex will comprise modern research laboratories, service and equipment rooms, research, management and administration offices, together with industrial scale process bays for pilot bay processing and polymer fabrication, and facilities for a small animal house. Specialist research facilities will include nuclear magnetic resonance imaging, scanning electron microscopy, sterilising, media preparation and tissue culture rooms.

75. The Complex will also provide amenity and support facilities to be shared with the other CSIRO Divisions currently at the site—Exploration and Mining, Petroleum Resources and Building, Construction and Engineering. These facilities will include a site library, site canteen, bulk chemical stores and a 140-seat auditorium. The auditorium will be a resource for use by all research groups located at Riverside Corporate Park and, by negotiation, also for use by the resident businesses on the site.

Allocation of floors

76. Facilities in at ground level in the main complex will include:

- main entry;
- auditorium;
- sensory centre;

- library and offices;
- canteen and kitchen;
- animal house; and
- an area for outdoor passive recreation.

77. The first and second levels will house facilities for Food Sciences Australia, comprising laboratories, offices, meeting rooms, stores and support areas.

78. The third and fourth levels will be occupied by Molecular Science with some shared suites on both floors. Level 5 will house plant rooms.

Floor area

79. The proposed development will comprise approximately 11,080 square metres of Useable Floor Area (UFA), which represents approximately 18,150 square metres of gross floor area (GFA) and will include:

- research facilities for CSIRO Molecular Science and Food Science Australia —6,400 square metres for
  - ⇒ laboratories
  - ⇒ laboratory special suites and support areas,
  - ⇒ laboratory offices;
- management and administration areas for CSIRO Molecular Science and Food Science Australia—775 square metres;
- joint amenities—library, canteen / recreation area, auditorium and reception—1,430 square metres;
- Food Sciences Australia sensory centre—135 square metres;
- Molecular Science animal house—465 square metres;
- Food Sciences Australia technical and process Bays—1,775 square metres; and
- precinct support facilities—100 square metres.

Useable space

80. The Committee noted that the proposed development comprises 11,080 square metres of useable floor space from a gross floor area of 18,150 square metres. This equation results in 30 per cent of the floor space being unusable. The Committee questioned this. CSIRO responded that useable space will be the net space used for laboratories and office areas. In any building, there are

requirements to provide plant areas, corridors and the building structure. These define net useable space and gross floor areas.

Staffing and sharing of facilities

81. The Committee questioned the capacity for future expansion if more staff will be required. CSIRO advised that the master plan for the central precinct is to relocate the Fire Technology facilities to the southern precinct which would create a site within the central precinct which would meet expansion requirements for the proposed facility or for another CSIRO division.

82. The proposal requires no relocation of staff to the North Ryde site. The total of 220 research and support staff that will be accommodated in the Complex are, predominantly, currently working at North Ryde.

83. The consolidation of the proposed research facilities within discrete, generic laboratories and the provision of common equipment and instrument rooms within the one building, rather than in separated structures, would maximise the flexibility of the accommodation and enhance the opportunities for future changes within and between research groups and programs.

Siting and location of elements

84. The site for the proposed new Complex forms part of the central precinct of Riverside Corporate Park which is bounded by Delhi Road to the north and Julius Avenue.

85. The main Research Building will be aligned on an east-west longitudinal axis parallel with the Delhi Road frontage, with a boundary setback to provide a landscaped buffer and amenities. The building will be aligned with the existing Mineral Research Laboratories—building 12, providing good opportunities for linkages to divisions located in the central precinct.

86. The siting of the new Joint Research Complex conforms with the general principles of the site masterplan.

87. The site is on the Delhi Road ridge and rises gently by about two metres towards the south-east from the Delhi Road western entry to Riverside Corporate Park.

88. Detailed geotechnical investigations will be conducted to confirm information available from previous investigations which have indicated medium plasticity sandy clay to a depth of 1m to 1.5m overlying weathered sandstone of variable strength. This is consistent with the materials exposed during excavation for new buildings east of the CSIRO Central Precinct.

89. Observations during excavation on properties to the east of the proposed complex have indicated that the existing ground water table will be below the level of the excavations for the new complex.

90. The site is currently occupied by temporary and redundant buildings, which are to be demolished as part of this proposal, and an at-grade carparking area. Existing buildings to the south and east of the site constrain development in these directions.

91. The Committee questioned the rationale for locating the complex along Delhi Road. It was pointed out to CSIRO that Building 12 is set further back than the proposed building. If set further back, much of the criticism could be offset. CSIRO advised that in a master planning sense, the building will create a front door to the Park. CSIRO examined other potentially available sites in terms of cost to the taxpayer due to land sales foregone, or extra cost due location on a sloping site and the benefits of collocating two divisions.

92. The Committee was advised that following discussions with Ryde City Council, CSIRO has modified the design of the proposed complex to address Council concerns relating to building height and setback from the boundary. The building height of the proposed complex will be similar to that of a private development currently under construction on the Delhi Road frontage which has been approved by the Council.

93. CSIRO also advised that the landscaped buffer zone along the Delhi Road frontage has been increased in width beyond Council setback requirements and the existing landscape will be enhanced with additional tree planting, dominated by a tree canopy.

94. CSIRO indicated considerable effort had been undertaken during design to reduce the height of the building below that of the adjacent minerals building and below the height of other buildings on Delhi Road. Ryde City Council has written guidelines relating to building heights and it is in CSIRO's interest to meet the spirit and the intent of these requirements. CSIRO provided a commitment to the Committee that it would be pro-active in working with Ryde City Council about any concerns about the height of the building and associated exhaust stacks.

95. A loading dock for the Research Wing will adjoin dock areas to the Process Bays and will be central to the Research Zone, incorporating a goods lift.

96. CSIRO advised the Committee that provision of an organic chemistry laboratory will be an important new facility in Sydney for CSIRO Molecular Science. The new facility will enable the Division to further extend its services to the chemical and plastics industry in Sydney. The Division already has important links with major firms in this sector, such as Orica, Nufarm and

DuPont Australia and many of these companies are located in the Sydney region. A local laboratory will greatly enhance the Division's ability to interact and collaborate with these firms.

97. The CSIRO Molecular Science Animal House will be located at the basement level with a separate and discrete service bay. Controlled staff access to the Animal House is by way of the central lift.

98. The Sensory Centre for Food Science Australia will be located at the rear of the Reception Lobby with independent access for visitors and service access from near the Process Bays.

99. Works external to the buildings will involve the construction of new roads to serve the Complex and to improve safety for both vehicles and pedestrians using the areas. The existing natural vegetation along the Delhi Road frontage will be retained and enhanced.

100. Following the completion of the proposed joint CSIRO Molecular Science/Food Science Australia (CMS/FSA) Complex the two areas of land occupied by their current facilities will be vacated and offered for private sale in accordance with the agreed development principles.

Design

Objectives

101. The design aims to provide facilities required to conduct leading edge, scientific research within a comfortable working environment. A second and also important aim is the provision of an environment conducive to interaction of all staff and their research visitors and collaborators.

102. The Committee was assured that the design of building forms will reflect CSIRO's aspirations in a diversity of public and private spaces which:

- provide a public interface for clients and visitors;
- act as a catalyst for promotion of CSIRO's work;
- assist in creating conditions for product, staff and visitor security and personnel safety;
- provide differentiation between communal areas and work areas;
- provide differentiation between work areas dedicated to particular program or groups and shared support zones;

- provide medium and long term flexibility and adaptability; and
- provide quality working facilities for research.

103. The Complex will be designed to maximise the use of natural light and natural ventilation as well as providing passive cooling and heating to achieve high levels of comfort.

Concept—central covered space

104. The central covered space will create a controlled natural environment for primary circulation beyond the Precinct Reception Control Point with a number of advantages, including:

- independent access to research project groups through the centre of the space on each level to maintain security and confidentiality;
- visual projection of the joint research complex from within the building;
- a focus for interchange of ideas through people meeting in a concentrated and clearly defined circulation route with outlook and amenity;
- a setting for awareness of the scope of activities within the complex to promote a sense of scientific community and encouragement to exchange ideas through optimum sharing of facilities;
- location of laboratories along the central space to reflect the scale of research operations to be carried out; and
- utility space to convey service ductwork, circulation across bridges and provide natural light conditions.

General design principles

105. Design of the facilities will be consistent with the general design principles applied to all recently constructed or designed CSIRO research accommodation. Design principles are:

- long term flexibility—multiple use of space;
- adaptability—easy conversion of layout and simple reserving of space; and
- simplicity of maintenance—with easily accessible services.

106. CSIRO advised that a generic laboratory layout has been developed through consultation with user representatives and staff. The Committee asked CSIRO to expand on the extent to which designers had consulted with scientists and

support staff who will occupy the new premises. CSIRO advised that chiefs of both divisions have had groups in their organisations involved in some detailed planning of the new building. Staff have indicated that they are looking forward to a new, considerably upgraded, facility which will benefit not just Food and Molecular Science, but through shared facilities, most of the CSIRO staff on site.

107. Building services and external infrastructure will comply with all relevant town planning, Commonwealth and State building, health and safety regulations, the Building Code of Australia and all relevant Australian Standards.

Entrance lobby

108. The Committee questioned the provision of what appeared to be more than generous space in the entrance lobby. This is considered by CSIRO to be a very important area. It will be the main entry to the building and will serve as a breakout area for the auditorium and for displays.

Carparking

109. The complex will be provided with 184 carparking spaces. Some spaces will be provided at grade with the remainder provided in the basement of the main research wing.

110. The Committee questioned the basis of the provision of 184 parking bays. This number was determined on the basis of staff surveys carried out Australia wide and at North Ryde. The results indicate that there is a requirement to provide carparking spaces equivalent to 80 per cent of staff numbers. With a population of 220 staff on site, this equates to less than 184, but there is a further allowance for visitor parking.

Structure

111. The building foundations are expected to be concrete column pads socketed into sandstone rock. It is anticipated that piling for foundations will not be required.

112. The multi-storey Research Building will be reinforced concrete column and slab construction, incorporating post-stressed band beams. Floor finishes will be vinyl to laboratories and carpet to offices.

113. The process bays and support facilities will be partial steel-framed structures with 'Colorbond' metal deck roofs. Floors to the process bays will generally

be monolithic concrete finish with vinyl floor finishes to specific areas to meet functional requirements.

Services and ceiling height

114. Co-ordination of services with structural columns and floor slab / beam profiles will be achieved through utilisation of ceiling space above offices, corridors for major duct runs as well as utilisation of the central space for fume cupboard exhausts / risers and fan rooms to achieve optimum floor to floor heights. The project is planned with a four metre floor to floor clearance.

Materials and finishes

115. The facade of the Research Building will utilise a range of differing building materials namely banded brickwork, lightweight metal wall panels and glazing. The banded brickwork facade will also be applied to the process bays helping to integrate them into the main building.

Roof and fume cupboard exhaust stacks

116. CSIRO submitted that the proposed building proposed will be a laboratory facility which must be aesthetically pleasing. CSIRO believes that with the provision of landscaping and the setback of 25 metres this will be achieved. A feature of the proposed building will be the roof. Roof treatment was described to the Committee as a dramatic expression to provide both horizontal and vertical definition.

117. The Committee questioned the intent of the dramatic metal roofing. CSIRO explained that the dramatic element will be the curved roof which will be a foil or curved sweep. The architects intend this to create a 'simple but elegant roofline'.

118. The Committee asked CSIRO and the architects to comment on the provision and design of fume cupboard exhaust stacks which will protrude above the roofline and which may detract from the intent of the foil or curved sweep roofline. The Committee was advised that the exhaust stacks could be grouped together in an aesthetically pleasant manner as sculptured elements. The Committee was also advised that the objective of the curved sweep is to lower the edge of the roof fronting Delhi Road. CSIRO advised that motorists on Delhi Road would be able to see the edge of the roof. The exhaust stacks will be treated with a colour to reflect the sky. The Committee remained unconvinced about the achievement of this objective by the measures proposed and was assured that further design work will be undertaken to

minimise the visual obstructiveness of the exhaust stacks. It must, however, be recognised that exhaust stacks are required for the building to meet occupational health and safety requirements.

Facilities for people with disabilities

119. The Complex will be designed to ensure access for people with disabilities. It will meet the requirements of the Building Code of Australia and relevant Australian Standards.

120. The main entry of the Research Building will provide on grade access from the main vehicular drop off point to the central lobby area. From this point a lift will provide access to all floors of the new research facilities. In addition, a new disabled access to the existing adjoining minerals building will be provided off this main lobby area via a ramp. Other facilities to be incorporated include carparking and provision of disabled toilets.

Childcare

121. A 'CSIROCare' childcare centre is located within the CSIRO central precinct at Riverside Corporate Park. This centre is owned by CSIRO and managed independently. It has a current capacity of 40 places. The centre provides childcare facilities for CSIRO, companies located at Riverside Corporate Park and the North Ryde community.

Overabundance of staff facilities

122. The Committee questioned CSIRO about what appeared to be an overabundance of facilities for staff. CSIRO advised that such facilities are being provided for CSIRO staff but the principal requirement will be to service the substantial population from the private sector. Features such as a cafeteria add to the attractiveness and marketability of the site. Staff facilities have been provided and the relatively small expenditure has more than repaid itself from land sales. CSIRO envisages that once Riverside Corporate Park is fully tenanted it would expect to sell the cafeteria facility to the private sector and expects to more than recoup the capital outlay.

Construction details

123. Further construction details are at APPENDIX B.

Committee's Conclusions

124. **The proposed joint research complex will provide both Divisions with much needed modern research laboratories and ancillary facilities. The extent of the complex can be justified being necessary to meet current and future requirements. CSIRO staff were involved in some detailed planning of the proposed joint complex.**

125. **The proposed location and height of the joint research centre combine to create a strong architectural statement whose immediate impact will be tempered by the setback from Delhi Road and tree plantings.**

Committee's Recommendation

126. **The Committee recommends that the profile and heights of exhaust stacks should be re-examined to reduce their visual impact.**

Master planning and site

Site planning

127. The 1990 site development strategic plan, commissioned and adopted by CSIRO, is the basis for all future development at the North Ryde site. This plan was endorsed by the Committee. The plan provides for the wholesale redevelopment of the North Ryde property. Projects to enhance CSIRO research capabilities involving the construction of new facilities or the refurbishment of existing one were to be staged over ten years.

128. Subsequent refinement of this plan confined CSIRO accommodation and resources into one major precinct—the central precinct with an adjacent supplementary precinct—the southern precinct. The latter would consolidate all of the facilities of the Division of Building Construction and Engineering, with all other CSIRO resources located within the central precinct.

129. The extent of the works undertaken so far includes the provision of most of the site infrastructure, the first stage of the consolidation of the facilities of the Division of Building and Construction Engineering in the southern precinct, south of the ring road, the identification of sites for disposal and the sale of several development sites as well as the provision of site amenity facilities including the village centre and child care centre.

Master plan for central precinct

130. The current Molecular Science and Food Sciences project is the next stage of the redevelopment program. It is based on a master plan for the central precinct, based on the site development strategic plan. Planning included cost studies and explored options for the location of new facilities, consideration of building heights and mass and the configuration and extent of discrete building envelopes. Simultaneously, a review of all the existing buildings was undertaken to establish their suitability for conducting modern scientific research, the opportunity for upgrading them and the relationship of those assessed as viable to the proposed new facilities. The studies also looked for opportunities to retain or establish areas within the precinct as locations for further buildings and facilities, should these be required in the future.

131. The central precinct master plan aims to optimise the development potential of the central precinct, identifies the site for the current proposal and aims to enhance the relationship of new buildings with existing buildings assessed as suitable for retention and upgrade in the future.

132. The plan identifies a discrete area, which, in due course, will be freed up for further, future development and establishes what CSIRO believes is a suitable relationship between the central and southern precincts.

Southern precinct

133. A further master plan has been prepared for the southern precinct which aims to optimise the development of the consolidated Division of Building Construction and Engineering facilities. The plan is the precursor of the construction of facilities required for the Division. This project is the subject of the Committee's 9th report of 1999. The buildings, in the central precinct, have reached the end of their useful lives and are planned for demolition and replacement with new facilities. Demolition will create substantial unallocated space suitable for further future development.

Completion of CSIRO development

134. CSIRO advised the Committee that upon completion of these projects within the next three years, all of the CSIRO works, together with the complete redevelopment of site infrastructure and services, as envisaged in the 1990 site development strategic plan effectively will be finalised.

Planning approvals

135. CSIRO advised the Committee that the proposal has been discussed with Ryde City Council. Although the Council's Development Control Plan for adjacent properties does not have legislative jurisdiction over CSIRO facilities, CSIRO intends to comply with relevant Council conditions in the development of the proposed complex. The Development Control Plan for Riverside Corporate Park provides control principles for the development of the Park. Specific controls relate to land use, siting and design of buildings, building heights, aesthetics, heritage issues, landscaping and soil and water management. The Committee was advised by CSIRO of extensive consultation with Ryde City Council. Five meetings with Council were held to arrive at the design stage for the proposed complex and these meetings will continue to ensure that Council requirements are met.

136. CSIRO told the Committee

> We not only will comply—and have complied—with the spirit and letter of the legislation of Ryde City Council but have also a particular integrity and obligation under our corporate environmental policy, which we adopt across the whole of the country.[1]

137. In addition, CSIRO and consultants have liaised with the NSW EPA, Department of Land and Water Conservation, NSW NPWS, Environment Australia and Sydney Water in developing the current design for the proposed complex. Development of Riverside Corporate Park has progressed in accordance with guidelines administered by these authorities. Most organisations consulted raised no objections but have set out certain parameters which they would like CSIRO to achieve in design and construction phases.

138. All private development has been subject to approval by Ryde City Council. Responding to criticism about private development CSIRO advised the Committee that a Section 88b instrument is attached to the title on all lots sold. This provides guidelines for landscaping, design and construction, services and environmental controls. Property owners are required to submit a statement of environmental effects as part of development applications submitted to Ryde City Council and also defines trees which will be removed. Council assesses each application on merit against particular criteria and applicants are required to abide by conditions set out in development approvals.

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1 CSIRO, *Transcript*, p. 148.

139. Asked by the Committee if there had been any queries or complaints from the Council about the land which has been sold, CSIRO advised:

> There have been no complaints and the land we sold is owned by someone else...we are not held responsible for things that are being done on land we have sold and where the freehold has been passed over to the owner of the land.[2]

Committee's Conclusion

140. **CSIRO consulted widely with State and local government planning authorities in order to meet planning requirements.**

Environment

141. Initiatives implemented by CSIRO in the development of Riverside Corporate Park have included:

- retention of bushland in the south-east corner of the park adjacent to Lane Cove National Park as part of CSIRO commitment to minimise the loss of remnant vegetation;
- replacement of trees lost within building lots with suitable native canopy planting;
- retention, where possible and replacement of trees along the Delhi and Epping Road frontages, supplemented with additional buffer plantings of locally indigenous species and native species already existing on the site;
- bush regeneration programs where sewer and stormwater infrastructure works have affected the remnant natural bush;
- stormwater collection and discharge via sedimentation ponds and a wetland watercourse to reduce the impact of stormwater which previously discharged from a pipe system overland through Lane Cove National Park into the Lane Cove River;
- replacement of an old sewer pumping station system with a gravity sewer under Epping Road, significantly reducing the risk of untreated effluent discharging into the Lane Cove River; and

2 CSIRO, *Transcript*, p. 148.

- landscape maintenance activities to eradicate and control weed infestation.

142. CSIRO advised the Committee that it is committed to responsible environmental management in the design, construction and operation of its facilities and has maintained this commitment both in developing the proposed joint complex and in the implementation of appropriate planning controls and initiatives to ensure Riverside Corporate Park is developed in an environmentally friendly manner.

143. CSIRO strongly contested claims that the development of the Corporate Park has been undertaken in a manner which is unsympathetic with environmental values. There is a substantial portion of land, worth $2–3 million which will not be developed because of commitments made at previous hearings. This area has been excised from the various building lots. CSIRO will negotiate with Lane Cove National Park about management of the area.

144. As far as the building site is concerned, all stormwater drainage will be controlled. Measures designed to minimise the effects of stormwater runoff will be designed on the basis of overland flow from a 100 year storm. CSIRO acknowledged that piped stormwater systems would not have the capacity to absorb runoff of a 100 year storm intensity. It is planned that the sedimentation ponds would filter the worst of any storm effects. There is, however, no guarantee that in an extreme storm event there will not be some overtopping of the sedimentation ponds. The Committee believes this is reasonable given that the effects of major storm events will not be restricted to the CSIRO site.

145. CSIRO has engaged, through the design team, a specialist environmental consultant for the project who is preparing an Environmental Management Plan in consultation with all relevant environmental authorities. The aim of the plan will be to develop comprehensive strategies to ensure that there is minimal impact on the environment arising from the construction and operation of the proposed complex.

146. The planning team has complied with Ryde City Council's environmental and planning controls throughout the process of developing the concept for the Complex. Consultation is ongoing with Council to address visibility and height of buildings at the Delhi Road frontage.

147. Specific actions to be implemented in this development will include:

- appropriate tree planting and landscaping adjacent to the Complex;

- the filtering and control of all stormwater run-off to prevent any potential pollutants from reaching the Lane Cove River;
- sound attenuation and vibration isolation within the new facilities to maintain acceptable noise and vibration limits on the site;
- maintaining air quality at the site and surrounding areas in accordance with best management practices;
- the dilution and treatment of non toxic, liquid waste prior to discharge to sewer;
- collecting any wastes such as solvents, potentially flammable liquids, oils and toxic liquids at the point of use in waste containers. The containers will be collected for disposal by a licensed industrial waste collector; and
- storage of hazardous goods, chemicals and gases in accordance with respective codes.

148. Consultation has also continued with State Government authorities including the Environmental Protection Authority (EPA) and Sydney Water. The main issues at this stage with the EPA relate to waste generation, plant noise and chemical emissions during operation of the facility. Discussions with Sydney Water centred around trade waste and connection to sewer. Consultations with these and other authorities will continue during the course of the design and construction processes.

NSW National Parks and Wildlife Service

149. The NSW National Parks and Wildlife Service (NPWS) has statutory responsibilities for the management of its lands and for the protection and care of native flora and fauna. The NPWS advised the Committee that it has no objections to the construction and operation of the proposed complex. The NPWS noted that the site is in the vicinity of Lane Cove National park and was therefore concerned to ensure that all possible measures are taken to protect the park from potential impacts associated with the proposed development, including:

- corridor values;
- erosion and sedimentation;
- stormwater runoff to NPWS land;
- management implications and impacts;
- fire;

- boundary encroachment; and
- visual impact.

150. The NPWS requested that particular attention be given to water quality. This has been prompted by nutrients from development sites in the area impacting on the Lane Cove River for some time. A high priority should therefore be given to reducing existing impacts and any further impacts resulting from future development.

151. The NPWS mentions that the proposal as submitted to the Committee by the CSIRO makes brief reference to the management of runoff sedimentation and water quality. Specific action will be undertaken, including filtering and control of all stormwater runoff to prevent any potential pollutants reaching Lane Cove River. The NPWS supports the intent of the proposed action, noting the absence of details on stormwater management and controls to be employed.

152. The NPWS suggested, therefore, that all possible sources of water egress from the site be identified and appropriate state of the art controls be provided. Any control measures should be subject to regular monitoring and maintenance. The monitoring mechanism should make provision for the early identification and rectification of any deficiencies in water controls at the site.

153. The submission to the Committee acknowledges that the wider CSIRO site contains remnant bushland. The NPWS advised the Committee that although this bushland is unlikely to be affected by the current proposal, it suggested the protection of any remnant bushland be afforded a high priority in planning for future use and development of other areas of the site. The NPWS also suggested that proposed tree planting and landscaping be undertaken using only native plant species. This should assist in providing additional fauna habitat and reduce the risk of weed infestation.

154. CSIRO assured the Committee that liaison will be maintained with the NPWS during ongoing design development and construction to ensure that NPWS requirements are met. In relation to specific issues raised, CSIRO advised the Committee that:

- the Environmental Management Plan will address protection of Lane Cove National park from any potential impact associated with the development—especially water quality and runoff control; and
- protection of any remnant bushland and proposed tree planting and landscaping are to be addressed in the Environmental Management Plan, and planting will comprise locally indigenous species and native species already existing on the site.

NSW Environment Protection Authority

155. The NSW Environment Protection Authority (EPA) advised the Committee that it has no objections to the proposal as outlined. The EPA also advised that it has been involved in discussions with the CSIRO and its consultants in the development of the proposal.

156. The NSW *Protection of the Environment Operations Act 1997* took effect from 1 July 1999. Under the provisions of the Act, CSIRO may need to hold a licence, issued by the EPA, for activities undertaken in the proposed facility. When detailed design is completed it will need to be determined by the EPA if the proposal falls within the scope of the licensing schedule to the Act. The EPA stated that particular environmental matters requiring attention during the development and operation of the facility include the following:

- sediment and erosion control during construction and prevention of sediment being carried on roads on vehicle tyres;
- measures to ensure spillages are contained on site, particularly from truck loading and unloading areas;
- noise control measures—particularly from equipment operating continuously and with outlets at elevated positions;
- controls on air emissions from fume cupboards to ensure standards are complied with and emissions are minimised as far as practicable; and
- generation and treatment of waste comply with State statutory requirements.

157. In response, CSIRO acknowledged that it may need to hold a licence, issued by the EPA, for activities to be undertaken during the development and operation of the proposed facility. Matters raised by the EPA will be addressed in the Environmental Management Plan in consultation with relevant authorities. This plan will address not only matters identified by the EPA but also the development of comprehensive strategies to ensure there is minimal impact on the environment arising from the construction and operation of the proposed complex.

Acoustics

158. The main external factors influencing the acoustic amenity for the proposed complex arise from:

- traffic on Delhi Road;
- aircraft flyovers;

- helicopters operating from the adjacent Hoyts Television Studios; and
- plant noise.

159. CSIRO assured the Committee that the design of the complex will ensure that the following conditions will be achieved:

- background noise levels within the various areas and areas requiring speech privacy will be designed to meet the requirements of Australian Standards;
- particular attention will be given to the control of noise and vibration in the Process Bays;
- maximum distance will be maintained between vibration sources and vibration sensitive laboratories; and
- vibration control will be implemented at both source and receiver locations.

Traffic

160. A total of 220 research and support staff will be accommodated in the proposed complex. These are, predominantly, already working on the site in the facilities to be replaced. The proposal is therefore primarily to replace and consolidate existing diverse substandard and outdated facilities with high quality modern facilities. The traffic generating potential for the proposed complex will be minimal.

161. The effect on the overall traffic situation resulting from Riverside Corporate Park development is minimal. There is ongoing liaison between CSIRO, the Roads and Traffic Authority and Ryde City Council—including the repositioning of the slipway at Rivett Road to allow traffic to enter the park from the west and exit to the east, thereby lessening any possible effect on Delhi Road traffic.

162. CSIRO is aware that Delhi Road has now become a major thoroughfare because it is the link road between Epping Road and the M2 and Chatswood. The proposal will not make a significant difference to this because only CSIRO staff at the site will be relocated. It is not proposed to increase or decrease the number of CSIRO staff on the site.

163. In relation to the eastern entrance to the site, there was a suggestion that because it is wider, it is used by heavy trucks. This was the case until recently when the western entrance was upgraded. It is now wider and features a roundabout which can be negotiated by heavy trucks. CSIRO is currently negotiating with the Roads and Traffic Authority about the possibility of

traffic lights at the eastern entrance. CSIRO believes the western entrance, which has been upgraded with traffic lights, will receive the majority of traffic and that the western entrance will be used less by heavy trucks.

Rail link

164. The NSW Department of Transport advised the Committee of planning underway for a new 28 kilometre railway between Parramatta and Chatswood via Epping. Most of the line will be underground. It is planned to be operating by 2006 and is estimated to cost about $1.6 billion to build. An Environmental Impact Statement is being prepared and options, a rail bridge or tunnel, for crossing the Lane Cove River are being investigated. The bridge option would allow a station to be built under Delhi Road in the vicinity of Riverside Corporate Park. CSIRO advised the Committee that it has been liaising with the Department of Transport on the possible project over a long period. CSIRO will continue this liaison during further development. CSIRO believes there would be considerable social and economic benefits to the community arising from the implementation of the rail link proposal.

Energy conservation and management

165. Passive energy conservation measures will be incorporated into both building and landscape design, whilst the design of mechanical, electrical and hydraulic services will incorporate active energy conservation initiatives.

166. Energy Conservation and Management initiatives will include:

- optimum building orientation providing maximum north/south exposure in order to maximise opportunity for solar control in summer and passive solar energy in winter;
- optimum building layout centred around a central courtyard to maximise daylight conditions for both offices and laboratories;
- provision of primary or borrowed natural light in all major functional spaces thus minimising the use of artificial lighting;
- thermal insulation to reduce heating and cooling loads;
- provision of smaller openings to offices on north and south enabling smaller environmental heat exchanges and less shading requirements;
- provision of sunscreening elements to northern façade to control solar heat gains;
- building Management System to operate, control and monitor engineering services;

- incorporation of water saving devices on hydraulic fittings and fixtures to reduce water consumption;
- installation and connection of power factor correction equipment to improve the building power factor and reduce energy usage and cost;
- utilisation of fluorescent lighting with electronic ballasts and triphosphor tubes for energy conservation and extended lamp life;
- provision of a dedicated automatic lighting control system with features such as:
  - ⇒ time clock control switches to turn the bulk of lighting off at pre-determined times
  - ⇒ passive infra-red detectors to activate / de-activate lighting to intermittently used rooms such as toilets, storerooms and meeting rooms
  - ⇒ photo-electric control of lighting in perimeter rooms with access to natural lighting
- separate air handling plant for each laboratory module allowing independent control and operation out of hours;
- use of variable fresh air supply (to suit the population density) in the Auditorium and motion detectors to control meeting room air conditioning;
- selection of cost effective and energy efficient and mechanical plant; and
- the use of variable speed pumps and fans (where applicable) to closely match systems load fluctuations and minimise power requirements.

167. These initiatives and measures are consistent with a continuing commitment by CSIRO to reduce energy use through the adoption of better and more efficient energy management practices in the design and operation of its facilities.

Committee's Conclusion

168. **CSIRO has implemented extensive initiatives to minimise the environmental impact of the development of the corporate park site. These measures include extensive stormwater management and the provision of a substantial portion of land as a flora and fauna reserve.**

Social considerations

Safety of workforce

169. CSIRO pursues an active Occupational Health & Safety policy within the workplace and this will be extended to include all new facilities. Strict compliance with these requirements will be adhered to in all construction work.

Local impact

170. CSIRO believes the project will provide a number of benefits to the local economy. During the construction period, construction and associated industries will benefit with up to 250 persons working on the project at any one time.

171. Post construction benefits will result from the research and development opportunities generated through collaborative and technology transfer initiatives within Riverside Corporate Park and the North Ryde Technology Triangle. In addition, opportunities will be provided for student interaction from the nearby Macquarie University.

Cost and timetable

Cost

172. The estimated cost of the proposed work is $49 million at March 1999 prices, inclusive of escalation costs, contingencies, all professional fees and authorities charges.

173. The estimate does not include the cost of relocating staff and equipment from existing facilities and loose furniture and fittings.

Timetable

174. CSIRO anticipates that, following Parliamentary approval, construction will commence in early 2000 with completion and occupancy in late 2001.

Committee's Recommendation

175. **The Committee recommends the construction of the Joint Research Complex for CSIRO Molecular Science and Food Science Australia at Riverside Corporate park, North Ryde at an estimated cost of $49 million at March 1999 prices.**

Conclusions and Recommendations

176. The conclusions and recommendations of the Committee and the paragraph in the report to which each refers are set out below:

1. **The Riverside Corporate Park, North Ryde, contains the largest aggregation of CSIRO research activities in New South Wales. Long term planning envisages development of the corporate park, within CSIRO precincts, to provide modern research facilities. (paragraph 68)**
2. **Land surplus to CSIRO requirements has been developed and infrastructure and site services have been upgraded or replaced for sale to private sector companies. Further rationalisation and consolidation of CSIRO facilities is planned. (paragraph 69)**
3. **Food Science Australia and the Division of Molecular Science undertake wide-ranging strategic and applied research for industries which play a vital role in the continued economic growth of Australia. (paragraph 70)**
4. **Both Divisions are located at North Ryde in facilities which are inadequate and cannot be adapted to contemporary and future research requirements. North Ryde is regarded as an ideal location for both organisations which are required to interact with companies and universities located in the Sydney area. (paragraph 71)**
5. **A need therefore exists for the provision of modern research facilities for Food Science Australia and the Division of Molecular Science at the North Ryde site. Both Divisions would benefit from collocation. (paragraph 72)**

6. **The proposed joint research complex will provide both Divisions with much needed modern research laboratories and ancillary facilities. The extent of the complex can be justified being necessary to meet current and future requirements. CSIRO staff were involved in some detailed planning of the proposed joint complex. (paragraph 124)**

7. **The proposed location and height of the joint research centre combine to create a strong architectural statement whose immediate impact will be tempered by the setback from Delhi Road and tree plantings. (paragraph 125)**

8. **The Committee recommends that the profile and heights of exhaust stacks should be re-examined to reduce their visual impact. (paragraph 126)**

9. **CSIRO consulted widely with State and local government planning authorities in order to meet planning requirements. (paragraph 140)**

10. **CSIRO has implemented extensive initiatives to minimise the environmental impact of the development of the corporate park site. These measures include extensive stormwater management and the provision of a substantial portion of land as a flora and fauna reserve. (paragraph 168)**

11. **The Committee recommends the construction of the Joint Research Complex for CSIRO Molecular Science and Food Science Australia at Riverside Corporate park, North Ryde at an estimated cost of $49 million at March 1999 prices. (paragraph 175)**

Hon. Judi Moylan MP
Chair

23 September 1999

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Appendix A—Witnesses

ARDERN, Mr Kerry Charles, Project Director, APP Projects Pty Ltd

EYLES, Dr Michael John, Chief Executive, Food Science Australia

FERNS, Mrs Helen (private capacity)

GALBRAITH, Dr Michael Neil, Officer in Charge, North Ryde, Program Manager, Scientific Support Services, CSIRO Molecular Science

HUDSON, Professor Chris, Goodman Fielder Corporate Technology Group

KELLY, Mr James, Managing Director, Meddicoll Pty Ltd

MALLETT, Dr Christopher Patrick, Deputy Chief Executive, CSIRO

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MOODY, Mr Trevor Laurence, Assistant General Manager, Corporate Property, CSIRO

WARE, Miss Rhonda Elizabeth (private capacity)

B

Appendix B—Construction details and consultation

Mechanical Services

Scope

1. The mechanical services will include:

    - air conditioning for comfort conditions in laboratories, offices, meeting rooms, library and cafeteria;
    - air conditioning for specific conditions in the Animal House, Process Bays and constant temperature rooms;
    - exhaust ventilation systems for laboratories, toilets, fume cupboards, hoods and specific equipment;
    - central steam raising plant serving sterilisers, laboratories, food processing bays and the Animal House humidification systems;
    - central chilled and heating water plant;
    - laboratory cooling water system;
    - relocation of site services; and
    - automatic controls for air conditioning and ventilation systems incorporated into an integrated building management system.

Central Plant

2. The central plant will generally be located at roof level in the new building and will comprise:

    - natural gas fired low temperature hot water boilers and pumps;

- natural gas fired steam boilers;
- water cooled chillers and chilled water pumps;
- cooling towers and condenser water pumps associated with water cooled chillers, laboratory cooling water reticulation system and constant temperature room refrigeration plant;
- filtered outside air supply systems serving local air handling units;
- tempered air supply to fume cupboards and corridors; and
- general exhaust system.

Chilled and low temperature hot water distribution

3. The chilled water system will comprise two large high efficiency centrifugal chillers with small rotary type chillers for low load operation. Chiller capacity will be sized so that approximately 65 per cent of the maximum cooling capacity is available if one of the large chillers fails. Chilled water will be reticulated to local air handling plant throughout the Laboratory Building and Process Bays and to constant temperature rooms where applicable.

4. The low temperature hot water system will include two high efficiency boilers each sized for 65 per cent of the load and individual constant speed pumps for each boiler. Heating water will be reticulated to local air handling plant throughout the Research Building and Process Bays.

Steam raising plant

5. Packaged, unattended steam boilers will be provided to satisfy the demand and comply with the maximum capacity for unattended operation and will function in concert with steam pressure reducing sets in Research areas and Process Bays.

Condenser water system

6. Four cooling towers will be provided, incorporating redundancies to facilitate cleaning and repairs with minimal disruption to building functions. High efficiency filters will be provided for the local refrigeration plant and laboratory cooling water systems. The viability of combining these systems will be examined.

Filtered outside air supply systems

7. Filtered outside (fresh) air will be obtained from a common source protected from exhaust air contamination. The system will comprise a filter bank, multiple fans and a manifold supplying tempered air supply air handling

units and local air handling plant. Fan operation will be staged to suit changes in demand.

Tempered air supply system

8. Air supply air handling units will deliver cooled, heated or dehumidified air at room temperature for:

   - fume cupboard exhaust make-up air; and
   - laboratory corridors to make-up air to laboratories which operate at a positive pressure compared to ambient and a negative pressure relative to corridors.

9. The tempered air supply air handling units will operate on a variable fan speed basis to suit changes in demand.

General exhaust system

10. The general exhaust systems will comprise exhaust duct headers in the laboratories and roof mounted fans. The systems will maintain the correct pressure balance between laboratories and adjacent areas.

Laboratory air conditioning

11. Each laboratory module (approximately 20 metres long) will be served by a separate local air handling unit which is capable of supplying 100 per cent fresh air and which will allow optimum temperature control without wasteful reheating. The temperature control system for each laboratory module will respond to average conditions within the module.

12. Exhaust / return air will be collected above the equipment bays for efficient heat removal.

13. Special laboratory suites will have individual air handling systems and / or 100 per cent fresh air supply as appropriate.

Fume cupboards

14. Laboratory fume cupboards will be connected to roof mounted fans.

15. Makeup air for the fume cupboards will be supplied from laboratory relief air and the tempered air supply. The laboratory exhaust, fume cupboard exhaust and tempered air supply will be adjusted automatically according to the fume cupboard sash position.

Reticulated piped services

16. The following piped services will be reticulated to the laboratories:

- compressed air;
- nitrogen ;
- oxygen;
- vacuum;
- steam; and
- laboratory cooling water.

Constant temperature rooms

17. Constant temperature rooms will be for specific purposes and will generally employ sandwich panel coolroom construction methods.

General air conditioning

18. Air conditioning systems for offices, meeting rooms etc. will comprise local air handling plant similar to the laboratories but without the provisions for a full fresh air system. The courtyard will be a naturally ventilated and shaded space and will not be treated as an artificial environment.

Building management system

19. A proprietary Building Management System will monitor and / or control all building engineering services throughout the new complex. The system will cover HVAC plant and equipment, air flows, filter performance, fume and other exhaust systems, heating and chilled water, steam, vacuum and gases reticulation, constant temperature rooms and artificial lighting. The system will be programmable with graphics interfaces for full zone control and will incorporate facilities for external monitoring and energy conservation. It will be capable of expansion.

Electrical

New substation

20. A new indoor chamber type substation will be established to supply the building electrical load. The substation will be sized to house three 1500KVA transformers and located at ground level to facilitate transformer replacement and maintenance access.

Distribution

21. The new main switchboard will house an automatic transfer switch to control the operation of the standby diesel generator and to automatically connect the

essential loads to the generator supply in the event of failure of the Supply Authority supply. The switchboard will be housed in a switchroom located immediately adjacent to the new substation.

22. Power factor correction equipment will be installed within the main switchroom and connected to each of the supplies from the substation to improve the building power factor and reduce energy usage and cost.

23. Distribution boards will be installed on each level and in each area / zone of the building and to ensure that subcircuit lengths are generally less than thirty metres. At this length, standard sized cable can be used without voltage drop problems. Distribution boards will generally be installed in dedicated cupboards. However, where wall mounted, the distribution board enclosure will be designed to suit the particular environment.

Auxiliary standby power

24. A standby diesel generator will be provided to serve the essential building and laboratory loads both in the main building, the animal house and in the food process bays.

25. Two UPS systems will be supplied. One system will be installed in the computer room and dedicated to the computer equipment and the second system will serve:

    - discrete outlets serving bio-hazard and laminar flow hoods in PC2 and PC3 Tissue Culture and several individual specialist instruments; and
    - specific temperature control plant associated with nominated equipment.

26. Submains cabling serving non-essential loads will be of the PVC insulated and sheathed copper type. Submains cabling serving essential and UPS loads would be of the mineral insulated metal sheathed type except where installed underground where PVC insulated and sheathed cables would be installed in heavy duty UPVC conduit.

Existing site services

27. The existing Food Sciences Building is currently serviced from a PABX located in the central precinct with cabling installed across the site of the proposed new main building. A temporary service will be installed prior to the commencement of construction.

28. The existing fibre optic data cabling to the Food Sciences Building will be affected by the construction works. Temporary connections will be installed.

Power supply systems

29. Cable management systems will be provided to reticulate cabling and provide flexibility for future cabling needs. A combination of cable trays and support channels will be provided in the laboratories. Two channel skirting duct will be provided in office areas and specialised laboratory areas. The skirting ducts will be connected to the accessible ceiling spaces via PVC conduits.

30. General purpose outlets will be provided throughout as required. Outlets will generally be of the double type.

31. Earth leakage protection (30mA sensitive) will be provided to all general purpose outlets except those supplying refrigeration equipment. Non-protected circuits will be colour coded.

32. Emergency shut-off switches will be provided to all laboratory areas for emergency shutdown of all general purpose outlets in the event of fire or accident (as per AS2243).

Lighting

33. Lighting will generally be provided by means of fluorescent luminaires. The luminaires will use electronic ballasts and tri-phosphor tubes for energy conservation and extended lamp life.

34. Luminaires in laboratory areas with false ceilings will be recessed mounted and incorporate prismatic acrylic lenses. Luminaires in PC2 and PC3 laboratories will be sealed to prevent ingress of dust and other foreign particles. In office and support areas consideration will be given to the use of high efficiency low brightness type luminaires.

35. Luminaires installed in Process Bays and the Animal House will be of surface mounted weatherproof type sealed against dust and moisture.

36. All lighting will be designed to provide lighting levels which comply with AS1680. Maximum use of natural light will be employed where this will not be detrimental to the function of the respective space.

37. External lighting will utilise fluorescent or discharge lamps and will be provided to ensure safe access to the building and for security purposes. The lighting will be controlled by a combination of photo-electric and time switches.

38. The design will allow for the following special lighting facilities:

    - anglepoise examination lighting in Surgical Rooms of Animal House;
    - diurnal control of all lighting in Animal Holding Rooms;

- vapour sealed luminaires in all cold and freezer rooms as well as the Constant Temperature Laboratories; and
- luminaires set flush into the accessible ceiling and vapour and dust sealed with provision for external servicing in PC3 laboratories.

39. The building will be equipped with a system of emergency and exit luminaires complying with Australian Standard 2293. The luminaires will be of the self-contained type. A computer based system will be installed to monitor and test the emergency lighting system.

40. A dedicated automatic lighting control system will be provided to maximise possible energy saving features.

Communications

41. A computer room will house the central data hub for the new complex. The site microwave link and PABX equipment will remain in the PABX Room in Building 12.

42. An integrated voice / data cabling system will be provided to link each voice and data outlet in the computer room.

43. Horizontal cabling will comprise Category 5, 4 pair UTP cable terminating in RJ45 outlets. Vertical backbone cabling will comprise multi-mode fibre optic cable. Patch panel cabinets will be housed in communications closets to be established on each level of the building.

44. An audio visual system will be provided in the auditorium, incorporating a video projector, sound system, microphones, CD player, video player and control system.

Access control system

45. The new access control system will be integrated with the existing precinct access control system and will incorporate proximity card readers and control door operations. Panic buttons will be provided throughout the building to enable staff to summon assistance in the event of accident or emergency.

46. The access control system will be connected to the existing site monitoring system.

Equipment alarm monitoring system

47. A system will be provided to enable monitoring of the status of important laboratory equipment on a 24 hour basis, e.g. incubators. Outlets will be installed throughout the laboratory areas to enable connection of such equipment. The outlets will be cabled to a central computer which will

monitor the parameters of the respective item of equipment and raise an alarm in the event of failure.

Lightning protection

48. A lightning protection system will be provided in compliance with Australian Standards to the total complex to protect the building structure and equipment. Surge suppressers will be installed on the incoming power cabling as well as the incoming copper communications cabling.

Lift services

49. A combined passenger / goods lift and a passenger only lift will be provided to meet the service demands of the new building.

Hydraulics

Scope

50. The hydraulic services works will include:

- sanitary and laboratory waste drainage;
- stormwater drainage;
- water services;
- natural gas services; and
- modifications to existing site hydraulic services.

Regulations and standards

51. All hydraulic services will be designed and constructed in accordance with the Building Code of Australia, Australian Standards, Sydney Water, Ryde City Council, and the NSW Fire Brigade requirements.

Sanitary and laboratory waste drainage

52. The sanitary drainage system will be designed to meet the requirements of AS3500, 'Australian Code of Good Manufacturing Practice (GMP) for Therapeutic Goods Medical Products', Sydney Water and Environment Protection Authority requirements.

53. Fixtures and fittings will be piped to connect into drainage stacks which flow by gravity to discharge into the sewer main.

54. Waste drainage from the ground floor canteen fixtures will be separately piped via user grease interceptors. The grease interceptor outlets will connect to the base building sanitary drainage system.

55. Laboratory waste systems will reticulate throughout the building in vertical ducts evenly spaced to allow flexibility within the laboratories. Sullage wastes from chemical laboratories will discharge to chemical neutraliser pits with self-monitoring automatic dosing facilities. Toxic wastes will discharge to independent settling pits. Removal will be by discharge to the sewer or removal by licensed waste removal contractors.

56. Waste discharge from darkrooms will be as for the general laboratory areas with precious metal recovery.

57. Wastes from the Electrophoresis and Radiation suites will be collected separately from the general laboratories to a similar system but with an isolation valve on the outlet of the dilution pit to isolate any radioactive spillage (should it occur) before connection to the sewer.

58. Floor wastes will not generally be installed in laboratory areas except in special use areas such as the Central Sterilising Suite, Animal Houses, Process Bays and Bulk Stores Area.

Stormwater drainage

59. The stormwater drainage system will be designed to meet the requirements of Ryde City Council. Any internal box gutters will be sized for 1 in 100 year storm recurrence with appropriate overflows. The preferred eaves gutters will be sized for 1 in 20 year storm recurrence. The downpipes will be a minimum of 200mm diameter and oversized to allow coping for leaf litter blockages.

Water

60. Water services into the building will be connected to the external mains and include, discrete water meters, backflow prevention and reduced pressure zone devices.

61. The building will be equipped with a high level domestic water storage tank. A booster pump system located at the building base will pump water through an express riser located in the core area to the high level storage tank.

62. The cold water distribution system will be zoned to give a range of terminal pressures. Cold water pipework will be grouped together with other services and arranged so that easy access is available.

63. Water services will be supplied to particular fixtures that require cold water or treated water such as deionised or pure water for laboratories, kitchens,

scrub-up areas, plantrooms, toilets, etc. including special laboratory taps and outlets, safety showers and eye wash units.

64. A separate potable water supply will be reticulated for the Food Sensory Centre. Washers and autoclaves for the Central Sterilising and Media Preparation Suites will be supplied with potable water, but through anti-backflow devices acceptable to the water authorities. Potable water will be supplied to the Process Bays and to the taps for hosing down in the Animal House Breeding and Holding Rooms, Feed Storage rooms, Cage Store and Preparation rooms, Waste Storage Room, and Cage Clean and Wash Room and to taps for the PC2 laboratories and Surgeries.

65. The non-potable water supply will have zone protection between laboratory areas to prevent internal cross connection. Laboratory sinks and fume cupboards will be supplied with non-potable water.

66. An irrigation system will be provided for the landscaping, connected to the site water mains via a reduced pressure zone device to prevent cross-connections with the potable water system. Opportunities to utilise recycled rainwater will be investigated as options to supplement the water supply for the irrigation system.

67. The central hot water system will be located in the plant room and will be gas fired, with a balanced flow and return system throughout the building. Individual electric hot water units will serve specific areas. Consideration will be given to providing a solar energy hot water system to determine if it is a viable alternative for the hot water system.

68. Deionised water will be supplied and reticulated from plant located in the roof plantroom of the Research Building. Smaller localised stand alone units will be installed in specific areas such as the Animal House.

Natural gas

69. Connection will be made to the existing gas service for the central precinct that emanates from the AGL gas main in Delhi Road.

Fire protection

Scope

70. Fire protection services will comprise:

- fire hydrants, hose reels and extinguishers;
- automatic fire sprinkler system;
- an emergency warning and communication system; and

- smoke detection

Existing site fire services mains

71. The existing precinct fire services mains are pressurised from storage tanks adjacent to Building 19. The hydrant service also has a separate connection to the external water main to comply with current Building Code of Australia requirements.

72. The fire sprinkler system for existing precinct buildings is fed from an existing sprinkler storage tank located adjacent to Building 19.

Hydrants, hosereels and extinguishers

73. The complex will be serviced with an external fire hydrant and internal fire hose reel system in accordance with Building Code of Australia requirements. Portable fire extinguishers will also be provided at required locations.

Automatic fire sprinkler system

74. A fully automatic wet pipe fire suppression system will be provided to interlink with the smoke exhaust and stair pressurisation systems. The fire sprinkler system will be designed in accordance with AS2118. The use of dry heads will be undertaken in areas where water damage is not acceptable. Each room will be monitored with a signal back to the fire indicator panel and to the building management system.

Emergency Warning and Intercommunication System (EWIS)

75. An EWIS system will be installed in accordance with the requirements of the Building Code of Australia.

Smoke detection

76. Smoke detection will be installed in all laboratories and equipment bays. Smoke detectors will also be installed in all air handling plant.

77. The smoke detection system and fire sprinkler system will be monitored by a fire indicator panel to be installed at the main entry to the building.

78. A very early smoke detection and alarm (VESDA) system will be installed in the Computer Room to provide additional protection for equipment.

Fire protection—design and certification

79. The NSW Fire Brigades will be responsible for responding to any emergency situation involving fire or the spillage of hazardous materials at the complex.

The Brigades submitted to the Committee that during detailed design development it should be given the opportunity to comment and make recommendations in relation to:

- fire hydrant location, coverage, pressure and flow rates;
- special hazards involving chemical storage, handling and usage;
- storage of flammable liquids and gases;
- fire suppression and alarm systems to be installed; and
- any alternative solutions to the Building Code of Australia which involve fire safety measures.

80. CSIRO advised the Committee that design consultants had met with the NSW Fire Brigades Fire Safety Division to discuss fire safety. Liaison will continue during design and documentation phases.

81. CSIRO assured the Committee that it would be seeking a Certificate of Approval from the Fire Authority at the completion of construction. This is in accordance with normal CSIRO practice for its buildings.

Civil engineering

Roadworks and carparks

82. Access to Riverside Corporate Park is via Delhi Road and Epping Road. Delhi Road provides the main route to the CMS/FSA site via Julius Avenue.

83. Proposed road improvements will include:

- car parks to accommodate 184 carparking spaces, including disabled carparking bays;
- access road from Julius Avenue to link with a new site road network, servicing both cars and heavy vehicles;
- manoeuvring areas and new loading dock areas for service vehicles; and
- pedestrian footpaths to link desire lines.

Consultations

84. The following authorities and Departments have been contacted and/or consulted by CSIRO and its consultants during the preparation of this submission:

Commonwealth

- Department of Communications, Information Technology & The Arts
- Department of Employment Education Training & Youth Affairs
- Department of Agriculture, Fisheries & Forestry
- Department of Workplace Relations & Small Business
- Department of Transport & Regional Development
- Department of Industry, Science & Resources
- Department of Transport & Regional Development
- Department of The Treasury
- Department of Prime Minister & Cabinet
- Department of Environment & Heritage
- Department of Finance & Administration
- Department of Foreign Affairs and Trade

State and Local Government

- Ryde City Council
- NSW Fire Brigade
- NSW Environment Protection Authority
- NSW National Parks and Wildlife
- NSW Department of Land, Water and Conservation
- Sydney Water

Union

- CSIRO Division of Community Public Sector Union (CPSU)

Other Authorities and Organisations

- Telstra
- Australian Gas Light Company
- ACROD
- CSIRO Care
- Energy Australia

- NSW Master Builders Association
- Local Community Groups

C

Appendix C – Associated Drawings